Mathematics

Effective August 2025
Rule 6A-1.09412, F.A.C.

Foundational Skills in Mathematics K-2 (#5012005) 2024 - And Beyond (current)

Course Standards

Name	Description
MA.1.AR.1.1:	Apply properties of addition to find a sum of three or more whole numbers. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is to apply the associative and commutative properties of addition. It is not the expectation to name the properties or use parentheses. Refer to Properties of Operations, Equality and Inequality (Appendix D). *Clarification 2:* Instruction includes emphasis on using the properties to make a ten when adding three or more numbers. *Clarification 3:* Addition is limited to sums within 20.
MA.1.AR.1.2:	Solve addition and subtraction real-world problems using objects, drawings or equations to represent the problem. **Clarifications:** *Clarification 1:* Instruction includes understanding the context of the problem, as well as the quantities within the problem. *Clarification 2:* Students are not expected to independently read word problems. *Clarification 3:* Addition and subtraction are limited to sums within 20 and related subtraction facts. Refer to Situations Involving Operations with Numbers (Appendix A).
MA.1.AR.2.1:	Restate a subtraction problem as a missing addend problem using the relationship between addition and subtraction. **Clarifications:** *Clarification 1:* Addition and subtraction are limited to sums within 20 and related subtraction facts.
MA.1.AR.2.2:	Determine and explain if equations involving addition or subtraction are true or false. **Clarifications:** *Clarification 1:* Instruction focuses on understanding of the equal sign. *Clarification 2:* Problem types are limited to an equation with no more than four terms. The sum or difference can be on either side of the equal sign. *Clarification 3:* Addition and subtraction are limited to sums within 20 and related subtraction facts.
MA.1.AR.2.3:	Determine the unknown whole number in an addition or subtraction equation, relating three whole numbers, with the unknown in any position. **Clarifications:** *Clarification 1:* Instruction begins the development of algebraic thinking skills where the symbolic representation of the unknown uses any symbol other than a letter. *Clarification 2:* Problems include the unknown on either side of the equal sign. *Clarification 3:* Addition and subtraction are limited to sums within 20 and related subtraction facts. Refer to Situations Involving Operations with Numbers (Appendix A).
MA.1.DP.1.1:	Collect data into categories and represent the results using tally marks or pictographs. **Clarifications:** *Clarification 1:* Instruction includes connecting tally marks to counting by 5s. *Clarification 2:* Data sets include geometric figures that are categorized using their defining attributes and data from the classroom or school. *Clarification 3:* Pictographs are limited to single-unit scales.
MA.1.DP.1.2:	Interpret data represented with tally marks or pictographs by calculating the total number of data points and comparing the totals of different categories. **Clarifications:** *Clarification 1:* Instruction focuses on the connection to addition and subtraction when calculating the total and comparing, respectively.
MA.1.FR.1.1:	Partition circles and rectangles into two and four equal-sized parts. Name the parts of the whole using appropriate language including halves or fourths. **Clarifications:** *Clarification 1:* This benchmark does not require writing the equal sized parts as a fraction with a numerator and denominator.
MA.1.GR.1.1:	Identify, compare and sort two- and three-dimensional figures based on their defining attributes. Figures are limited to circles, semi-circles, triangles, rectangles, squares, trapezoids, hexagons, spheres, cubes, rectangular prisms, cones and cylinders. **Clarifications:** *Clarification 1:* Instruction focuses on the defining attributes of a figure: whether it is closed or not; number of vertices, sides, edges or faces; and if it contains straight, curved or equal length sides or edges. *Clarification 2:* Instruction includes figures given in a variety of sizes, orientations and non-examples that lack one or more defining attributes. *Clarification 3:* Within this benchmark, the expectation is not to sort a combination of two- and three-dimensional figures at the same time or to define the attributes of trapezoids. *Clarification 4:* Instruction includes using formal and informal language to describe the defining attributes of figures when comparing and

	sorting.
MA.1.GR.1.2:	Sketch two-dimensional figures when given defining attributes. Figures are limited to triangles, rectangles, squares and hexagons.
MA.1.GR.1.3:	Compose and decompose two- and three-dimensional figures. Figures are limited to semi-circles, triangles, rectangles, squares, trapezoids, hexagons, cubes, rectangular prisms, cones and cylinders. **Clarifications:** *Clarification 1:* Instruction focuses on the understanding of spatial relationships relating to part-whole, and on the connection to breaking apart numbers and putting them back together. *Clarification 2:* Composite figures are composed without gaps or overlaps. *Clarification 3:* Within this benchmark, it is not the expectation to compose two- and three- dimensional figures at the same time.
MA.1.GR.1.4:	Given a real-world object, identify parts that are modeled by two- and three-dimensional figures. Figures are limited to semi-circles, triangles, rectangles, squares and hexagons, spheres, cubes, rectangular prisms, cones and cylinders.
MA.1.M.1.1:	Estimate the length of an object to the nearest inch. Measure the length of an object to the nearest inch or centimeter. **Clarifications:** *Clarification 1:* Instruction emphasizes measuring from the zero point of the ruler. The markings on the ruler indicate the unit of length by marking equal distances with no gaps or overlaps. *Clarification 2:* When estimating length, the expectation is to give a reasonable number of inches for the length of a given object.
MA.1.M.1.2:	Compare and order the length of up to three objects using direct and indirect comparison. **Clarifications:** *Clarification 1:* When directly comparing objects, the objects can be placed side by side or they can be separately measured in the same units and the measurements can be compared. *Clarification 2:* Two objects can be compared indirectly by directly comparing them to a third object.
MA.1.M.2.1:	Using analog and digital clocks, tell and write time in hours and half-hours. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is not to understand military time or to use a.m. or p.m. *Clarification 2:* Instruction includes the connection to partitioning circles into halves and to semi-circles.
MA.1.M.2.2:	Identify pennies, nickels, dimes and quarters, and express their values using the ¢ symbol. State how many of each coin equal a dollar. **Clarifications:** *Clarification 1:* Instruction includes the recognition of both sides of a coin. *Clarification 2:* Within this benchmark, the expectation is not to use decimal values.
MA.1.M.2.3:	Find the value of combinations of pennies, nickels and dimes up to one dollar, and the value of combinations of one, five and ten dollar bills up to $100. Use the ¢ and $ symbols appropriately. **Clarifications:** *Clarification 1:* Instruction includes the identification of a one, five and ten-dollar bill and the computation of the value of combinations of pennies, nickels and dimes or one, five and ten dollar bills. *Clarification 2:* Instruction focuses on the connection to place value and skip counting. *Clarification 3:* Within this benchmark, the expectation is not to use decimal values or to find the value of a combination of coins and dollars.
MA.1.NSO.1.1:	Starting at a given number, count forward and backwards within 120 by ones. Skip count by 2s to 20 and by 5s to 100. **Clarifications:** *Clarification 1:* Instruction focuses on the connection to addition as “counting on” and subtraction as “counting back”. *Clarification 2:*Instruction also focuses on the recognition of patterns within skip counting which helps build a foundation for multiplication in later grades. *Clarification 3:* Instruction includes recognizing counting sequences using visual charts, such as a 120 chart, to emphasize base 10 place value.
MA.1.NSO.1.2:	Read numbers from 0 to 100 written in standard form, expanded form and word form. Write numbers from 0 to 100 using standard form and expanded form.
MA.1.NSO.1.3:	Compose and decompose two-digit numbers in multiple ways using tens and ones. Demonstrate each composition or decomposition with objects, drawings and expressions or equations.
MA.1.NSO.1.4:	Plot, order and compare whole numbers up to 100. **Clarifications:** *Clarification 1:* When comparing numbers, instruction includes using a number line and using place values of the tens and ones digits. *Clarification 2:* Within this benchmark, the expectation is to use terms (e.g., less than, greater than, between or equal to) and symbols (<, > or =).
MA.1.NSO.2.1:	Recall addition facts with sums to 10 and related subtraction facts with automaticity.
MA.1.NSO.2.2:	Add two whole numbers with sums from 0 to 20, and subtract using related facts with procedural reliability. **Clarifications:** *Clarification 1:* Instruction focuses on helping a student choose a method they can use reliably. *Clarification 2:* Instruction includes situations involving adding to, putting together, comparing and taking from.
MA.1.NSO.2.3:	Identify the number that is one more, one less, ten more and ten less than a given two-digit number.
MA.1.NSO.2.4:	Explore the addition of a two-digit number and a one-digit number with sums to 100. **Clarifications:** *Clarification 1:* Instruction focuses on combining ones and tens and composing new tens from ones, when needed. *Clarification 2:* Instruction includes the use of manipulatives, number lines, drawings or models.

MA.1.NSO.2.5:	Explore subtraction of a one-digit number from a two-digit number. **Clarifications:** *Clarification 1:* Instruction focuses on utilizing the number line as a tool for subtraction through "counting on" or "counting back". The process of counting on highlights subtraction as a missing addend problem. *Clarification 2:* Instruction includes the use of manipulatives, drawings or equations to decompose tens and regroup ones, when needed.
MA.2.AR.1.1:	Solve one- and two-step addition and subtraction real-world problems. **Clarifications:** *Clarification 1:* Instruction includes understanding the context of the problem, as well as the quantities within the problem. *Clarification 2:* Problems include creating real-world situations based on an equation. *Clarification 3:* Addition and subtraction are limited to sums up to 100 and related differences. Refer to Situations Involving Operations with Numbers (Appendix A).
MA.2.AR.2.1:	Determine and explain whether equations involving addition and subtraction are true or false. **Clarifications:** *Clarification 1:* Instruction focuses on understanding of the equal sign. *Clarification 2:* Problem types are limited to an equation with three or four terms. The sum or difference can be on either side of the equal sign. *Clarification 3:* Addition and subtraction are limited to sums up to 100 and related differences.
MA.2.AR.2.2:	Determine the unknown whole number in an addition or subtraction equation, relating three or four whole numbers, with the unknown in any position. **Clarifications:** *Clarification 1:* Instruction extends the development of algebraic thinking skills where the symbolic representation of the unknown uses any symbol other than a letter. *Clarification 2:* Problems include having the unknown on either side of the equal sign. *Clarification 3:* Addition and subtraction are limited to sums up to 100 and related differences. Refer to Situations Involving Operations with Numbers (Appendix A).
MA.2.AR.3.1:	Represent an even number using two equal groups or two equal addends. Represent an odd number using two equal groups with one left over or two equal addends plus 1. **Clarifications:** *Clarification 1:* Instruction focuses on the connection of recognizing even and odd numbers using skip counting, arrays and patterns in the ones place. *Clarification 2:* Addends are limited to whole numbers less than or equal to 12.
MA.2.AR.3.2:	Use repeated addition to find the total number of objects in a collection of equal groups. Represent the total number of objects using rectangular arrays and equations. **Clarifications:** *Clarification 1:* Instruction includes making a connection between arrays and repeated addition, which builds a foundation for multiplication. *Clarification 2:* The total number of objects is limited to 25.
MA.2.DP.1.1:	Collect, categorize and represent data using tally marks, tables, pictographs or bar graphs. Use appropriate titles, labels and units. **Clarifications:** *Clarification 1:* Data displays can be represented both horizontally and vertically. Scales on graphs are limited to ones, fives or tens.
MA.2.DP.1.2:	Interpret data represented with tally marks, tables, pictographs or bar graphs including solving addition and subtraction problems. **Clarifications:** *Clarification 1:* Addition and subtraction problems are limited to whole numbers with sums within 100 and related differences. *Clarification 2:* Data displays can be represented both horizontally and vertically. Scales on graphs are limited to ones, fives or tens.
MA.2.FR.1.1:	Partition circles and rectangles into two, three or four equal-sized parts. Name the parts using appropriate language, and describe the whole as two halves, three thirds or four fourths. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is not to write the equal-sized parts as a fraction with a numerator and denominator. *Clarification 2:* Problems include mathematical and real-world context.
MA.2.FR.1.2:	Partition rectangles into two, three or four equal-sized parts in two different ways showing that equal-sized parts of the same whole may have different shapes.
MA.2.GR.1.1:	Identify and draw two-dimensional figures based on their defining attributes. Figures are limited to triangles, rectangles, squares, pentagons, hexagons and octagons. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation includes the use of rulers and straight edges.
MA.2.GR.1.2:	Categorize two-dimensional figures based on the number and length of sides, number of vertices, whether they are closed or not and whether the edges are curved or straight. **Clarifications:** *Clarification 1:* Instruction focuses on using formal and informal language to describe defining attributes when categorizing.
MA.2.GR.1.3:	Identify line(s) of symmetry for a two-dimensional figure. **Clarifications:** *Clarification 1:* Instruction focuses on the connection between partitioning two-dimensional figures and symmetry. *Clarification 2:* Problem types include being given an image and determining whether a given line is a line of symmetry or not.
	Explore perimeter as an attribute of a figure by placing unit segments along the boundary without gaps or overlaps. Find perimeters of rectangles by

	counting unit segments.
MA.2.GR.2.1:	**Clarifications:** *Clarification 1:* Instruction emphasizes the conceptual understanding that perimeter is an attribute that can be measured for a two-dimensional figure. *Clarification 2:* Instruction includes real-world objects, such as picture frames or desktops.
MA.2.GR.2.2:	Find the perimeter of a polygon with whole-number side lengths. Polygons are limited to triangles, rectangles, squares and pentagons. **Clarifications:** *Clarification 1:* Instruction includes the connection to the associative and commutative properties of addition. Refer to Properties of Operations, Equality and Inequality (Appendix D). *Clarification 2:* Within this benchmark, the expectation is not to use a formula to find perimeter. *Clarification 3:* Instruction includes cases where the side lengths are given or measured to the nearest unit. *Clarification 4:* Perimeter cannot exceed 100 units and responses include the appropriate units.
MA.2.M.1.1:	Estimate and measure the length of an object to the nearest inch, foot, yard, centimeter or meter by selecting and using an appropriate tool. **Clarifications:** *Clarification 1:* Instruction includes seeing rulers and tape measures as number lines. *Clarification 2:* Instruction focuses on recognizing that when an object is measured in two different units, fewer of the larger units are required. When comparing measurements of the same object in different units, measurement conversions are not expected. *Clarification 3:* When estimating the size of an object, a comparison with an object of known size can be used.
MA.2.M.1.2:	Measure the lengths of two objects using the same unit and determine the difference between their measurements. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is to measure objects to the nearest inch, foot, yard, centimeter or meter.
MA.2.M.1.3:	Solve one- and two-step real-world measurement problems involving addition and subtraction of lengths given in the same units. **Clarifications:** *Clarification 1:* Addition and subtraction problems are limited to sums within 100 and related differences.
MA.2.M.2.1:	Using analog and digital clocks, tell and write time to the nearest five minutes using a.m. and p.m. appropriately. Express portions of an hour using the fractional terms half an hour, half past, quarter of an hour, quarter after and quarter til. **Clarifications:** *Clarification 1:* Instruction includes the connection to partitioning of circles and to the number line. *Clarification 2:* Within this benchmark, the expectation is not to understand military time.
MA.2.M.2.2:	Solve one- and two-step addition and subtraction real-world problems involving either dollar bills within \$100 or coins within 100¢ using \$ and ¢ symbols appropriately. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is not to use decimal values. *Clarification 2:* Addition and subtraction problems are limited to sums within 100 and related differences. Refer to Situations Involving Operations with Numbers (Appendix A).
MA.2.NSO.1.1:	Read and write numbers from 0 to 1,000 using standard form, expanded form and word form.
MA.2.NSO.1.2:	Compose and decompose three-digit numbers in multiple ways using hundreds, tens and ones. Demonstrate each composition or decomposition with objects, drawings and expressions or equations.
MA.2.NSO.1.3:	Plot, order and compare whole numbers up to 1,000. **Clarifications:** *Clarification 1:* When comparing numbers, instruction includes using a number line and using place values of the hundreds, tens and ones digits. *Clarification 2:* Within this benchmark, the expectation is to use terms (e.g., less than, greater than, between or equal to) and symbols (<, > or =).
MA.2.NSO.1.4:	Round whole numbers from 0 to 100 to the nearest 10. **Clarifications:** *Clarification 1:* Within the benchmark, the expectation is to understand that rounding is a process that produces a number with a similar value that is less precise but easier to use.
MA.2.NSO.2.1:	Recall addition facts with sums to 20 and related subtraction facts with automaticity.
MA.2.NSO.2.2:	Identify the number that is ten more, ten less, one hundred more and one hundred less than a given three-digit number.
MA.2.NSO.2.3:	Add two whole numbers with sums up to 100 with procedural reliability. Subtract a whole number from a whole number, each no larger than 100, with procedural reliability. **Clarifications:** *Clarification 1:* Instruction focuses on helping a student choose a method they can use reliably.
MA.2.NSO.2.4:	Explore the addition of two whole numbers with sums up to 1,000. Explore the subtraction of a whole number from a whole number, each no larger than 1,000. **Clarifications:** *Clarification 1:* Instruction includes the use of manipulatives, number lines, drawings or properties of operations or place value. *Clarification 2:* Instruction focuses on composing and decomposing ones, tens and hundreds when needed.
MA.K.AR.1.1:	For any number from 1 to 9, find the number that makes 10 when added to the given number. **Clarifications:** *Clarification 1:* Instruction includes creating a ten using manipulatives, number lines, models and drawings.
	Given a number from 0 to 10, find the different ways it can be represented as the sum of two numbers.

MA.K.AR.1.2:	**Clarifications:** *Clarification 1:* Instruction includes the exploration of finding possible pairs to make a sum using manipulatives, objects, drawings and expressions; and understanding how the different representations are related to each other.
MA.K.AR.1.3:	Solve addition and subtraction real-world problems using objects, drawings or equations to represent the problem. **Clarifications:** *Clarification 1:* Instruction includes understanding the context of the problem, as well as the quantities within the problem. *Clarification 2:* Students are not expected to independently read word problems. *Clarification 3:* Addition and subtraction are limited to sums within 10 and related subtraction facts. Refer to Situations Involving Operations with Numbers (Appendix A).
MA.K.AR.2.1:	Explain why addition or subtraction equations are true using objects or drawings. **Clarifications:** *Clarification 1:* Instruction focuses on the understanding of the equal sign. *Clarification 2:* Problem types are limited to an equation with two or three terms. The sum or difference can be on either side of the equal sign. *Clarification 3:* Addition and subtraction are limited to sums within 20 and related subtraction facts.
MA.K.DP.1.1:	Collect and sort objects into categories and compare the categories by counting the objects in each category. Report the results verbally, with a written numeral or with drawings. **Clarifications:** *Clarification 1:* Instruction focuses on supporting work in counting. *Clarification 2:* Instruction includes geometric figures that can be categorized using their defining attributes. *Clarification 3:* Within this benchmark, it is not the expectation for students to construct formal representations or graphs on their own.
MA.K.GR.1.1:	Identify two- and three-dimensional figures regardless of their size or orientation. Figures are limited to circles, triangles, rectangles, squares, spheres, cubes, cones and cylinders. **Clarifications:** *Clarification 1:* Instruction includes a wide variety of circles, triangles, rectangles, squares, spheres, cubes, cones and cylinders. *Clarification 2:* Instruction includes a variety of non-examples that lack one or more defining attributes. *Clarification 3:* Two-dimensional figures can be either filled, outlined or both.
MA.K.GR.1.2:	Compare two-dimensional figures based on their similarities, differences and positions. Sort two-dimensional figures based on their similarities and differences. Figures are limited to circles, triangles, rectangles and squares. **Clarifications:** *Clarification 1:* Instruction includes exploring figures in a variety of sizes and orientations. *Clarification 2:* Instruction focuses on using informal language to describe relative positions and the similarities or differences between figures when comparing and sorting.
MA.K.GR.1.3:	Compare three-dimensional figures based on their similarities, differences and positions. Sort three-dimensional figures based on their similarities and differences. Figures are limited to spheres, cubes, cones and cylinders. **Clarifications:** *Clarification 1:* Instruction includes exploring figures in a variety of sizes and orientations. *Clarification 2:* Instruction focuses on using informal language to describe relative positions and the similarities or differences between figures when comparing and sorting.
MA.K.GR.1.4:	Find real-world objects that can be modeled by a given two- or three-dimensional figure. Figures are limited to circles, triangles, rectangles, squares, spheres, cubes, cones and cylinders.
MA.K.GR.1.5:	Combine two-dimensional figures to form a given composite figure. Figures used to form a composite shape are limited to triangles, rectangles and squares. **Clarifications:** *Clarification 1:* This benchmark is intended to develop the understanding of spatial relationships.
MA.K.M.1.1:	Identify the attributes of a single object that can be measured such as length, volume or weight. **Clarifications:** *Clarification 1:* Within this benchmark, measuring is not required.
MA.K.M.1.2:	Directly compare two objects that have an attribute which can be measured in common. Express the comparison using language to describe the difference. **Clarifications:** *Clarification 1:* To directly compare length, objects are placed next to each other with one end of each object lined up to determine which one is longer. *Clarification 2:* Language to compare length includes short, shorter, long, longer, tall, taller, high or higher. Language to compare volume includes has more, has less, holds more, holds less, more full, less full, full, empty, takes up more space or takes up less space. Language to compare weight includes heavy, heavier, light, lighter, weighs more or weighs less.
MA.K.M.1.3:	Express the length of an object, up to 20 units long, as a whole number of lengths by laying non-standard objects end to end with no gaps or overlaps. **Clarifications:** *Clarification 1:* Non-standard units of measurement are units that are not typically used, such as paper clips or colored tiles. To measure with non-standard units, students lay multiple copies of the same object end to end with no gaps or overlaps. The length is shown by the number of objects needed.
	Given a group of up to 20 objects, count the number of objects in that group and represent the number of objects with a written numeral. State the number of objects in a rearrangement of that group without recounting. **Clarifications:**

MA.K.NSO.1.1:	*Clarification 1:* Instruction focuses on developing an understanding of cardinality and one-to-one correspondence. *Clarification 2:* Instruction includes counting objects and pictures presented in a line, rectangular array, circle or scattered arrangement. Objects presented in a scattered arrangement are limited to 10. *Clarification 3:* Within this benchmark, the expectation is not to write the number in word form.
MA.K.NSO.1.2:	Given a number from 0 to 20, count out that many objects. **Clarifications:** *Clarification 1:* Instruction includes giving a number verbally or with a written numeral.
MA.K.NSO.1.3:	Identify positions of objects within a sequence using the words “first,” “second,” “third,” “fourth” or “fifth.” **Clarifications:** *Clarification 1:* Instruction includes the understanding that rearranging a group of objects does not change the total number of objects but may change the order of an object in that group.
MA.K.NSO.1.4:	Compare the number of objects from 0 to 20 in two groups using the terms less than, equal to or greater than. **Clarifications:** *Clarification 1:* Instruction focuses on matching, counting and the connection to addition and subtraction. *Clarification 2:* Within this benchmark, the expectation is not to use the relational symbols =,> or <.
MA.K.NSO.2.1:	Recite the number names to 100 by ones and by tens. Starting at a given number, count forward within 100 and backward within 20. **Clarifications:** *Clarification 1:* When counting forward by ones, students are to say the number names in the standard order and understand that each successive number refers to a quantity that is one larger. When counting backward, students are to understand that each succeeding number in the count sequence refers to a quantity that is one less. *Clarification 2:* Within this benchmark, the expectation is to recognize and count to 100 by the end of Kindergarten.
MA.K.NSO.2.2:	Represent whole numbers from 10 to 20, using a unit of ten and a group of ones, with objects, drawings and expressions or equations.
MA.K.NSO.2.3:	Locate, order and compare numbers from 0 to 20 using the number line and terms less than, equal to or greater than. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is not to use the relational symbols =,> or <. *Clarification 2:* When comparing numbers from 0 to 20, both numbers are plotted on the same number line. *Clarification 3:* When locating numbers on the number line, the expectation includes filling in a missing number by counting from left to right on the number line.
MA.K.NSO.3.1:	Explore addition of two whole numbers from 0 to 10, and related subtraction facts. **Clarifications:** *Clarification 1:* Instruction includes objects, fingers, drawings, number lines and equations. *Clarification 2:* Instruction focuses on the connection that addition is “putting together” or “counting on” and that subtraction is “taking apart” or “taking from.” Refer to Situations Involving Operations with Numbers (Appendix A). *Clarification 3:* Within this benchmark, it is the expectation that one problem can be represented in multiple ways and understanding how the different representations are related to each other.
MA.K.NSO.3.2:	Add two one-digit whole numbers with sums from 0 to 10 and subtract using related facts with procedural reliability. **Clarifications:** *Clarification 1:* Instruction focuses on helping a student choose a method they can use reliably.
MA.K12.MTR.1.1:	**Actively participate in effortful learning both individually and collectively.** Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task. • Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach. **Clarifications:** Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging. • Develop students’ ability to analyze and problem solve. • Recognize students’ effort when solving challenging problems.
MA.K12.MTR.2.1:	**Demonstrate understanding by representing problems in multiple ways.** Mathematicians who demonstrate understanding by representing problems in multiple ways: • Build understanding through modeling and using manipulatives. • Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. • Progress from modeling problems with objects and drawings to using algorithms and equations. • Express connections between concepts and representations. • Choose a representation based on the given context or purpose. **Clarifications:** Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: • Help students make connections between concepts and representations.

	Provide opportunities for students to use manipulatives when investigating concepts. • Guide students from concrete to pictorial to abstract representations as understanding progresses. • Show students that various representations can have different purposes and can be useful in different situations.
MA.K12.MTR.3.1:	**Complete tasks with mathematical fluency.** Mathematicians who complete tasks with mathematical fluency: • Select efficient and appropriate methods for solving problems within the given context. • Maintain flexibility and accuracy while performing procedures and mental calculations. • Complete tasks accurately and with confidence. • Adapt procedures to apply them to a new context. • Use feedback to improve efficiency when performing calculations. **Clarifications:** Teachers who encourage students to complete tasks with mathematical fluency: • Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately. • Offer multiple opportunities for students to practice efficient and generalizable methods. • Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.
MA.K12.MTR.4.1:	**Engage in discussions that reflect on the mathematical thinking of self and others.** Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others: • Communicate mathematical ideas, vocabulary and methods effectively. • Analyze the mathematical thinking of others. • Compare the efficiency of a method to those expressed by others. • Recognize errors and suggest how to correctly solve the task. • Justify results by explaining methods and processes. • Construct possible arguments based on evidence. **Clarifications:** Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: • Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning. • Create opportunities for students to discuss their thinking with peers. • Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. • Develop students' ability to justify methods and compare their responses to the responses of their peers.
MA.K12.MTR.5.1:	**Use patterns and structure to help understand and connect mathematical concepts.** Mathematicians who use patterns and structure to help understand and connect mathematical concepts: • Focus on relevant details within a problem. • Create plans and procedures to logically order events, steps or ideas to solve problems. • Decompose a complex problem into manageable parts. • Relate previously learned concepts to new concepts. • Look for similarities among problems. • Connect solutions of problems to more complicated large-scale situations. **Clarifications:** Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts: • Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts. • Support students to develop generalizations based on the similarities found among problems. • Provide opportunities for students to create plans and procedures to solve problems. • Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.
MA.K12.MTR.6.1:	**Assess the reasonableness of solutions.** Mathematicians who assess the reasonableness of solutions: • Estimate to discover possible solutions. • Use benchmark quantities to determine if a solution makes sense. • Check calculations when solving problems. • Verify possible solutions by explaining the methods used. • Evaluate results based on the given context. **Clarifications:** Teachers who encourage students to assess the reasonableness of solutions: • Have students estimate or predict solutions prior to solving. • Prompt students to continually ask, "Does this solution make sense? How do you know?" • Reinforce that students check their work as they progress within and after a task. • Strengthen students' ability to verify solutions through justifications.
MA.K12.MTR.7.1:	**Apply mathematics to real-world contexts.** Mathematicians who apply mathematics to real-world contexts: • Connect mathematical concepts to everyday experiences. • Use models and methods to understand, represent and solve problems. • Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency. **Clarifications:** Teachers who encourage students to apply mathematics to real-world contexts: • Provide opportunities for students to create models, both concrete and abstract, and perform investigations.

	• Challenge students to question the accuracy of their models and methods. • Support students as they validate conclusions by comparing them to the given situation. • Indicate how various concepts can be applied to other disciplines.
ELA.K12.EE.1.1:	Cite evidence to explain and justify reasoning. **Clarifications:** K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing. 2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations. 4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they've directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor. 6-8 Students continue with previous skills and use a style guide to create a proper citation. 9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.
ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.
ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like "Why is the girl smiling?" or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
ELA.K12.EE.4.1:	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully. In grades 1-2, students build upon these skills by justifying what they are thinking. For example: "I think _______ because ______." The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
ELA.K12.EE.5.1:	Use the accepted rules governing a specific format to create quality work. **Clarifications:** Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.
ELA.K12.EE.6.1:	Use appropriate voice and tone when speaking or writing. **Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.
ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.

General Course Information and Notes

VERSION DESCRIPTION

This course supports students who need additional instruction in foundational mathematics skills as it relates to core instruction. Instruction will use explicit, systematic, and sequential approaches to mathematics instruction addressing all strands including number sense & operations, fractions, algebraic reasoning, geometric reasoning, measurement and data analysis & probability. Teachers will use the listed benchmarks that correspond to each students' needs.

Effective instruction matches instruction to the need of the students in the group and provides multiple opportunities to practice the skill and receive feedback. The additional time allotted for this course is in addition to core instruction. The intervention includes materials and strategies designed to supplement core instruction.

General Notes

Florida's Benchmarks for Excellent Student Thinking (B.E.S.T.) Standards
This course includes Florida's B.E.S.T. ELA Expectations (EE) and Mathematical Thinking and Reasoning Standards (MTRs) for students. Florida educators should intentionally embed these standards within the content and their instruction as applicable. For guidance on the implementation of the EEs and MTRs, please visit https://www.cpalms.org/Standards/BEST_Standards.aspx and select the appropriate B.E.S.T. Standards package.

English Language Development ELD Standards Special Notes Section:
Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link:

General Information

Course Number: 5012005

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades PreK to 5 Education Courses > **Subject:** Mathematics > **SubSubject:** General Mathematics >

Abbreviated Title: FDN SKILLS MATH K-2

Course Length: Multiple (M) - Course length can vary

Course Attributes:

- Class Size Core Required

Course Type: Elective Course

Course Level: 1

Course Status: State Board Approved

Grade Level(s): K,1,2

Educator Certifications

Elementary Education (Elementary Grades 1-6)
Elementary Education (Grades K-6)
Primary Education (K-3 - No Longer Issued)
Prekindergarten/Primary Education (Age 3 through Grade 3)
Early Childhood Education (Early Childhood - No Longer Issued)
Mathematics (Elementary Grades 1-6)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Foundational Skills in Mathematics 3-5 (#5012015) 2024 - And Beyond (current)

Course Standards

Name	Description
MA.3.AR.1.1:	Apply the distributive property to multiply a one-digit number and two-digit number. Apply properties of multiplication to find a product of one-digit whole numbers. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is to apply the associative and commutative properties of multiplication, the distributive property and name the properties. Refer to K-12 Glossary (Appendix C). *Clarification 2:* Within the benchmark, the expectation is to utilize parentheses. *Clarification 3:* Multiplication for products of three or more numbers is limited to factors within 12. Refer to Properties of Operations, Equality and Inequality (Appendix D).
MA.3.AR.1.2:	Solve one- and two-step real-world problems involving any of four operations with whole numbers. **Clarifications:** *Clarification 1:* Instruction includes understanding the context of the problem, as well as the quantities within the problem. *Clarification 2:* Multiplication is limited to factors within 12 and related division facts. Refer to Situations Involving Operations with Numbers (Appendix A).
MA.3.AR.2.1:	Restate a division problem as a missing factor problem using the relationship between multiplication and division. **Clarifications:** *Clarification 1:* Multiplication is limited to factors within 12 and related division facts. *Clarification 2:* Within this benchmark, the symbolic representation of the missing factor uses any symbol or a letter.
MA.3.AR.2.2:	Determine and explain whether an equation involving multiplication or division is true or false. **Clarifications:** *Clarification 1:* Instruction extends the understanding of the meaning of the equal sign to multiplication and division. *Clarification 2:* Problem types are limited to an equation with three or four terms. The product or quotient can be on either side of the equal sign. *Clarification 3:* Multiplication is limited to factors within 12 and related division facts.
MA.3.AR.2.3:	Determine the unknown whole number in a multiplication or division equation, relating three whole numbers, with the unknown in any position. **Clarifications:** *Clarification 1:* Instruction extends the development of algebraic thinking skills where the symbolic representation of the unknown uses any symbol or a letter. *Clarification 2:* Problems include the unknown on either side of the equal sign. *Clarification 3:* Multiplication is limited to factors within 12 and related division facts. Refer to Situations Involving Operations with Numbers (Appendix A).
MA.3.AR.3.1:	Determine and explain whether a whole number from 1 to 1,000 is even or odd. **Clarifications:** *Clarification 1:* Instruction includes determining and explaining using place value and recognizing patterns.
MA.3.AR.3.2:	Determine whether a whole number from 1 to 144 is a multiple of a given one-digit number. **Clarifications:** *Clarification 1:* Instruction includes determining if a number is a multiple of a given number by using multiplication or division.
MA.3.AR.3.3:	Identify, create and extend numerical patterns. **Clarifications:** *Clarification 1:* The expectation is to use ordinal numbers (1st, 2nd, 3rd, …) to describe the position of a number within a sequence. *Clarification 2:* Problem types include patterns involving addition, subtraction, multiplication or division of whole numbers.
MA.3.DP.1.1:	Collect and represent numerical and categorical data with whole-number values using tables, scaled pictographs, scaled bar graphs or line plots. Use appropriate titles, labels and units. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is to complete a representation or construct a representation from a data set. *Clarification 2:* Instruction includes the connection between multiplication and the number of data points represented by a bar in scaled bar graph or a scaled column in a pictograph. *Clarification 3:* Data displays are represented both horizontally and vertically.
	Interpret data with whole-number values represented with tables, scaled pictographs, circle graphs, scaled bar graphs or line plots by solving one- and two-step problems.

MA.3.DP.1.2:	**Clarifications:** *Clarification 1:* Problems include the use of data in informal comparisons between two data sets in the same units. *Clarification 2:* Data displays can be represented both horizontally and vertically. *Clarification 3:* Circle graphs are limited to showing the total values in each category.
MA.3.FR.1.1:	Represent and interpret unit fractions in the form 1/n as the quantity formed by one part when a whole is partitioned into n equal parts. **Clarifications:** *Clarification 1:* This benchmark emphasizes conceptual understanding through the use of manipulatives or visual models. *Clarification 2:* Instruction focuses on representing a unit fraction as part of a whole, part of a set, a point on a number line, a visual model or in fractional notation. *Clarification 3:* Denominators are limited to 2, 3, 4, 5, 6, 8, 10 and 12.
MA.3.FR.1.2:	Represent and interpret fractions, including fractions greater than one, in the form of mn as the result of adding the unit fraction 1n to itself *m* times. **Clarifications:** *Clarification 1:* Instruction emphasizes conceptual understanding through the use of manipulatives or visual models, including circle graphs, to represent fractions. *Clarification 2:* Denominators are limited to 2, 3, 4, 5, 6, 8, 10 and 12.
MA.3.FR.1.3:	Read and write fractions, including fractions greater than one, using standard form, numeral-word form and word form. **Clarifications:** *Clarification 1:* Instruction focuses on making connections to reading and writing numbers to develop the understanding that fractions are numbers and to support algebraic thinking in later grades. *Clarification 2:* Denominators are limited to 2, 3, 4, 5, 6, 8, 10 and 12.
MA.3.FR.2.1:	Plot, order and compare fractional numbers with the same numerator or the same denominator. **Clarifications:** *Clarification 1:* Instruction includes making connections between using a ruler and plotting and ordering fractions on a number line. *Clarification 2:* When comparing fractions, instruction includes an appropriately scaled number line and using reasoning about their size. *Clarification 3:* Fractions include fractions greater than one, including mixed numbers, with denominators limited to 2, 3, 4, 5, 6, 8, 10 and 12.
MA.3.FR.2.2:	Identify equivalent fractions and explain why they are equivalent. **Clarifications:** *Clarification 1:* Instruction includes identifying equivalent fractions and explaining why they are equivalent using manipulatives, drawings, and number lines. *Clarification 2:* Within this benchmark, the expectation is not to generate equivalent fractions. *Clarification 3:* Fractions are limited to fractions less than or equal to one with denominators of 2, 3, 4, 5, 6, 8, 10 and 12. Number lines must be given and scaled appropriately.
MA.3.GR.1.1:	Describe and draw points, lines, line segments, rays, intersecting lines, perpendicular lines and parallel lines. Identify these in two-dimensional figures. **Clarifications:** *Clarification 1:* Instruction includes mathematical and real-world context for identifying points, lines, line segments, rays, intersecting lines, perpendicular lines and parallel lines. *Clarification 2:* When working with perpendicular lines, right angles can be called square angles or square corners.
MA.3.GR.1.2:	Identify and draw quadrilaterals based on their defining attributes. Quadrilaterals include parallelograms, rhombi, rectangles, squares and trapezoids. **Clarifications:** *Clarification 1:* Instruction includes a variety of quadrilaterals and a variety of non-examples that lack one or more defining attributes when identifying quadrilaterals. *Clarification 2:* Quadrilaterals will be filled, outlined or both when identifying. *Clarification 3:* Drawing representations must be reasonably accurate.
MA.3.GR.1.3:	Draw line(s) of symmetry in a two-dimensional figure and identify line-symmetric two-dimensional figures. **Clarifications:** *Clarification 1:* Instruction develops the understanding that there could be no line of symmetry, exactly one line of symmetry or more than one line of symmetry. *Clarification 2:* Instruction includes folding paper along a line of symmetry so that both halves match exactly to confirm line-symmetric figures.
MA.3.GR.2.1:	Explore area as an attribute of a two-dimensional figure by covering the figure with unit squares without gaps or overlaps. Find areas of rectangles by counting unit squares. **Clarifications:** *Clarification 1:* Instruction emphasizes the conceptual understanding that area is an attribute that can be measured for a two-dimensional figure. The measurement unit for area is the area of a unit square, which is a square with side length of 1 unit. *Clarification 2:* Two-dimensional figures cannot exceed 12 units by 12 units and responses include the appropriate units in word form (e.g., square centimeter or sq.cm.).
MA.3.GR.2.2:	Find the area of a rectangle with whole-number side lengths using a visual model and a multiplication formula. **Clarifications:** *Clarification 1:* Instruction includes covering the figure with unit squares, a rectangular array or applying a formula. *Clarification 2:* Two-dimensional figures cannot exceed 12 units by 12 units and responses include the appropriate units in word form.

MA.3.GR.2.3:	Solve mathematical and real-world problems involving the perimeter and area of rectangles with whole-number side lengths using a visual model and a formula. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is not to find unknown side lengths. *Clarification 2:* Two-dimensional figures cannot exceed 12 units by 12 units and responses include the appropriate units in word form.
MA.3.GR.2.4:	Solve mathematical and real-world problems involving the perimeter and area of composite figures composed of non-overlapping rectangles with whole-number side lengths. **Clarifications:** *Clarification 1:* Composite figures must be composed of non-overlapping rectangles. *Clarification 2:* Each rectangle within the composite figure cannot exceed 12 units by 12 units and responses include the appropriate units in word form.
MA.3.M.1.1:	Select and use appropriate tools to measure the length of an object, the volume of liquid within a beaker and temperature. **Clarifications:** *Clarification 1:* Instruction focuses on identifying measurement on a linear scale, making the connection to the number line. *Clarification 2:* When measuring the length, limited to the nearest centimeter and half or quarter inch. *Clarification 3:* When measuring the temperature, limited to the nearest degree. *Clarification 4:* When measuring the volume of liquid, limited to nearest milliliter and half or quarter cup.
MA.3.M.1.2:	Solve real-world problems involving any of the four operations with whole-number lengths, masses, weights, temperatures or liquid volumes. **Clarifications:** *Clarification 1:* Within this benchmark, it is the expectation that responses include appropriate units. *Clarification 2:* Problem types are not expected to include measurement conversions. *Clarification 3:* Instruction includes the comparison of attributes measured in the same units. *Clarification 4:* Units are limited to yards, feet, inches; meters, centimeters; pounds, ounces; kilograms, grams; degrees Fahrenheit, degrees Celsius; gallons, quarts, pints, cups; and liters, milliliters.
MA.3.M.2.1:	Using analog and digital clocks tell and write time to the nearest minute using a.m. and p.m. appropriately. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is not to understand military time.
MA.3.M.2.2:	Solve one- and two-step real-world problems involving elapsed time. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is not to include crossing between a.m. and p.m.
MA.3.NSO.1.1:	Read and write numbers from 0 to 10,000 using standard form, expanded form and word form.
MA.3.NSO.1.2:	Compose and decompose four-digit numbers in multiple ways using thousands, hundreds, tens and ones. Demonstrate each composition or decomposition using objects, drawings and expressions or equations.
MA.3.NSO.1.3:	Plot, order and compare whole numbers up to 10,000. **Clarifications:** *Clarification 1:* When comparing numbers, instruction includes using an appropriately scaled number line and using place values of the thousands, hundreds, tens and ones digits. *Clarification 2:* Number lines, scaled by 50s, 100s or 1,000s, must be provided and can be a representation of any range of numbers. *Clarification 3:* Within this benchmark, the expectation is to use symbols (<, > or =).
MA.3.NSO.1.4:	Round whole numbers from 0 to 1,000 to the nearest 10 or 100.
MA.3.NSO.2.1:	Add and subtract multi-digit whole numbers including using a standard algorithm with procedural fluency.
MA.3.NSO.2.2:	Explore multiplication of two whole numbers with products from 0 to 144, and related division facts. **Clarifications:** *Clarification 1:* Instruction includes equal groups, arrays, area models and equations. *Clarification 2:* Within the benchmark, it is the expectation that one problem can be represented in multiple ways and understanding how the different representations are related to each other. *Clarification 3:* Factors and divisors are limited to up to 12.
MA.3.NSO.2.3:	Multiply a one-digit whole number by a multiple of 10, up to 90, or a multiple of 100, up to 900, with procedural reliability. **Clarifications:** *Clarification 1:* When multiplying one-digit numbers by multiples of 10 or 100, instruction focuses on methods that are based on place value.
MA.3.NSO.2.4:	Multiply two whole numbers from 0 to 12 and divide using related facts with procedural reliability. **Clarifications:** *Clarification 1:* Instruction focuses on helping a student choose a method they can use reliably.
MA.4.AR.1.1:	Solve real-world problems involving multiplication and division of whole numbers including problems in which remainders must be interpreted within the context. **Clarifications:** *Clarification 1:* Problems involving multiplication include multiplicative comparisons. Refer to Situations Involving Operations with Numbers (Appendix A). *Clarification 2:* Depending on the context, the solution of a division problem with a remainder may be the whole number part of the quotient, the whole number part of the quotient with the remainder, the whole number part of the quotient plus 1, or the remainder. *Clarification 3:* Multiplication is limited to products of up to 3 digits by 2 digits. Division is limited to up to 4 digits divided by 1 digit.

MA.4.AR.1.2:	Solve real-world problems involving addition and subtraction of fractions with like denominators, including mixed numbers and fractions greater than one. **Clarifications:** *Clarification 1:* Problems include creating real-world situations based on an equation or representing a real-world problem with a visual model or equation. *Clarification 2:* Fractions within problems must reference the same whole. *Clarification 3:* Within this benchmark, the expectation is not to simplify or use lowest terms. *Clarification 4:* Denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, 16 and 100.
MA.4.AR.1.3:	Solve real-world problems involving multiplication of a fraction by a whole number or a whole number by a fraction. **Clarifications:** *Clarification 1:* Problems include creating real-world situations based on an equation or representing a real-world problem with a visual model or equation. *Clarification 2:* Fractions within problems must reference the same whole. *Clarification 3:* Within this benchmark, the expectation is not to simplify or use lowest terms. *Clarification 4:* Fractions limited to fractions less than one with denominators of 2, 3, 4, 5, 6, 8, 10, 12, 16 and 100.
MA.4.AR.2.1:	Determine and explain whether an equation involving any of the four operations with whole numbers is true or false. **Clarifications:** *Clarification 1:* Multiplication is limited to whole number factors within 12 and related division facts.
MA.4.AR.2.2:	Given a mathematical or real-world context, write an equation involving multiplication or division to determine the unknown whole number with the unknown in any position. **Clarifications:** *Clarification 1:* Instruction extends the development of algebraic thinking skills where the symbolic representation of the unknown uses a letter. *Clarification 2:* Problems include the unknown on either side of the equal sign. *Clarification 3:* Multiplication is limited to factors within 12 and related division facts.
MA.4.AR.3.1:	Determine factor pairs for a whole number from 0 to 144. Determine whether a whole number from 0 to 144 is prime, composite or neither. **Clarifications:** *Clarification 1:* Instruction includes the connection to the relationship between multiplication and division and patterns with divisibility rules. *Clarification 2:* The numbers 0 and 1 are neither prime nor composite.
MA.4.AR.3.2:	Generate, describe and extend a numerical pattern that follows a given rule. **Clarifications:** *Clarification 1:* Instruction includes patterns within a mathematical or real-world context.
MA.4.DP.1.1:	Collect and represent numerical data, including fractional values, using tables, stem-and-leaf plots or line plots. **Clarifications:** *Clarification 1:* Denominators are limited to 2, 3, 4, 5, 6, 8, 10, 12, 16 and 100.
MA.4.DP.1.2:	Determine the mode, median or range to interpret numerical data including fractional values, represented with tables, stem-and-leaf plots or line plots. **Clarifications:** *Clarification 1:* Instruction includes interpreting data within a real-world context. *Clarification 2:* Instruction includes recognizing that data sets can have one mode, no mode or more than one mode. *Clarification 3:* Within this benchmark, data sets are limited to an odd number when calculating the median. *Clarification 4:* Denominators are limited to 2, 3, 4, 5, 6, 8, 10, 12, 16 and 100.
MA.4.DP.1.3:	Solve real-world problems involving numerical data. **Clarifications:** *Clarification 1:* Instruction includes using any of the four operations to solve problems. *Clarification 2:* Data involving fractions with like denominators are limited to 2, 3, 4, 5, 6, 8, 10, 12, 16 and 100. Fractions can be greater than one. *Clarification 3:* Data involving decimals are limited to hundredths.
MA.4.FR.1.1:	Model and express a fraction, including mixed numbers and fractions greater than one, with the denominator 10 as an equivalent fraction with the denominator 100. **Clarifications:** *Clarification 1:* Instruction emphasizes conceptual understanding through the use of manipulatives, visual models, number lines or equations.
MA.4.FR.1.2:	Use decimal notation to represent fractions with denominators of 10 or 100, including mixed numbers and fractions greater than 1, and use fractional notation with denominators of 10 or 100 to represent decimals. **Clarifications:** *Clarification 1:* Instruction emphasizes conceptual understanding through the use of manipulatives visual models, number lines or equations. *Clarification 2:* Instruction includes the understanding that a decimal and fraction that are equivalent represent the same point on the number line and that fractions with denominators of 10 or powers of 10 may be called decimal fractions.
	Identify and generate equivalent fractions, including fractions greater than one. Describe how the numerator and denominator are affected when the equivalent fraction is created.

MA.4.FR.1.3:	**Clarifications:** *Clarification 1:* Instruction includes the use of manipulatives, visual models, number lines or equations. *Clarification 2:* Instruction includes recognizing how the numerator and denominator are affected when equivalent fractions are generated.
MA.4.FR.1.4:	Plot, order and compare fractions, including mixed numbers and fractions greater than one, with different numerators and different denominators. **Clarifications:** *Clarification 1:* When comparing fractions, instruction includes using an appropriately scaled number line and using reasoning about their size. *Clarification 2:* Instruction includes using benchmark quantities, such as 0, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ and 1, to compare fractions. *Clarification 3:* Denominators are limited to 2, 3, 4, 5, 6, 8, 10, 12, 16 and 100. *Clarification 4:* Within this benchmark, the expectation is to use symbols (<, > or =).
MA.4.FR.2.1:	Decompose a fraction, including mixed numbers and fractions greater than one, into a sum of fractions with the same denominator in multiple ways. Demonstrate each decomposition with objects, drawings and equations. **Clarifications:** *Clarification 1:* Denominators are limited to 2, 3, 4, 5, 6, 8, 10, 12, 16 and 100.
MA.4.FR.2.2:	Add and subtract fractions with like denominators, including mixed numbers and fractions greater than one, with procedural reliability. **Clarifications:** *Clarification 1:* Instruction includes the use of word form, manipulatives, drawings, the properties of operations or number lines. *Clarification 2:* Within this benchmark, the expectation is not to simplify or use lowest terms. *Clarification 3:* Denominators are limited to 2, 3, 4, 5, 6, 8, 10, 12, 16 and 100.
MA.4.FR.2.3:	Explore the addition of a fraction with denominator of 10 to a fraction with denominator of 100 using equivalent fractions. **Clarifications:** *Clarification 1:* Instruction includes the use of visual models. *Clarification 2:* Within this benchmark, the expectation is not to simplify or use lowest terms.
MA.4.FR.2.4:	Extend previous understanding of multiplication to explore the multiplication of a fraction by a whole number or a whole number by a fraction. **Clarifications:** *Clarification 1:* Instruction includes the use of visual models or number lines and the connection to the commutative property of multiplication. Refer to Properties of Operation, Equality and Inequality (Appendix D). *Clarification 2:* Within this benchmark, the expectation is not to simplify or use lowest terms. *Clarification 3:* Fractions multiplied by a whole number are limited to less than 1. All denominators are limited to 2, 3, 4, 5, 6, 8, 10, 12, 16, 100.
MA.4.GR.1.1:	Informally explore angles as an attribute of two-dimensional figures. Identify and classify angles as acute, right, obtuse, straight or reflex. **Clarifications:** *Clarification 1:* Instruction includes classifying angles using benchmark angles of 90° and 180° in two-dimensional figures. *Clarification 2:* When identifying angles, the expectation includes two-dimensional figures and real-world pictures.
MA.4.GR.1.2:	Estimate angle measures. Using a protractor, measure angles in whole-number degrees and draw angles of specified measure in whole-number degrees. Demonstrate that angle measure is additive. **Clarifications:** *Clarification 1:* Instruction includes measuring given angles and drawing angles using protractors. *Clarification 2:* Instruction includes estimating angle measures using benchmark angles (30°, 45°, 60°, 90° and 180°). *Clarification 3:* Instruction focuses on the understanding that angles can be decomposed into non-overlapping angles whose measures sum to the measure of the original angle.
MA.4.GR.1.3:	Solve real-world and mathematical problems involving unknown whole-number angle measures. Write an equation to represent the unknown. **Clarifications:** *Clarification 1:* Instruction includes the connection to angle measure as being additive.
MA.4.GR.2.1:	Solve perimeter and area mathematical and real-world problems, including problems with unknown sides, for rectangles with whole-number side lengths. **Clarifications:** *Clarification 1:* Instruction extends the development of algebraic thinking where the symbolic representation of the unknown uses a letter. *Clarification 2:* Problems involving multiplication are limited to products of up to 3 digits by 2 digits. Problems involving division are limited to up to 4 digits divided by 1 digit. *Clarification 3:* Responses include the appropriate units in word form.
MA.4.GR.2.2:	Solve problems involving rectangles with the same perimeter and different areas or with the same area and different perimeters. **Clarifications:** *Clarification 1:* Instruction focuses on the conceptual understanding of the relationship between perimeter and area. *Clarification 2:* Within this benchmark, rectangles are limited to having whole-number side lengths. *Clarification 3:* Problems involving multiplication are limited to products of up to 3 digits by 2 digits. Problems involving division are limited to up to 4 digits divided by 1 digit. *Clarification 4:* Responses include the appropriate units in word form.
	Select and use appropriate tools to measure attributes of objects. **Clarifications:**

MA.4.M.1.1:	*Clarification 1:* Attributes include length, volume, weight, mass and temperature. *Clarification 2:* Instruction includes digital measurements and scales that are not linear in appearance. *Clarification 3:* When recording measurements, use fractions and decimals where appropriate.
MA.4.M.1.2:	Convert within a single system of measurement using the units: yards, feet, inches; kilometers, meters, centimeters, millimeters; pounds, ounces; kilograms, grams; gallons, quarts, pints, cups; liter, milliliter; and hours, minutes, seconds. **Clarifications:** *Clarification 1:* Instruction includes the understanding of how to convert from smaller to larger units or from larger to smaller units. *Clarification 2:* Within the benchmark, the expectation is not to convert from grams to kilograms, meters to kilometers or milliliters to liters. *Clarification 3:* Problems involving fractions are limited to denominators of 2, 3, 4, 5, 6, 8, 10, 12, 16 and 100.
MA.4.M.2.1:	Solve two-step real-world problems involving distances and intervals of time using any combination of the four operations. **Clarifications:** *Clarification 1:* Problems involving fractions will include addition and subtraction with like denominators and multiplication of a fraction by a whole number or a whole number by a fraction. *Clarification 2:* Problems involving fractions are limited to denominators of 2, 3, 4, 5, 6, 8, 10, 12, 16 and 100. *Clarification 3:* Within the benchmark, the expectation is not to use decimals.
MA.4.M.2.2:	Solve one- and two-step addition and subtraction real-world problems involving money using decimal notation.
MA.4.NSO.1.1:	Express how the value of a digit in a multi-digit whole number changes if the digit moves one place to the left or right.
MA.4.NSO.1.2:	Read and write multi-digit whole numbers from 0 to 1,000,000 using standard form, expanded form and word form.
MA.4.NSO.1.3:	Plot, order and compare multi-digit whole numbers up to 1,000,000. **Clarifications:** *Clarification 1:* When comparing numbers, instruction includes using an appropriately scaled number line and using place values of the hundred thousands, ten thousands, thousands, hundreds, tens and ones digits. *Clarification 2:* Scaled number lines must be provided and can be a representation of any range of numbers. *Clarification 3:* Within this benchmark, the expectation is to use symbols (<, > or =).
MA.4.NSO.1.4:	Round whole numbers from 0 to 10,000 to the nearest 10, 100 or 1,000.
MA.4.NSO.1.5:	Plot, order and compare decimals up to the hundredths. **Clarifications:** *Clarification 1:* When comparing numbers, instruction includes using an appropriately scaled number line and using place values of the ones, tenths and hundredths digits. *Clarification 2:* Within the benchmark, the expectation is to explain the reasoning for the comparison and use symbols (<, > or =). *Clarification 3:* Scaled number lines must be provided and can be a representation of any range of numbers.
MA.4.NSO.2.1:	Recall multiplication facts with factors up to 12 and related division facts with automaticity.
MA.4.NSO.2.2:	Multiply two whole numbers, up to three digits by up to two digits, with procedural reliability. **Clarifications:** *Clarification 1:* Instruction focuses on helping a student choose a method they can use reliably. *Clarification 2:* Instruction includes the use of models or equations based on place value and the distributive property.
MA.4.NSO.2.3:	Multiply two whole numbers, each up to two digits, including using a standard algorithm with procedural fluency.
MA.4.NSO.2.4:	Divide a whole number up to four digits by a one-digit whole number with procedural reliability. Represent remainders as fractional parts of the divisor. **Clarifications:** *Clarification 1:* Instruction focuses on helping a student choose a method they can use reliably. *Clarification 2:* Instruction includes the use of models based on place value, properties of operations or the relationship between multiplication and division.
MA.4.NSO.2.5:	Explore the multiplication and division of multi-digit whole numbers using estimation, rounding and place value. **Clarifications:** *Clarification 1:* Instruction focuses on previous understanding of multiplication with multiples of 10 and 100, and seeing division as a missing factor problem. *Clarification 2:* Estimating quotients builds the foundation for division using a standard algorithm. *Clarification 3:* When estimating the division of whole numbers, dividends are limited to up to four digits and divisors are limited to up to two digits.
MA.4.NSO.2.6:	Identify the number that is one-tenth more, one-tenth less, one-hundredth more and one-hundredth less than a given number.
MA.4.NSO.2.7:	Explore the addition and subtraction of multi-digit numbers with decimals to the hundredths. **Clarifications:** *Clarification 1:* Instruction includes the connection to money and the use of manipulatives and models based on place value.
MA.5.AR.1.1:	Solve multi-step real-world problems involving any combination of the four operations with whole numbers, including problems in which remainders must be interpreted within the context. **Clarifications:** *Clarification 1:* Depending on the context, the solution of a division problem with a remainder may be the whole number part of the quotient, the whole number part of the quotient with the remainder, the whole number part of the quotient plus 1, or the remainder.
MA.5.AR.1.2:	Solve real-world problems involving the addition, subtraction or multiplication of fractions, including mixed numbers and fractions greater than 1. **Clarifications:** *Clarification 1:* Instruction includes the use of visual models and equations to represent the problem.

MA.5.AR.1.3:	Solve real-world problems involving division of a unit fraction by a whole number and a whole number by a unit fraction. **Clarifications:** *Clarification 1:* Instruction includes the use of visual models and equations to represent the problem.
MA.5.AR.2.1:	Translate written real-world and mathematical descriptions into numerical expressions and numerical expressions into written mathematical descriptions. **Clarifications:** *Clarification 1:* Expressions are limited to any combination of the arithmetic operations, including parentheses, with whole numbers, decimals and fractions. *Clarification 2:* Within this benchmark, the expectation is not to include exponents or nested grouping symbols.
MA.5.AR.2.2:	Evaluate multi-step numerical expressions using order of operations. **Clarifications:** *Clarification 1:* Multi-step expressions are limited to any combination of arithmetic operations, including parentheses, with whole numbers, decimals and fractions. *Clarification 2:* Within this benchmark, the expectation is not to include exponents or nested grouping symbols. *Clarification 3:* Decimals are limited to hundredths. Expressions cannot include division of a fraction by a fraction.
MA.5.AR.2.3:	Determine and explain whether an equation involving any of the four operations is true or false. **Clarifications:** *Clarification 1:* Problem types include equations that include parenthesis but not nested parentheses. *Clarification 2:* Instruction focuses on the connection between properties of equality and order of operations.
MA.5.AR.2.4:	Given a mathematical or real-world context, write an equation involving any of the four operations to determine the unknown whole number with the unknown in any position. **Clarifications:** *Clarification 1:* Instruction extends the development of algebraic thinking where the unknown letter is recognized as a variable. *Clarification 2:* Problems include the unknown and different operations on either side of the equal sign
MA.5.AR.3.1:	Given a numerical pattern, identify and write a rule that can describe the pattern as an expression. **Clarifications:** *Clarification 1:* Rules are limited to one or two operations using whole numbers.
MA.5.AR.3.2:	Given a rule for a numerical pattern, use a two-column table to record the inputs and outputs. **Clarifications:** *Clarification 1:* Instruction builds a foundation for proportional and linear relationships in later grades. *Clarification 2:* Rules are limited to one or two operations using whole numbers.
MA.5.DP.1.1:	Collect and represent numerical data, including fractional and decimal values, using tables, line graphs or line plots. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is for an estimation of fractional and decimal heights on line graphs. *Clarification 2:* Decimal values are limited to hundredths. Denominators are limited to 1, 2, 3 and 4. Fractions can be greater than one.
MA.5.DP.1.2:	Interpret numerical data, with whole-number values, represented with tables or line plots by determining the mean, mode, median or range. **Clarifications:** *Clarification 1:* Instruction includes interpreting the mean in real-world problems as a leveling out, a balance point or an equal share.
MA.5.FR.1.1:	Given a mathematical or real-world problem, represent the division of two whole numbers as a fraction. **Clarifications:** *Clarification 1:* Instruction includes making a connection between fractions and division by understanding that fractions can also represent division of a numerator by a denominator. *Clarification 2:* Within this benchmark, the expectation is not to simplify or use lowest terms. *Clarification 3:* Fractions can include fractions greater than one.
MA.5.FR.2.1:	Add and subtract fractions with unlike denominators, including mixed numbers and fractions greater than 1, with procedural reliability. **Clarifications:** *Clarification 1:* Instruction includes the use of estimation, manipulatives, drawings or the properties of operations. *Clarification 2:* Instruction builds on the understanding from previous grades of factors up to 12 and their multiples.
MA.5.FR.2.2:	Extend previous understanding of multiplication to multiply a fraction by a fraction, including mixed numbers and fractions greater than 1, with procedural reliability. **Clarifications:** *Clarification 1:* Instruction includes the use of manipulatives, drawings or the properties of operations. *Clarification 2:* Denominators limited to whole numbers up to 20.
MA.5.FR.2.3:	When multiplying a given number by a fraction less than 1 or a fraction greater than 1, predict and explain the relative size of the product to the given number without calculating. **Clarifications:** *Clarification 1:* Instruction focuses on the connection to decimals, estimation and assessing the reasonableness of an answer.
MA.5.FR.2.4:	Extend previous understanding of division to explore the division of a unit fraction by a whole number and a whole number by a unit fraction. **Clarifications:** *Clarification 1:* Instruction includes the use of manipulatives, drawings or the properties of operations.

	Clarification 2: Refer to Situations Involving Operations with Numbers (Appendix A).
MA.5.GR.1.1:	Classify triangles or quadrilaterals into different categories based on shared defining attributes. Explain why a triangle or quadrilateral would or would not belong to a category. **Clarifications:** *Clarification 1:* Triangles include scalene, isosceles, equilateral, acute, obtuse and right; quadrilaterals include parallelograms, rhombi, rectangles, squares and trapezoids.
MA.5.GR.1.2:	Identify and classify three-dimensional figures into categories based on their defining attributes. Figures are limited to right pyramids, right prisms, right circular cylinders, right circular cones and spheres. **Clarifications:** *Clarification 1:* Defining attributes include the number and shape of faces, number and shape of bases, whether or not there is an apex, curved or straight edges and curved or flat faces.
MA.5.GR.2.1:	Find the perimeter and area of a rectangle with fractional or decimal side lengths using visual models and formulas. **Clarifications:** *Clarification 1:* Instruction includes finding the area of a rectangle with fractional side lengths by tiling it with squares having unit fraction side lengths and showing that the area is the same as would be found by multiplying the side lengths. *Clarification 2:* Responses include the appropriate units in word form.
MA.5.GR.3.1:	Explore volume as an attribute of three-dimensional figures by packing them with unit cubes without gaps. Find the volume of a right rectangular prism with whole-number side lengths by counting unit cubes. **Clarifications:** *Clarification 1:* Instruction emphasizes the conceptual understanding that volume is an attribute that can be measured for a three-dimensional figure. The measurement unit for volume is the volume of a unit cube, which is a cube with edge length of 1 unit.
MA.5.GR.3.2:	Find the volume of a right rectangular prism with whole-number side lengths using a visual model and a formula. **Clarifications:** *Clarification 1:* Instruction includes finding the volume of right rectangular prisms by packing the figure with unit cubes, using a visual model or applying a multiplication formula. *Clarification 2:* Right rectangular prisms cannot exceed two-digit edge lengths and responses include the appropriate units in word form.
MA.5.GR.3.3:	Solve real-world problems involving the volume of right rectangular prisms, including problems with an unknown edge length, with whole-number edge lengths using a visual model or a formula. Write an equation with a variable for the unknown to represent the problem. **Clarifications:** *Clarification 1:* Instruction progresses from right rectangular prisms to composite figures composed of right rectangular prisms. *Clarification 2:* When finding the volume of composite figures composed of right rectangular prisms, recognize volume as additive by adding the volume of non-overlapping parts. *Clarification 3:* Responses include the appropriate units in word form.
MA.5.GR.4.1:	Identify the origin and axes in the coordinate system. Plot and label ordered pairs in the first quadrant of the coordinate plane. **Clarifications:** *Clarification 1:* Instruction includes the connection between two-column tables and coordinates on a coordinate plane. *Clarification 2:* Instruction focuses on the connection of the number line to the x- and y-axis. *Clarification 3:* Coordinate planes include axes scaled by whole numbers. Ordered pairs contain only whole numbers.
MA.5.GR.4.2:	Represent mathematical and real-world problems by plotting points in the first quadrant of the coordinate plane and interpret coordinate values of points in the context of the situation. **Clarifications:** *Clarification 1:* Coordinate planes include axes scaled by whole numbers. Ordered pairs contain only whole numbers.
MA.5.M.1.1:	Solve multi-step real-world problems that involve converting measurement units to equivalent measurements within a single system of measurement. **Clarifications:** *Clarification 1:* Within the benchmark, the expectation is not to memorize the conversions. *Clarification 2:* Conversions include length, time, volume and capacity represented as whole numbers, fractions and decimals.
MA.5.M.2.1:	Solve multi-step real-world problems involving money using decimal notation.
MA.5.NSO.1.1:	Express how the value of a digit in a multi-digit number with decimals to the thousandths changes if the digit moves one or more places to the left or right.
MA.5.NSO.1.2:	Read and write multi-digit numbers with decimals to the thousandths using standard form, word form and expanded form.
MA.5.NSO.1.3:	Compose and decompose multi-digit numbers with decimals to the thousandths in multiple ways using the values of the digits in each place. Demonstrate the compositions or decompositions using objects, drawings and expressions or equations.
MA.5.NSO.1.4:	Plot, order and compare multi-digit numbers with decimals up to the thousandths. **Clarifications:** *Clarification 1:* When comparing numbers, instruction includes using an appropriately scaled number line and using place values of digits. *Clarification 2:* Scaled number lines must be provided and can be a representation of any range of numbers. *Clarification 3:* Within this benchmark, the expectation is to use symbols (<, > or =).
MA.5.NSO.1.5:	Round multi-digit numbers with decimals to the thousandths to the nearest hundredth, tenth or whole number.
MA.5.NSO.2.1:	Multiply multi-digit whole numbers including using a standard algorithm with procedural fluency.
	Divide multi-digit whole numbers, up to five digits by two digits, including using a standard algorithm with procedural fluency. Represent remainders

MA.5.NSO.2.2:	as fractions. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is not to use simplest form for fractions.
MA.5.NSO.2.3:	Add and subtract multi-digit numbers with decimals to the thousandths, including using a standard algorithm with procedural fluency.
MA.5.NSO.2.4:	Explore the multiplication and division of multi-digit numbers with decimals to the hundredths using estimation, rounding and place value. **Clarifications:** *Clarification 1:* Estimating quotients builds the foundation for division using a standard algorithm. *Clarification 2:* Instruction includes the use of models based on place value and the properties of operations.
MA.5.NSO.2.5:	Multiply and divide a multi-digit number with decimals to the tenths by one-tenth and one-hundredth with procedural reliability. **Clarifications:** *Clarification 1:* Instruction focuses on the place value of the digit when multiplying or dividing.
MA.K12.MTR.1.1:	**Actively participate in effortful learning both individually and collectively.** Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task. • Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach. **Clarifications:** Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging. • Develop students' ability to analyze and problem solve. • Recognize students' effort when solving challenging problems.
MA.K12.MTR.2.1:	**Demonstrate understanding by representing problems in multiple ways.** Mathematicians who demonstrate understanding by representing problems in multiple ways: • Build understanding through modeling and using manipulatives. • Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. • Progress from modeling problems with objects and drawings to using algorithms and equations. • Express connections between concepts and representations. • Choose a representation based on the given context or purpose. **Clarifications:** Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: • Help students make connections between concepts and representations. • Provide opportunities for students to use manipulatives when investigating concepts. • Guide students from concrete to pictorial to abstract representations as understanding progresses. • Show students that various representations can have different purposes and can be useful in different situations.
MA.K12.MTR.3.1:	**Complete tasks with mathematical fluency.** Mathematicians who complete tasks with mathematical fluency: • Select efficient and appropriate methods for solving problems within the given context. • Maintain flexibility and accuracy while performing procedures and mental calculations. • Complete tasks accurately and with confidence. • Adapt procedures to apply them to a new context. • Use feedback to improve efficiency when performing calculations. **Clarifications:** Teachers who encourage students to complete tasks with mathematical fluency: • Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately. • Offer multiple opportunities for students to practice efficient and generalizable methods. • Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.
MA.K12.MTR.4.1:	**Engage in discussions that reflect on the mathematical thinking of self and others.** Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others: • Communicate mathematical ideas, vocabulary and methods effectively. • Analyze the mathematical thinking of others. • Compare the efficiency of a method to those expressed by others. • Recognize errors and suggest how to correctly solve the task. • Justify results by explaining methods and processes. • Construct possible arguments based on evidence. **Clarifications:** Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: • Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning. • Create opportunities for students to discuss their thinking with peers. • Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. • Develop students' ability to justify methods and compare their responses to the responses of their peers.

MA.K12.MTR.5.1:	**Use patterns and structure to help understand and connect mathematical concepts.** Mathematicians who use patterns and structure to help understand and connect mathematical concepts: • Focus on relevant details within a problem. • Create plans and procedures to logically order events, steps or ideas to solve problems. • Decompose a complex problem into manageable parts. • Relate previously learned concepts to new concepts. • Look for similarities among problems. • Connect solutions of problems to more complicated large-scale situations. **Clarifications:** Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts: • Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts. • Support students to develop generalizations based on the similarities found among problems. • Provide opportunities for students to create plans and procedures to solve problems. • Develop students’ ability to construct relationships between their current understanding and more sophisticated ways of thinking.
MA.K12.MTR.6.1:	**Assess the reasonableness of solutions.** Mathematicians who assess the reasonableness of solutions: • Estimate to discover possible solutions. • Use benchmark quantities to determine if a solution makes sense. • Check calculations when solving problems. • Verify possible solutions by explaining the methods used. • Evaluate results based on the given context. **Clarifications:** Teachers who encourage students to assess the reasonableness of solutions: • Have students estimate or predict solutions prior to solving. • Prompt students to continually ask, “Does this solution make sense? How do you know?” • Reinforce that students check their work as they progress within and after a task. • Strengthen students’ ability to verify solutions through justifications.
MA.K12.MTR.7.1:	**Apply mathematics to real-world contexts.** Mathematicians who apply mathematics to real-world contexts: • Connect mathematical concepts to everyday experiences. • Use models and methods to understand, represent and solve problems. • Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency. **Clarifications:** Teachers who encourage students to apply mathematics to real-world contexts: • Provide opportunities for students to create models, both concrete and abstract, and perform investigations. • Challenge students to question the accuracy of their models and methods. • Support students as they validate conclusions by comparing them to the given situation. • Indicate how various concepts can be applied to other disciplines.
ELA.K12.EE.1.1:	Cite evidence to explain and justify reasoning. **Clarifications:** K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing. 2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations. 4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they’ve directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor. 6-8 Students continue with previous skills and use a style guide to create a proper citation. 9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.
ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.
ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like “Why is the girl smiling?” or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
ELA.K12.EE.4.1:	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully. In grades 1-2, students build upon these skills by justifying what they are thinking. For example: “I think _______ because ______.” The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills.

	Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
ELA.K12.EE.5.1:	Use the accepted rules governing a specific format to create quality work. **Clarifications:** Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.
ELA.K12.EE.6.1:	Use appropriate voice and tone when speaking or writing. **Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.
ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.

General Course Information and Notes

VERSION DESCRIPTION

This course supports students who need additional instruction in foundational mathematics skills as it relates to core instruction. Instruction will use explicit, systematic, and sequential approaches to mathematics instruction addressing all domains including number sense & operations, fractions, algebraic reasoning, geometric reasoning, measurement and data analysis & probability. Teachers will use the listed standards that correspond to each students' needs.

Effective instruction matches instruction to the need of the students in the group and provides multiple opportunities to practice the skill and receive feedback. The additional time allotted for this course is in addition to core instruction. The intervention includes materials and strategies designed to supplement core instruction.

General Notes

Florida's Benchmarks for Excellent Student Thinking (B.E.S.T.) Standards
This course includes Florida's B.E.S.T. ELA Expectations (EE) and Mathematical Thinking and Reasoning Standards (MTRs) for students. Florida educators should intentionally embed these standards within the content and their instruction as applicable. For guidance on the implementation of the EEs and MTRs, please visit https://www.cpalms.org/Standards/BEST_Standards.aspx and select the appropriate B.E.S.T. Standards package.

English Language Development ELD Standards Special Notes Section:
Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade-level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link: https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf

General Information

Course Number: 5012015

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades PreK to 5 Education Courses > **Subject:** Mathematics > **SubSubject:** General Mathematics >

Abbreviated Title: FDN SKILLS MATH 3-5

Course Length: Multiple (M) - Course length can vary

Course Attributes:

- Class Size Core Required

Course Type: Elective Course

Course Level: 1

Course Status: State Board Approved

Grade Level(s): 3,4,5

Educator Certifications

Elementary Education (Elementary Grades 1-6)
Elementary Education (Grades K-6)
Mathematics (Elementary Grades 1-6)
Middle Grades Mathematics (Middle Grades 5-9)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Grade Kindergarten Mathematics (#5012020) 2024 - And Beyond

(current)

Course Standards

Name	Description
MA.K.AR.1.1:	For any number from 1 to 9, find the number that makes 10 when added to the given number. **Clarifications:** *Clarification 1:* Instruction includes creating a ten using manipulatives, number lines, models and drawings.
MA.K.AR.1.2:	Given a number from 0 to 10, find the different ways it can be represented as the sum of two numbers. **Clarifications:** *Clarification 1:* Instruction includes the exploration of finding possible pairs to make a sum using manipulatives, objects, drawings and expressions; and understanding how the different representations are related to each other.
MA.K.AR.1.3:	Solve addition and subtraction real-world problems using objects, drawings or equations to represent the problem. **Clarifications:** *Clarification 1:* Instruction includes understanding the context of the problem, as well as the quantities within the problem. *Clarification 2:* Students are not expected to independently read word problems. *Clarification 3:* Addition and subtraction are limited to sums within 10 and related subtraction facts. Refer to Situations Involving Operations with Numbers (Appendix A).
MA.K.AR.2.1:	Explain why addition or subtraction equations are true using objects or drawings. **Clarifications:** *Clarification 1:* Instruction focuses on the understanding of the equal sign. *Clarification 2:* Problem types are limited to an equation with two or three terms. The sum or difference can be on either side of the equal sign. *Clarification 3:* Addition and subtraction are limited to sums within 20 and related subtraction facts.
MA.K.DP.1.1:	Collect and sort objects into categories and compare the categories by counting the objects in each category. Report the results verbally, with a written numeral or with drawings. **Clarifications:** *Clarification 1:* Instruction focuses on supporting work in counting. *Clarification 2:* Instruction includes geometric figures that can be categorized using their defining attributes. *Clarification 3:* Within this benchmark, it is not the expectation for students to construct formal representations or graphs on their own.
MA.K.GR.1.1:	Identify two- and three-dimensional figures regardless of their size or orientation. Figures are limited to circles, triangles, rectangles, squares, spheres, cubes, cones and cylinders. **Clarifications:** *Clarification 1:* Instruction includes a wide variety of circles, triangles, rectangles, squares, spheres, cubes, cones and cylinders. *Clarification 2:* Instruction includes a variety of non-examples that lack one or more defining attributes. *Clarification 3:* Two-dimensional figures can be either filled, outlined or both.
MA.K.GR.1.2:	Compare two-dimensional figures based on their similarities, differences and positions. Sort two-dimensional figures based on their similarities and differences. Figures are limited to circles, triangles, rectangles and squares. **Clarifications:** *Clarification 1:* Instruction includes exploring figures in a variety of sizes and orientations. *Clarification 2:* Instruction focuses on using informal language to describe relative positions and the similarities or differences between figures when comparing and sorting.
MA.K.GR.1.3:	Compare three-dimensional figures based on their similarities, differences and positions. Sort three-dimensional figures based on their similarities and differences. Figures are limited to spheres, cubes, cones and cylinders. **Clarifications:** *Clarification 1:* Instruction includes exploring figures in a variety of sizes and orientations. *Clarification 2:* Instruction focuses on using informal language to describe relative positions and the similarities or differences between figures when comparing and sorting.
MA.K.GR.1.4:	Find real-world objects that can be modeled by a given two- or three-dimensional figure. Figures are limited to circles, triangles, rectangles, squares, spheres, cubes, cones and cylinders.
MA.K.GR.1.5:	Combine two-dimensional figures to form a given composite figure. Figures used to form a composite shape are limited to triangles, rectangles and squares. **Clarifications:** *Clarification 1:* This benchmark is intended to develop the understanding of spatial relationships.
MA.K.M.1.1:	Identify the attributes of a single object that can be measured such as length, volume or weight. **Clarifications:** *Clarification 1:* Within this benchmark, measuring is not required.

MA.K.M.1.2:	Directly compare two objects that have an attribute which can be measured in common. Express the comparison using language to describe the difference. **Clarifications:** *Clarification 1:* To directly compare length, objects are placed next to each other with one end of each object lined up to determine which one is longer. *Clarification 2:* Language to compare length includes short, shorter, long, longer, tall, taller, high or higher. Language to compare volume includes has more, has less, holds more, holds less, more full, less full, full, empty, takes up more space or takes up less space. Language to compare weight includes heavy, heavier, light, lighter, weighs more or weighs less.
MA.K.M.1.3:	Express the length of an object, up to 20 units long, as a whole number of lengths by laying non-standard objects end to end with no gaps or overlaps. **Clarifications:** *Clarification 1:* Non-standard units of measurement are units that are not typically used, such as paper clips or colored tiles. To measure with non-standard units, students lay multiple copies of the same object end to end with no gaps or overlaps. The length is shown by the number of objects needed.
MA.K.NSO.1.1:	Given a group of up to 20 objects, count the number of objects in that group and represent the number of objects with a written numeral. State the number of objects in a rearrangement of that group without recounting. **Clarifications:** *Clarification 1:* Instruction focuses on developing an understanding of cardinality and one-to-one correspondence. *Clarification 2:* Instruction includes counting objects and pictures presented in a line, rectangular array, circle or scattered arrangement. Objects presented in a scattered arrangement are limited to 10. *Clarification 3:* Within this benchmark, the expectation is not to write the number in word form.
MA.K.NSO.1.2:	Given a number from 0 to 20, count out that many objects. **Clarifications:** *Clarification 1:* Instruction includes giving a number verbally or with a written numeral.
MA.K.NSO.1.3:	Identify positions of objects within a sequence using the words "first," "second," "third," "fourth" or "fifth." **Clarifications:** *Clarification 1:* Instruction includes the understanding that rearranging a group of objects does not change the total number of objects but may change the order of an object in that group.
MA.K.NSO.1.4:	Compare the number of objects from 0 to 20 in two groups using the terms less than, equal to or greater than. **Clarifications:** *Clarification 1:* Instruction focuses on matching, counting and the connection to addition and subtraction. *Clarification 2:* Within this benchmark, the expectation is not to use the relational symbols =,> or <.
MA.K.NSO.2.1:	Recite the number names to 100 by ones and by tens. Starting at a given number, count forward within 100 and backward within 20. **Clarifications:** *Clarification 1:* When counting forward by ones, students are to say the number names in the standard order and understand that each successive number refers to a quantity that is one larger. When counting backward, students are to understand that each succeeding number in the count sequence refers to a quantity that is one less. *Clarification 2:* Within this benchmark, the expectation is to recognize and count to 100 by the end of Kindergarten.
MA.K.NSO.2.2:	Represent whole numbers from 10 to 20, using a unit of ten and a group of ones, with objects, drawings and expressions or equations.
MA.K.NSO.2.3:	Locate, order and compare numbers from 0 to 20 using the number line and terms less than, equal to or greater than. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is not to use the relational symbols =,> or <. *Clarification 2:* When comparing numbers from 0 to 20, both numbers are plotted on the same number line. *Clarification 3:* When locating numbers on the number line, the expectation includes filling in a missing number by counting from left to right on the number line.
MA.K.NSO.3.1:	Explore addition of two whole numbers from 0 to 10, and related subtraction facts. **Clarifications:** *Clarification 1:* Instruction includes objects, fingers, drawings, number lines and equations. *Clarification 2:* Instruction focuses on the connection that addition is "putting together" or "counting on" and that subtraction is "taking apart" or "taking from." Refer to Situations Involving Operations with Numbers (Appendix A). *Clarification 3:* Within this benchmark, it is the expectation that one problem can be represented in multiple ways and understanding how the different representations are related to each other.
MA.K.NSO.3.2:	Add two one-digit whole numbers with sums from 0 to 10 and subtract using related facts with procedural reliability. **Clarifications:** *Clarification 1:* Instruction focuses on helping a student choose a method they can use reliably.
MA.K12.MTR.1.1:	**Actively participate in effortful learning both individually and collectively.** Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task. • Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach.

	Clarifications: Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging. • Develop students' ability to analyze and problem solve. • Recognize students' effort when solving challenging problems.
MA.K12.MTR.2.1:	**Demonstrate understanding by representing problems in multiple ways.** Mathematicians who demonstrate understanding by representing problems in multiple ways: • Build understanding through modeling and using manipulatives. • Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. • Progress from modeling problems with objects and drawings to using algorithms and equations. • Express connections between concepts and representations. • Choose a representation based on the given context or purpose. **Clarifications:** Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: • Help students make connections between concepts and representations. • Provide opportunities for students to use manipulatives when investigating concepts. • Guide students from concrete to pictorial to abstract representations as understanding progresses. • Show students that various representations can have different purposes and can be useful in different situations.
MA.K12.MTR.3.1:	**Complete tasks with mathematical fluency.** Mathematicians who complete tasks with mathematical fluency: • Select efficient and appropriate methods for solving problems within the given context. • Maintain flexibility and accuracy while performing procedures and mental calculations. • Complete tasks accurately and with confidence. • Adapt procedures to apply them to a new context. • Use feedback to improve efficiency when performing calculations. **Clarifications:** Teachers who encourage students to complete tasks with mathematical fluency: • Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately. • Offer multiple opportunities for students to practice efficient and generalizable methods. • Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.
MA.K12.MTR.4.1:	**Engage in discussions that reflect on the mathematical thinking of self and others.** Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others: • Communicate mathematical ideas, vocabulary and methods effectively. • Analyze the mathematical thinking of others. • Compare the efficiency of a method to those expressed by others. • Recognize errors and suggest how to correctly solve the task. • Justify results by explaining methods and processes. • Construct possible arguments based on evidence. **Clarifications:** Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: • Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning. • Create opportunities for students to discuss their thinking with peers. • Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. • Develop students' ability to justify methods and compare their responses to the responses of their peers.
MA.K12.MTR.5.1:	**Use patterns and structure to help understand and connect mathematical concepts.** Mathematicians who use patterns and structure to help understand and connect mathematical concepts: • Focus on relevant details within a problem. • Create plans and procedures to logically order events, steps or ideas to solve problems. • Decompose a complex problem into manageable parts. • Relate previously learned concepts to new concepts. • Look for similarities among problems. • Connect solutions of problems to more complicated large-scale situations. **Clarifications:** Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts: • Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts. • Support students to develop generalizations based on the similarities found among problems. • Provide opportunities for students to create plans and procedures to solve problems. • Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.
MA.K12.MTR.6.1:	**Assess the reasonableness of solutions.** Mathematicians who assess the reasonableness of solutions: • Estimate to discover possible solutions. • Use benchmark quantities to determine if a solution makes sense. • Check calculations when solving problems. • Verify possible solutions by explaining the methods used. • Evaluate results based on the given context.

	Clarifications: Teachers who encourage students to assess the reasonableness of solutions: • Have students estimate or predict solutions prior to solving. • Prompt students to continually ask, “Does this solution make sense? How do you know?” • Reinforce that students check their work as they progress within and after a task. • Strengthen students’ ability to verify solutions through justifications.
MA.K12.MTR.7.1:	**Apply mathematics to real-world contexts.** Mathematicians who apply mathematics to real-world contexts: • Connect mathematical concepts to everyday experiences. • Use models and methods to understand, represent and solve problems. • Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency. **Clarifications:** Teachers who encourage students to apply mathematics to real-world contexts: • Provide opportunities for students to create models, both concrete and abstract, and perform investigations. • Challenge students to question the accuracy of their models and methods. • Support students as they validate conclusions by comparing them to the given situation. • Indicate how various concepts can be applied to other disciplines.
ELA.K12.EE.1.1:	Cite evidence to explain and justify reasoning. **Clarifications:** K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing. 2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations. 4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they’ve directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor. 6-8 Students continue with previous skills and use a style guide to create a proper citation. 9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.
ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.
ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like “Why is the girl smiling?” or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
ELA.K12.EE.4.1:	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully. In grades 1-2, students build upon these skills by justifying what they are thinking. For example: “I think _______ because ______.” The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
ELA.K12.EE.5.1:	Use the accepted rules governing a specific format to create quality work. **Clarifications:** Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.
ELA.K12.EE.6.1:	Use appropriate voice and tone when speaking or writing. **Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.
ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.
ELD.K12.ELL.SI.1:	English language learners communicate for social and instructional purposes within the school setting.

General Course Information and Notes

VERSION DESCRIPTION

The benchmarks in this course are mastery goals that students are expected to attain by the end of the year. To build mastery, students will continue to review and apply earlier grade-level benchmarks and expectations.

General Notes

In Kindergarten, instructional time will emphasize three areas: (1) developing an understanding of counting to represent the total number of objects in a set and to order the objects within a set; (2) developing an understanding of addition and subtraction and the relationship of these operations to counting and (3) measuring, comparing and categorizing objects according to various attributes, including their two- and three-dimensional shapes.

Curricular content for all subjects must integrate critical-thinking, problem-solving, and workforce-literacy skills; communication, reading, and writing skills; mathematics skills; collaboration skills; contextual and applied-learning skills; technology-literacy skills; information and media-literacy skills; and civic-engagement skills.

English Language Development ELD Standards Special Notes Section:
Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link:
https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf

General Information

Course Number: 5012020

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades PreK to 5 Education Courses > **Subject:** Mathematics > **SubSubject:** General Mathematics >

Abbreviated Title: GRADE K MATH

Course Length: Year (Y)

Course Type: Core Academic Course

Course Level: 2

Course Status: State Board Approved

Grade Level(s): K,1,2,3,4,5

Educator Certifications

Prekindergarten/Primary Education (Age 3 through Grade 3)
Elementary Education (Elementary Grades 1-6)
Primary Education (K-3 - No Longer Issued)
Early Childhood Education (Early Childhood - No Longer Issued)
Elementary Education (Grades K-6)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Grade One Mathematics (#5012030) 2024 - And Beyond (current)

Course Standards

Name	Description
MA.1.AR.1.1:	Apply properties of addition to find a sum of three or more whole numbers. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is to apply the associative and commutative properties of addition. It is not the expectation to name the properties or use parentheses. Refer to Properties of Operations, Equality and Inequality (Appendix D). *Clarification 2:* Instruction includes emphasis on using the properties to make a ten when adding three or more numbers. *Clarification 3:* Addition is limited to sums within 20.
MA.1.AR.1.2:	Solve addition and subtraction real-world problems using objects, drawings or equations to represent the problem. **Clarifications:** *Clarification 1:* Instruction includes understanding the context of the problem, as well as the quantities within the problem. *Clarification 2:* Students are not expected to independently read word problems. *Clarification 3:* Addition and subtraction are limited to sums within 20 and related subtraction facts. Refer to Situations Involving Operations with Numbers (Appendix A).
MA.1.AR.2.1:	Restate a subtraction problem as a missing addend problem using the relationship between addition and subtraction. **Clarifications:** *Clarification 1:* Addition and subtraction are limited to sums within 20 and related subtraction facts.
MA.1.AR.2.2:	Determine and explain if equations involving addition or subtraction are true or false. **Clarifications:** *Clarification 1:* Instruction focuses on understanding of the equal sign. *Clarification 2:* Problem types are limited to an equation with no more than four terms. The sum or difference can be on either side of the equal sign. *Clarification 3:* Addition and subtraction are limited to sums within 20 and related subtraction facts.
MA.1.AR.2.3:	Determine the unknown whole number in an addition or subtraction equation, relating three whole numbers, with the unknown in any position. **Clarifications:** *Clarification 1:* Instruction begins the development of algebraic thinking skills where the symbolic representation of the unknown uses any symbol other than a letter. *Clarification 2:* Problems include the unknown on either side of the equal sign. *Clarification 3:* Addition and subtraction are limited to sums within 20 and related subtraction facts. Refer to Situations Involving Operations with Numbers (Appendix A).
MA.1.DP.1.1:	Collect data into categories and represent the results using tally marks or pictographs. **Clarifications:** *Clarification 1:* Instruction includes connecting tally marks to counting by 5s. *Clarification 2:* Data sets include geometric figures that are categorized using their defining attributes and data from the classroom or school. *Clarification 3:* Pictographs are limited to single-unit scales.
MA.1.DP.1.2:	Interpret data represented with tally marks or pictographs by calculating the total number of data points and comparing the totals of different categories. **Clarifications:** *Clarification 1:* Instruction focuses on the connection to addition and subtraction when calculating the total and comparing, respectively.
MA.1.FR.1.1:	Partition circles and rectangles into two and four equal-sized parts. Name the parts of the whole using appropriate language including halves or fourths. **Clarifications:** *Clarification 1:* This benchmark does not require writing the equal sized parts as a fraction with a numerator and denominator.
MA.1.GR.1.1:	Identify, compare and sort two- and three-dimensional figures based on their defining attributes. Figures are limited to circles, semi-circles, triangles, rectangles, squares, trapezoids, hexagons, spheres, cubes, rectangular prisms, cones and cylinders. **Clarifications:** *Clarification 1:* Instruction focuses on the defining attributes of a figure: whether it is closed or not; number of vertices, sides, edges or faces; and if it contains straight, curved or equal length sides or edges. *Clarification 2:* Instruction includes figures given in a variety of sizes, orientations and non-examples that lack one or more defining attributes. *Clarification 3:* Within this benchmark, the expectation is not to sort a combination of two- and three-dimensional figures at the same time or to define the attributes of trapezoids. *Clarification 4:* Instruction includes using formal and informal language to describe the defining attributes of figures when comparing and sorting.
MA.1.GR.1.2:	Sketch two-dimensional figures when given defining attributes. Figures are limited to triangles, rectangles, squares and hexagons.
	Compose and decompose two- and three-dimensional figures. Figures are limited to semi-circles, triangles, rectangles, squares, trapezoids,

	hexagons, cubes, rectangular prisms, cones and cylinders.
MA.1.GR.1.3:	**Clarifications:** *Clarification 1:* Instruction focuses on the understanding of spatial relationships relating to part-whole, and on the connection to breaking apart numbers and putting them back together. *Clarification 2:* Composite figures are composed without gaps or overlaps. *Clarification 3:* Within this benchmark, it is not the expectation to compose two- and three- dimensional figures at the same time.
MA.1.GR.1.4:	Given a real-world object, identify parts that are modeled by two- and three-dimensional figures. Figures are limited to semi-circles, triangles, rectangles, squares and hexagons, spheres, cubes, rectangular prisms, cones and cylinders.
MA.1.M.1.1:	Estimate the length of an object to the nearest inch. Measure the length of an object to the nearest inch or centimeter. **Clarifications:** *Clarification 1:* Instruction emphasizes measuring from the zero point of the ruler. The markings on the ruler indicate the unit of length by marking equal distances with no gaps or overlaps. *Clarification 2:* When estimating length, the expectation is to give a reasonable number of inches for the length of a given object.
MA.1.M.1.2:	Compare and order the length of up to three objects using direct and indirect comparison. **Clarifications:** *Clarification 1:* When directly comparing objects, the objects can be placed side by side or they can be separately measured in the same units and the measurements can be compared. *Clarification 2:* Two objects can be compared indirectly by directly comparing them to a third object.
MA.1.M.2.1:	Using analog and digital clocks, tell and write time in hours and half-hours. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is not to understand military time or to use a.m. or p.m. *Clarification 2:* Instruction includes the connection to partitioning circles into halves and to semi-circles.
MA.1.M.2.2:	Identify pennies, nickels, dimes and quarters, and express their values using the ¢ symbol. State how many of each coin equal a dollar. **Clarifications:** *Clarification 1:* Instruction includes the recognition of both sides of a coin. *Clarification 2:* Within this benchmark, the expectation is not to use decimal values.
MA.1.M.2.3:	Find the value of combinations of pennies, nickels and dimes up to one dollar, and the value of combinations of one, five and ten dollar bills up to $100. Use the ¢ and $ symbols appropriately. **Clarifications:** *Clarification 1:* Instruction includes the identification of a one, five and ten-dollar bill and the computation of the value of combinations of pennies, nickels and dimes or one, five and ten dollar bills. *Clarification 2:* Instruction focuses on the connection to place value and skip counting. *Clarification 3:* Within this benchmark, the expectation is not to use decimal values or to find the value of a combination of coins and dollars.
MA.1.NSO.1.1:	Starting at a given number, count forward and backwards within 120 by ones. Skip count by 2s to 20 and by 5s to 100. **Clarifications:** *Clarification 1:* Instruction focuses on the connection to addition as “counting on” and subtraction as “counting back”. *Clarification 2:*Instruction also focuses on the recognition of patterns within skip counting which helps build a foundation for multiplication in later grades. *Clarification 3:* Instruction includes recognizing counting sequences using visual charts, such as a 120 chart, to emphasize base 10 place value.
MA.1.NSO.1.2:	Read numbers from 0 to 100 written in standard form, expanded form and word form. Write numbers from 0 to 100 using standard form and expanded form.
MA.1.NSO.1.3:	Compose and decompose two-digit numbers in multiple ways using tens and ones. Demonstrate each composition or decomposition with objects, drawings and expressions or equations.
MA.1.NSO.1.4:	Plot, order and compare whole numbers up to 100. **Clarifications:** *Clarification 1:* When comparing numbers, instruction includes using a number line and using place values of the tens and ones digits. *Clarification 2:* Within this benchmark, the expectation is to use terms (e.g., less than, greater than, between or equal to) and symbols (<, > or =).
MA.1.NSO.2.1:	Recall addition facts with sums to 10 and related subtraction facts with automaticity.
MA.1.NSO.2.2:	Add two whole numbers with sums from 0 to 20, and subtract using related facts with procedural reliability. **Clarifications:** *Clarification 1:* Instruction focuses on helping a student choose a method they can use reliably. *Clarification 2:* Instruction includes situations involving adding to, putting together, comparing and taking from.
MA.1.NSO.2.3:	Identify the number that is one more, one less, ten more and ten less than a given two-digit number.
MA.1.NSO.2.4:	Explore the addition of a two-digit number and a one-digit number with sums to 100. **Clarifications:** *Clarification 1:* Instruction focuses on combining ones and tens and composing new tens from ones, when needed. *Clarification 2:* Instruction includes the use of manipulatives, number lines, drawings or models.
MA.1.NSO.2.5:	Explore subtraction of a one-digit number from a two-digit number. **Clarifications:** *Clarification 1:* Instruction focuses on utilizing the number line as a tool for subtraction through “counting on” or “counting back”. The process of counting on highlights subtraction as a missing addend problem.

	Clarification 2: Instruction includes the use of manipulatives, drawings or equations to decompose tens and regroup ones, when needed.
MA.K12.MTR.1.1:	**Actively participate in effortful learning both individually and collectively.** Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task. • Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach. **Clarifications:** Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging. • Develop students' ability to analyze and problem solve. • Recognize students' effort when solving challenging problems.
MA.K12.MTR.2.1:	**Demonstrate understanding by representing problems in multiple ways.** Mathematicians who demonstrate understanding by representing problems in multiple ways: • Build understanding through modeling and using manipulatives. • Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. • Progress from modeling problems with objects and drawings to using algorithms and equations. • Express connections between concepts and representations. • Choose a representation based on the given context or purpose. **Clarifications:** Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: • Help students make connections between concepts and representations. • Provide opportunities for students to use manipulatives when investigating concepts. • Guide students from concrete to pictorial to abstract representations as understanding progresses. • Show students that various representations can have different purposes and can be useful in different situations.
MA.K12.MTR.3.1:	**Complete tasks with mathematical fluency.** Mathematicians who complete tasks with mathematical fluency: • Select efficient and appropriate methods for solving problems within the given context. • Maintain flexibility and accuracy while performing procedures and mental calculations. • Complete tasks accurately and with confidence. • Adapt procedures to apply them to a new context. • Use feedback to improve efficiency when performing calculations. **Clarifications:** Teachers who encourage students to complete tasks with mathematical fluency: • Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately. • Offer multiple opportunities for students to practice efficient and generalizable methods. • Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.
MA.K12.MTR.4.1:	**Engage in discussions that reflect on the mathematical thinking of self and others.** Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others: • Communicate mathematical ideas, vocabulary and methods effectively. • Analyze the mathematical thinking of others. • Compare the efficiency of a method to those expressed by others. • Recognize errors and suggest how to correctly solve the task. • Justify results by explaining methods and processes. • Construct possible arguments based on evidence. **Clarifications:** Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: • Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning. • Create opportunities for students to discuss their thinking with peers. • Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. • Develop students' ability to justify methods and compare their responses to the responses of their peers.
MA.K12.MTR.5.1:	**Use patterns and structure to help understand and connect mathematical concepts.** Mathematicians who use patterns and structure to help understand and connect mathematical concepts: • Focus on relevant details within a problem. • Create plans and procedures to logically order events, steps or ideas to solve problems. • Decompose a complex problem into manageable parts. • Relate previously learned concepts to new concepts. • Look for similarities among problems. • Connect solutions of problems to more complicated large-scale situations. **Clarifications:** Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts:

	• Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts. • Support students to develop generalizations based on the similarities found among problems. • Provide opportunities for students to create plans and procedures to solve problems. • Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.
MA.K12.MTR.6.1:	**Assess the reasonableness of solutions.** Mathematicians who assess the reasonableness of solutions: • Estimate to discover possible solutions. • Use benchmark quantities to determine if a solution makes sense. • Check calculations when solving problems. • Verify possible solutions by explaining the methods used. • Evaluate results based on the given context. **Clarifications:** Teachers who encourage students to assess the reasonableness of solutions: • Have students estimate or predict solutions prior to solving. • Prompt students to continually ask, "Does this solution make sense? How do you know?" • Reinforce that students check their work as they progress within and after a task. • Strengthen students' ability to verify solutions through justifications.
MA.K12.MTR.7.1:	**Apply mathematics to real-world contexts.** Mathematicians who apply mathematics to real-world contexts: • Connect mathematical concepts to everyday experiences. • Use models and methods to understand, represent and solve problems. • Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency. **Clarifications:** Teachers who encourage students to apply mathematics to real-world contexts: • Provide opportunities for students to create models, both concrete and abstract, and perform investigations. • Challenge students to question the accuracy of their models and methods. • Support students as they validate conclusions by comparing them to the given situation. • Indicate how various concepts can be applied to other disciplines.
ELA.K12.EE.1.1:	Cite evidence to explain and justify reasoning. **Clarifications:** K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing. 2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations. 4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they've directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor. 6-8 Students continue with previous skills and use a style guide to create a proper citation. 9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.
ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.
ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like "Why is the girl smiling?" or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
ELA.K12.EE.4.1:	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully. In grades 1-2, students build upon these skills by justifying what they are thinking. For example: "I think _______ because ______." The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
ELA.K12.EE.5.1:	Use the accepted rules governing a specific format to create quality work. **Clarifications:** Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.
ELA.K12.EE.6.1:	Use appropriate voice and tone when speaking or writing. **Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.

ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.
ELD.K12.ELL.SI.1:	English language learners communicate for social and instructional purposes within the school setting.

General Course Information and Notes

VERSION DESCRIPTION

The benchmarks in this course are mastery goals that students are expected to attain by the end of the year. To build mastery, students will continue to review and apply earlier grade-level benchmarks and expectations.

General Notes

In grade 1, instructional time will emphasize four areas: (1) understanding the place value of tens and ones within two-digit whole numbers; (2) extending understanding of addition and subtraction and the relationship between them; (3) developing an understanding of measurement of physical objects, money and time and (4) categorizing, composing and decomposing geometric figures.

Curricular content for all subjects must integrate critical-thinking, problem-solving, and workforce-literacy skills; communication, reading, and writing skills; mathematics skills; collaboration skills; contextual and applied-learning skills; technology-literacy skills; information and media-literacy skills; and civic-engagement skills.

English Language Development ELD Standards Special Notes Section:
Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link:
https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf

General Information

Course Number: 5012030

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades PreK to 5 Education Courses > **Subject:** Mathematics > **SubSubject:** General Mathematics >

Abbreviated Title: GRADE ONE MATH

Course Length: Year (Y)

Course Type: Core Academic Course

Course Status: State Board Approved

Grade Level(s): K,1,2,3,4,5

Educator Certifications

Prekindergarten/Primary Education (Age 3 through Grade 3)
Elementary Education (Elementary Grades 1-6)
Primary Education (K-3 - No Longer Issued)
Mathematics (Elementary Grades 1-6)
Elementary Education (Grades K-6)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Grade Two Mathematics (#5012040) 2024 - And Beyond (current)

Course Standards

Name	Description
MA.2.AR.1.1:	Solve one- and two-step addition and subtraction real-world problems. **Clarifications:** *Clarification 1:* Instruction includes understanding the context of the problem, as well as the quantities within the problem. *Clarification 2:* Problems include creating real-world situations based on an equation. *Clarification 3:* Addition and subtraction are limited to sums up to 100 and related differences. Refer to Situations Involving Operations with Numbers (Appendix A).
MA.2.AR.2.1:	Determine and explain whether equations involving addition and subtraction are true or false. **Clarifications:** *Clarification 1:* Instruction focuses on understanding of the equal sign. *Clarification 2:* Problem types are limited to an equation with three or four terms. The sum or difference can be on either side of the equal sign. *Clarification 3:* Addition and subtraction are limited to sums up to 100 and related differences.
MA.2.AR.2.2:	Determine the unknown whole number in an addition or subtraction equation, relating three or four whole numbers, with the unknown in any position. **Clarifications:** *Clarification 1:* Instruction extends the development of algebraic thinking skills where the symbolic representation of the unknown uses any symbol other than a letter. *Clarification 2:* Problems include having the unknown on either side of the equal sign. *Clarification 3:* Addition and subtraction are limited to sums up to 100 and related differences. Refer to Situations Involving Operations with Numbers (Appendix A).
MA.2.AR.3.1:	Represent an even number using two equal groups or two equal addends. Represent an odd number using two equal groups with one left over or two equal addends plus 1. **Clarifications:** *Clarification 1:* Instruction focuses on the connection of recognizing even and odd numbers using skip counting, arrays and patterns in the ones place. *Clarification 2:* Addends are limited to whole numbers less than or equal to 12.
MA.2.AR.3.2:	Use repeated addition to find the total number of objects in a collection of equal groups. Represent the total number of objects using rectangular arrays and equations. **Clarifications:** *Clarification 1:* Instruction includes making a connection between arrays and repeated addition, which builds a foundation for multiplication. *Clarification 2:* The total number of objects is limited to 25.
MA.2.DP.1.1:	Collect, categorize and represent data using tally marks, tables, pictographs or bar graphs. Use appropriate titles, labels and units. **Clarifications:** *Clarification 1:* Data displays can be represented both horizontally and vertically. Scales on graphs are limited to ones, fives or tens.
MA.2.DP.1.2:	Interpret data represented with tally marks, tables, pictographs or bar graphs including solving addition and subtraction problems. **Clarifications:** *Clarification 1:* Addition and subtraction problems are limited to whole numbers with sums within 100 and related differences. *Clarification 2:* Data displays can be represented both horizontally and vertically. Scales on graphs are limited to ones, fives or tens.
MA.2.FR.1.1:	Partition circles and rectangles into two, three or four equal-sized parts. Name the parts using appropriate language, and describe the whole as two halves, three thirds or four fourths. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is not to write the equal-sized parts as a fraction with a numerator and denominator. *Clarification 2:* Problems include mathematical and real-world context.
MA.2.FR.1.2:	Partition rectangles into two, three or four equal-sized parts in two different ways showing that equal-sized parts of the same whole may have different shapes.
MA.2.GR.1.1:	Identify and draw two-dimensional figures based on their defining attributes. Figures are limited to triangles, rectangles, squares, pentagons, hexagons and octagons. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation includes the use of rulers and straight edges.
MA.2.GR.1.2:	Categorize two-dimensional figures based on the number and length of sides, number of vertices, whether they are closed or not and whether the edges are curved or straight. **Clarifications:** *Clarification 1:* Instruction focuses on using formal and informal language to describe defining attributes when categorizing.
	Identify line(s) of symmetry for a two-dimensional figure.

MA.2.GR.1.3:	**Clarifications:** *Clarification 1:* Instruction focuses on the connection between partitioning two-dimensional figures and symmetry. *Clarification 2:* Problem types include being given an image and determining whether a given line is a line of symmetry or not.
MA.2.GR.2.1:	Explore perimeter as an attribute of a figure by placing unit segments along the boundary without gaps or overlaps. Find perimeters of rectangles by counting unit segments. **Clarifications:** *Clarification 1:* Instruction emphasizes the conceptual understanding that perimeter is an attribute that can be measured for a two-dimensional figure. *Clarification 2:* Instruction includes real-world objects, such as picture frames or desktops.
MA.2.GR.2.2:	Find the perimeter of a polygon with whole-number side lengths. Polygons are limited to triangles, rectangles, squares and pentagons. **Clarifications:** *Clarification 1:* Instruction includes the connection to the associative and commutative properties of addition. Refer to Properties of Operations, Equality and Inequality (Appendix D). *Clarification 2:* Within this benchmark, the expectation is not to use a formula to find perimeter. *Clarification 3:* Instruction includes cases where the side lengths are given or measured to the nearest unit. *Clarification 4:* Perimeter cannot exceed 100 units and responses include the appropriate units.
MA.2.M.1.1:	Estimate and measure the length of an object to the nearest inch, foot, yard, centimeter or meter by selecting and using an appropriate tool. **Clarifications:** *Clarification 1:* Instruction includes seeing rulers and tape measures as number lines. *Clarification 2:* Instruction focuses on recognizing that when an object is measured in two different units, fewer of the larger units are required. When comparing measurements of the same object in different units, measurement conversions are not expected. *Clarification 3:* When estimating the size of an object, a comparison with an object of known size can be used.
MA.2.M.1.2:	Measure the lengths of two objects using the same unit and determine the difference between their measurements. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is to measure objects to the nearest inch, foot, yard, centimeter or meter.
MA.2.M.1.3:	Solve one- and two-step real-world measurement problems involving addition and subtraction of lengths given in the same units. **Clarifications:** *Clarification 1:* Addition and subtraction problems are limited to sums within 100 and related differences.
MA.2.M.2.1:	Using analog and digital clocks, tell and write time to the nearest five minutes using a.m. and p.m. appropriately. Express portions of an hour using the fractional terms half an hour, half past, quarter of an hour, quarter after and quarter til. **Clarifications:** *Clarification 1:* Instruction includes the connection to partitioning of circles and to the number line. *Clarification 2:* Within this benchmark, the expectation is not to understand military time.
MA.2.M.2.2:	Solve one- and two-step addition and subtraction real-world problems involving either dollar bills within $100 or coins within 100¢ using $ and ¢ symbols appropriately. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is not to use decimal values. *Clarification 2:* Addition and subtraction problems are limited to sums within 100 and related differences. Refer to Situations Involving Operations with Numbers (Appendix A).
MA.2.NSO.1.1:	Read and write numbers from 0 to 1,000 using standard form, expanded form and word form.
MA.2.NSO.1.2:	Compose and decompose three-digit numbers in multiple ways using hundreds, tens and ones. Demonstrate each composition or decomposition with objects, drawings and expressions or equations.
MA.2.NSO.1.3:	Plot, order and compare whole numbers up to 1,000. **Clarifications:** *Clarification 1:* When comparing numbers, instruction includes using a number line and using place values of the hundreds, tens and ones digits. *Clarification 2:* Within this benchmark, the expectation is to use terms (e.g., less than, greater than, between or equal to) and symbols (<, > or =).
MA.2.NSO.1.4:	Round whole numbers from 0 to 100 to the nearest 10. **Clarifications:** *Clarification 1:* Within the benchmark, the expectation is to understand that rounding is a process that produces a number with a similar value that is less precise but easier to use.
MA.2.NSO.2.1:	Recall addition facts with sums to 20 and related subtraction facts with automaticity.
MA.2.NSO.2.2:	Identify the number that is ten more, ten less, one hundred more and one hundred less than a given three-digit number.
MA.2.NSO.2.3:	Add two whole numbers with sums up to 100 with procedural reliability. Subtract a whole number from a whole number, each no larger than 100, with procedural reliability. **Clarifications:** *Clarification 1:* Instruction focuses on helping a student choose a method they can use reliably.
MA.2.NSO.2.4:	Explore the addition of two whole numbers with sums up to 1,000. Explore the subtraction of a whole number from a whole number, each no larger than 1,000. **Clarifications:** *Clarification 1:* Instruction includes the use of manipulatives, number lines, drawings or properties of operations or place value. *Clarification 2:* Instruction focuses on composing and decomposing ones, tens and hundreds when needed.

MA.K12.MTR.1.1:	**Actively participate in effortful learning both individually and collectively.** Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task. • Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach. **Clarifications:** Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging. • Develop students’ ability to analyze and problem solve. • Recognize students’ effort when solving challenging problems.
MA.K12.MTR.2.1:	**Demonstrate understanding by representing problems in multiple ways.** Mathematicians who demonstrate understanding by representing problems in multiple ways: • Build understanding through modeling and using manipulatives. • Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. • Progress from modeling problems with objects and drawings to using algorithms and equations. • Express connections between concepts and representations. • Choose a representation based on the given context or purpose. **Clarifications:** Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: • Help students make connections between concepts and representations. • Provide opportunities for students to use manipulatives when investigating concepts. • Guide students from concrete to pictorial to abstract representations as understanding progresses. • Show students that various representations can have different purposes and can be useful in different situations.
MA.K12.MTR.3.1:	**Complete tasks with mathematical fluency.** Mathematicians who complete tasks with mathematical fluency: • Select efficient and appropriate methods for solving problems within the given context. • Maintain flexibility and accuracy while performing procedures and mental calculations. • Complete tasks accurately and with confidence. • Adapt procedures to apply them to a new context. • Use feedback to improve efficiency when performing calculations. **Clarifications:** Teachers who encourage students to complete tasks with mathematical fluency: • Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately. • Offer multiple opportunities for students to practice efficient and generalizable methods. • Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.
MA.K12.MTR.4.1:	**Engage in discussions that reflect on the mathematical thinking of self and others.** Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others: • Communicate mathematical ideas, vocabulary and methods effectively. • Analyze the mathematical thinking of others. • Compare the efficiency of a method to those expressed by others. • Recognize errors and suggest how to correctly solve the task. • Justify results by explaining methods and processes. • Construct possible arguments based on evidence. **Clarifications:** Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: • Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning. • Create opportunities for students to discuss their thinking with peers. • Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. • Develop students’ ability to justify methods and compare their responses to the responses of their peers.
MA.K12.MTR.5.1:	**Use patterns and structure to help understand and connect mathematical concepts.** Mathematicians who use patterns and structure to help understand and connect mathematical concepts: • Focus on relevant details within a problem. • Create plans and procedures to logically order events, steps or ideas to solve problems. • Decompose a complex problem into manageable parts. • Relate previously learned concepts to new concepts. • Look for similarities among problems. • Connect solutions of problems to more complicated large-scale situations. **Clarifications:** Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts: • Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts.

	• Support students to develop generalizations based on the similarities found among problems. • Provide opportunities for students to create plans and procedures to solve problems. • Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.
MA.K12.MTR.6.1:	**Assess the reasonableness of solutions.** Mathematicians who assess the reasonableness of solutions: • Estimate to discover possible solutions. • Use benchmark quantities to determine if a solution makes sense. • Check calculations when solving problems. • Verify possible solutions by explaining the methods used. • Evaluate results based on the given context. **Clarifications:** Teachers who encourage students to assess the reasonableness of solutions: • Have students estimate or predict solutions prior to solving. • Prompt students to continually ask, "Does this solution make sense? How do you know?" • Reinforce that students check their work as they progress within and after a task. • Strengthen students' ability to verify solutions through justifications.
MA.K12.MTR.7.1:	**Apply mathematics to real-world contexts.** Mathematicians who apply mathematics to real-world contexts: • Connect mathematical concepts to everyday experiences. • Use models and methods to understand, represent and solve problems. • Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency. **Clarifications:** Teachers who encourage students to apply mathematics to real-world contexts: • Provide opportunities for students to create models, both concrete and abstract, and perform investigations. • Challenge students to question the accuracy of their models and methods. • Support students as they validate conclusions by comparing them to the given situation. • Indicate how various concepts can be applied to other disciplines.
ELA.K12.EE.1.1:	Cite evidence to explain and justify reasoning. **Clarifications:** K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing. 2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations. 4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they've directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor. 6-8 Students continue with previous skills and use a style guide to create a proper citation. 9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.
ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.
ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like "Why is the girl smiling?" or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
ELA.K12.EE.4.1:	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully. In grades 1-2, students build upon these skills by justifying what they are thinking. For example: "I think ________ because _______." The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
ELA.K12.EE.5.1:	Use the accepted rules governing a specific format to create quality work. **Clarifications:** Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.
ELA.K12.EE.6.1:	Use appropriate voice and tone when speaking or writing. **Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.
ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.

ELD.K12.ELL.SI.1:	English language learners communicate for social and instructional purposes within the school setting.

General Course Information and Notes

VERSION DESCRIPTION

The benchmarks in this course are mastery goals that students are expected to attain by the end of the year. To build mastery, students will continue to review and apply earlier grade-level benchmarks and expectations.

General Notes

In grade 2, instructional time will emphasize four areas: (1) extending understanding of place value in three-digit numbers; (2) building fluency and algebraic reasoning with addition and subtraction; (3) extending understanding of measurement of objects, time and the perimeter of geometric figures and (4) developing spatial reasoning with number representations and two-dimensional figures.

Curricular content for all subjects must integrate critical-thinking, problem-solving, and workforce-literacy skills; communication, reading, and writing skills; mathematics skills; collaboration skills; contextual and applied-learning skills; technology-literacy skills; information and media-literacy skills; and civic-engagement skills.

English Language Development ELD Standards Special Notes Section:
Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link:
https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf

General Information

Course Number: 5012040

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades PreK to 5 Education Courses > **Subject:** Mathematics > **SubSubject:** General Mathematics >

Abbreviated Title: GRADE TWO MATH

Course Length: Year (Y)

Course Type: Core Academic Course

Course Level: 2

Course Status: State Board Approved

Grade Level(s): K,1,2,3,4,5

Educator Certifications

Prekindergarten/Primary Education (Age 3 through Grade 3)
Elementary Education (Elementary Grades 1-6)
Primary Education (K-3 - No Longer Issued)
Mathematics (Elementary Grades 1-6)
Elementary Education (Grades K-6)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Grade Three Mathematics (#5012050) 2024 - And Beyond (current)

Course Standards

Name	Description
MA.3.AR.1.1:	Apply the distributive property to multiply a one-digit number and two-digit number. Apply properties of multiplication to find a product of one-digit whole numbers. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is to apply the associative and commutative properties of multiplication, the distributive property and name the properties. Refer to K-12 Glossary (Appendix C). *Clarification 2:* Within the benchmark, the expectation is to utilize parentheses. *Clarification 3:* Multiplication for products of three or more numbers is limited to factors within 12. Refer to Properties of Operations, Equality and Inequality (Appendix D).
MA.3.AR.1.2:	Solve one- and two-step real-world problems involving any of four operations with whole numbers. **Clarifications:** *Clarification 1:* Instruction includes understanding the context of the problem, as well as the quantities within the problem. *Clarification 2:* Multiplication is limited to factors within 12 and related division facts. Refer to Situations Involving Operations with Numbers (Appendix A).
MA.3.AR.2.1:	Restate a division problem as a missing factor problem using the relationship between multiplication and division. **Clarifications:** *Clarification 1:* Multiplication is limited to factors within 12 and related division facts. *Clarification 2:* Within this benchmark, the symbolic representation of the missing factor uses any symbol or a letter.
MA.3.AR.2.2:	Determine and explain whether an equation involving multiplication or division is true or false. **Clarifications:** *Clarification 1:* Instruction extends the understanding of the meaning of the equal sign to multiplication and division. *Clarification 2:* Problem types are limited to an equation with three or four terms. The product or quotient can be on either side of the equal sign. *Clarification 3:* Multiplication is limited to factors within 12 and related division facts.
MA.3.AR.2.3:	Determine the unknown whole number in a multiplication or division equation, relating three whole numbers, with the unknown in any position. **Clarifications:** *Clarification 1:* Instruction extends the development of algebraic thinking skills where the symbolic representation of the unknown uses any symbol or a letter. *Clarification 2:* Problems include the unknown on either side of the equal sign. *Clarification 3:* Multiplication is limited to factors within 12 and related division facts. Refer to Situations Involving Operations with Numbers (Appendix A).
MA.3.AR.3.1:	Determine and explain whether a whole number from 1 to 1,000 is even or odd. **Clarifications:** *Clarification 1:* Instruction includes determining and explaining using place value and recognizing patterns.
MA.3.AR.3.2:	Determine whether a whole number from 1 to 144 is a multiple of a given one-digit number. **Clarifications:** *Clarification 1:* Instruction includes determining if a number is a multiple of a given number by using multiplication or division.
MA.3.AR.3.3:	Identify, create and extend numerical patterns. **Clarifications:** *Clarification 1:* The expectation is to use ordinal numbers (1st, 2nd, 3rd, ...) to describe the position of a number within a sequence. *Clarification 2:* Problem types include patterns involving addition, subtraction, multiplication or division of whole numbers.
MA.3.DP.1.1:	Collect and represent numerical and categorical data with whole-number values using tables, scaled pictographs, scaled bar graphs or line plots. Use appropriate titles, labels and units. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is to complete a representation or construct a representation from a data set. *Clarification 2:* Instruction includes the connection between multiplication and the number of data points represented by a bar in scaled bar graph or a scaled column in a pictograph. *Clarification 3:* Data displays are represented both horizontally and vertically.
MA.3.DP.1.2:	Interpret data with whole-number values represented with tables, scaled pictographs, circle graphs, scaled bar graphs or line plots by solving one- and two-step problems. **Clarifications:** *Clarification 1:* Problems include the use of data in informal comparisons between two data sets in the same units. *Clarification 2:* Data displays can be represented both horizontally and vertically. *Clarification 3:* Circle graphs are limited to showing the total values in each category.

MA.3.FR.1.1:	Represent and interpret unit fractions in the form 1/n as the quantity formed by one part when a whole is partitioned into n equal parts. **Clarifications:** *Clarification 1:* This benchmark emphasizes conceptual understanding through the use of manipulatives or visual models. *Clarification 2:* Instruction focuses on representing a unit fraction as part of a whole, part of a set, a point on a number line, a visual model or in fractional notation. *Clarification 3:* Denominators are limited to 2, 3, 4, 5, 6, 8, 10 and 12.
MA.3.FR.1.2:	Represent and interpret fractions, including fractions greater than one, in the form of mn as the result of adding the unit fraction 1n to itself *m* times. **Clarifications:** *Clarification 1:* Instruction emphasizes conceptual understanding through the use of manipulatives or visual models, including circle graphs, to represent fractions. *Clarification 2:* Denominators are limited to 2, 3, 4, 5, 6, 8, 10 and 12.
MA.3.FR.1.3:	Read and write fractions, including fractions greater than one, using standard form, numeral-word form and word form. **Clarifications:** *Clarification 1:* Instruction focuses on making connections to reading and writing numbers to develop the understanding that fractions are numbers and to support algebraic thinking in later grades. *Clarification 2:* Denominators are limited to 2, 3, 4, 5, 6, 8, 10 and 12.
MA.3.FR.2.1:	Plot, order and compare fractional numbers with the same numerator or the same denominator. **Clarifications:** *Clarification 1:* Instruction includes making connections between using a ruler and plotting and ordering fractions on a number line. *Clarification 2:* When comparing fractions, instruction includes an appropriately scaled number line and using reasoning about their size. *Clarification 3:* Fractions include fractions greater than one, including mixed numbers, with denominators limited to 2, 3, 4, 5, 6, 8, 10 and 12.
MA.3.FR.2.2:	Identify equivalent fractions and explain why they are equivalent. **Clarifications:** *Clarification 1:* Instruction includes identifying equivalent fractions and explaining why they are equivalent using manipulatives, drawings, and number lines. *Clarification 2:* Within this benchmark, the expectation is not to generate equivalent fractions. *Clarification 3:* Fractions are limited to fractions less than or equal to one with denominators of 2, 3, 4, 5, 6, 8, 10 and 12. Number lines must be given and scaled appropriately.
MA.3.GR.1.1:	Describe and draw points, lines, line segments, rays, intersecting lines, perpendicular lines and parallel lines. Identify these in two-dimensional figures. **Clarifications:** *Clarification 1:* Instruction includes mathematical and real-world context for identifying points, lines, line segments, rays, intersecting lines, perpendicular lines and parallel lines. *Clarification 2:* When working with perpendicular lines, right angles can be called square angles or square corners.
MA.3.GR.1.2:	Identify and draw quadrilaterals based on their defining attributes. Quadrilaterals include parallelograms, rhombi, rectangles, squares and trapezoids. **Clarifications:** *Clarification 1:* Instruction includes a variety of quadrilaterals and a variety of non-examples that lack one or more defining attributes when identifying quadrilaterals. *Clarification 2:* Quadrilaterals will be filled, outlined or both when identifying. *Clarification 3:* Drawing representations must be reasonably accurate.
MA.3.GR.1.3:	Draw line(s) of symmetry in a two-dimensional figure and identify line-symmetric two-dimensional figures. **Clarifications:** *Clarification 1:* Instruction develops the understanding that there could be no line of symmetry, exactly one line of symmetry or more than one line of symmetry. *Clarification 2:* Instruction includes folding paper along a line of symmetry so that both halves match exactly to confirm line-symmetric figures.
MA.3.GR.2.1:	Explore area as an attribute of a two-dimensional figure by covering the figure with unit squares without gaps or overlaps. Find areas of rectangles by counting unit squares. **Clarifications:** *Clarification 1:* Instruction emphasizes the conceptual understanding that area is an attribute that can be measured for a two-dimensional figure. The measurement unit for area is the area of a unit square, which is a square with side length of 1 unit. *Clarification 2:* Two-dimensional figures cannot exceed 12 units by 12 units and responses include the appropriate units in word form (e.g., square centimeter or sq.cm.).
MA.3.GR.2.2:	Find the area of a rectangle with whole-number side lengths using a visual model and a multiplication formula. **Clarifications:** *Clarification 1:* Instruction includes covering the figure with unit squares, a rectangular array or applying a formula. *Clarification 2:* Two-dimensional figures cannot exceed 12 units by 12 units and responses include the appropriate units in word form.
MA.3.GR.2.3:	Solve mathematical and real-world problems involving the perimeter and area of rectangles with whole-number side lengths using a visual model and a formula. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is not to find unknown side lengths. *Clarification 2:* Two-dimensional figures cannot exceed 12 units by 12 units and responses include the appropriate units in word form.

MA.3.GR.2.4:	Solve mathematical and real-world problems involving the perimeter and area of composite figures composed of non-overlapping rectangles with whole-number side lengths. **Clarifications:** *Clarification 1:* Composite figures must be composed of non-overlapping rectangles. *Clarification 2:* Each rectangle within the composite figure cannot exceed 12 units by 12 units and responses include the appropriate units in word form.
MA.3.M.1.1:	Select and use appropriate tools to measure the length of an object, the volume of liquid within a beaker and temperature. **Clarifications:** *Clarification 1:* Instruction focuses on identifying measurement on a linear scale, making the connection to the number line. *Clarification 2:* When measuring the length, limited to the nearest centimeter and half or quarter inch. *Clarification 3:* When measuring the temperature, limited to the nearest degree. *Clarification 4:* When measuring the volume of liquid, limited to nearest milliliter and half or quarter cup.
MA.3.M.1.2:	Solve real-world problems involving any of the four operations with whole-number lengths, masses, weights, temperatures or liquid volumes. **Clarifications:** *Clarification 1:* Within this benchmark, it is the expectation that responses include appropriate units. *Clarification 2:* Problem types are not expected to include measurement conversions. *Clarification 3:* Instruction includes the comparison of attributes measured in the same units. *Clarification 4:* Units are limited to yards, feet, inches; meters, centimeters; pounds, ounces; kilograms, grams; degrees Fahrenheit, degrees Celsius; gallons, quarts, pints, cups; and liters, milliliters.
MA.3.M.2.1:	Using analog and digital clocks tell and write time to the nearest minute using a.m. and p.m. appropriately. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is not to understand military time.
MA.3.M.2.2:	Solve one- and two-step real-world problems involving elapsed time. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is not to include crossing between a.m. and p.m.
MA.3.NSO.1.1:	Read and write numbers from 0 to 10,000 using standard form, expanded form and word form.
MA.3.NSO.1.2:	Compose and decompose four-digit numbers in multiple ways using thousands, hundreds, tens and ones. Demonstrate each composition or decomposition using objects, drawings and expressions or equations.
MA.3.NSO.1.3:	Plot, order and compare whole numbers up to 10,000. **Clarifications:** *Clarification 1:* When comparing numbers, instruction includes using an appropriately scaled number line and using place values of the thousands, hundreds, tens and ones digits. *Clarification 2:* Number lines, scaled by 50s, 100s or 1,000s, must be provided and can be a representation of any range of numbers. *Clarification 3:* Within this benchmark, the expectation is to use symbols (<, > or =).
MA.3.NSO.1.4:	Round whole numbers from 0 to 1,000 to the nearest 10 or 100.
MA.3.NSO.2.1:	Add and subtract multi-digit whole numbers including using a standard algorithm with procedural fluency.
MA.3.NSO.2.2:	Explore multiplication of two whole numbers with products from 0 to 144, and related division facts. **Clarifications:** *Clarification 1:* Instruction includes equal groups, arrays, area models and equations. *Clarification 2:* Within the benchmark, it is the expectation that one problem can be represented in multiple ways and understanding how the different representations are related to each other. *Clarification 3:* Factors and divisors are limited to up to 12.
MA.3.NSO.2.3:	Multiply a one-digit whole number by a multiple of 10, up to 90, or a multiple of 100, up to 900, with procedural reliability. **Clarifications:** *Clarification 1:* When multiplying one-digit numbers by multiples of 10 or 100, instruction focuses on methods that are based on place value.
MA.3.NSO.2.4:	Multiply two whole numbers from 0 to 12 and divide using related facts with procedural reliability. **Clarifications:** *Clarification 1:* Instruction focuses on helping a student choose a method they can use reliably.
MA.K12.MTR.1.1:	**Actively participate in effortful learning both individually and collectively.** Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task. • Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach. **Clarifications:** Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging.

	- Develop students' ability to analyze and problem solve. - Recognize students' effort when solving challenging problems.
MA.K12.MTR.2.1:	**Demonstrate understanding by representing problems in multiple ways.** Mathematicians who demonstrate understanding by representing problems in multiple ways: - Build understanding through modeling and using manipulatives. - Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. - Progress from modeling problems with objects and drawings to using algorithms and equations. - Express connections between concepts and representations. - Choose a representation based on the given context or purpose. **Clarifications:** Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: - Help students make connections between concepts and representations. - Provide opportunities for students to use manipulatives when investigating concepts. - Guide students from concrete to pictorial to abstract representations as understanding progresses. - Show students that various representations can have different purposes and can be useful in different situations.
MA.K12.MTR.3.1:	**Complete tasks with mathematical fluency.** Mathematicians who complete tasks with mathematical fluency: - Select efficient and appropriate methods for solving problems within the given context. - Maintain flexibility and accuracy while performing procedures and mental calculations. - Complete tasks accurately and with confidence. - Adapt procedures to apply them to a new context. - Use feedback to improve efficiency when performing calculations. **Clarifications:** Teachers who encourage students to complete tasks with mathematical fluency: - Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately. - Offer multiple opportunities for students to practice efficient and generalizable methods. - Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.
MA.K12.MTR.4.1:	**Engage in discussions that reflect on the mathematical thinking of self and others.** Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others: - Communicate mathematical ideas, vocabulary and methods effectively. - Analyze the mathematical thinking of others. - Compare the efficiency of a method to those expressed by others. - Recognize errors and suggest how to correctly solve the task. - Justify results by explaining methods and processes. - Construct possible arguments based on evidence. **Clarifications:** Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: - Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning. - Create opportunities for students to discuss their thinking with peers. - Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. - Develop students' ability to justify methods and compare their responses to the responses of their peers.
MA.K12.MTR.5.1:	**Use patterns and structure to help understand and connect mathematical concepts.** Mathematicians who use patterns and structure to help understand and connect mathematical concepts: - Focus on relevant details within a problem. - Create plans and procedures to logically order events, steps or ideas to solve problems. - Decompose a complex problem into manageable parts. - Relate previously learned concepts to new concepts. - Look for similarities among problems. - Connect solutions of problems to more complicated large-scale situations. **Clarifications:** Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts: - Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts. - Support students to develop generalizations based on the similarities found among problems. - Provide opportunities for students to create plans and procedures to solve problems. - Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.
MA.K12.MTR.6.1:	**Assess the reasonableness of solutions.** Mathematicians who assess the reasonableness of solutions: - Estimate to discover possible solutions. - Use benchmark quantities to determine if a solution makes sense. - Check calculations when solving problems. - Verify possible solutions by explaining the methods used. - Evaluate results based on the given context. **Clarifications:** Teachers who encourage students to assess the reasonableness of solutions: - Have students estimate or predict solutions prior to solving.

	• Prompt students to continually ask, "Does this solution make sense? How do you know?" • Reinforce that students check their work as they progress within and after a task. • Strengthen students' ability to verify solutions through justifications.
MA.K12.MTR.7.1:	**Apply mathematics to real-world contexts.** Mathematicians who apply mathematics to real-world contexts: • Connect mathematical concepts to everyday experiences. • Use models and methods to understand, represent and solve problems. • Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency. **Clarifications:** Teachers who encourage students to apply mathematics to real-world contexts: • Provide opportunities for students to create models, both concrete and abstract, and perform investigations. • Challenge students to question the accuracy of their models and methods. • Support students as they validate conclusions by comparing them to the given situation. • Indicate how various concepts can be applied to other disciplines.
ELA.K12.EE.1.1:	Cite evidence to explain and justify reasoning. **Clarifications:** K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing. 2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations. 4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they've directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor. 6-8 Students continue with previous skills and use a style guide to create a proper citation. 9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.
ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.
ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like "Why is the girl smiling?" or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
ELA.K12.EE.4.1:	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully. In grades 1-2, students build upon these skills by justifying what they are thinking. For example: "I think _______ because ______." The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
ELA.K12.EE.5.1:	Use the accepted rules governing a specific format to create quality work. **Clarifications:** Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.
ELA.K12.EE.6.1:	Use appropriate voice and tone when speaking or writing. **Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.
ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.
ELD.K12.ELL.SI.1:	English language learners communicate for social and instructional purposes within the school setting.

General Course Information and Notes

VERSION DESCRIPTION

The benchmarks in this course are mastery goals that students are expected to attain by the end of the year. To build mastery, students will continue to review and apply earlier grade-level benchmarks and expectations.

General Notes

In grade 3, instructional time will emphasize four areas: (1) adding and subtracting multi-digit whole numbers, including using a standard algorithm; (2) building an understanding of multiplication and division, the relationship between them and the connection to area of rectangles; (3) developing an understanding of fractions and (4) extending geometric reasoning to lines and attributes of quadrilaterals.

Curricular content for all subjects must integrate critical-thinking, problem-solving, and workforce-literacy skills; communication, reading, and writing skills; mathematics skills; collaboration skills; contextual and applied-learning skills; technology-literacy skills; information and media-literacy skills; and civic-engagement skills.

English Language Development ELD Standards Special Notes Section:
Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link:
https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf

General Information

Course Number: 5012050

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades PreK to 5 Education Courses > **Subject:** Mathematics > **SubSubject:** General Mathematics >

Abbreviated Title: GRADE THREE MATH

Course Length: Year (Y)

Course Type: Core Academic Course

Course Level: 2

Course Status: State Board Approved

Grade Level(s): K,1,2,3,4,5

Educator Certifications

Prekindergarten/Primary Education (Age 3 through Grade 3)
Elementary Education (Elementary Grades 1-6)
Primary Education (K-3 - No Longer Issued)
Mathematics (Elementary Grades 1-6)
Elementary Education (Grades K-6)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Grade 3 Accelerated Mathematics (#5012055) 2024 - And Beyond

(current)

Course Standards

Name	Description
MA.3.AR.1.1:	Apply the distributive property to multiply a one-digit number and two-digit number. Apply properties of multiplication to find a product of one-digit whole numbers. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is to apply the associative and commutative properties of multiplication, the distributive property and name the properties. Refer to K-12 Glossary (Appendix C). *Clarification 2:* Within the benchmark, the expectation is to utilize parentheses. *Clarification 3:* Multiplication for products of three or more numbers is limited to factors within 12. Refer to Properties of Operations, Equality and Inequality (Appendix D).
MA.3.AR.1.2:	Solve one- and two-step real-world problems involving any of four operations with whole numbers. **Clarifications:** *Clarification 1:* Instruction includes understanding the context of the problem, as well as the quantities within the problem. *Clarification 2:* Multiplication is limited to factors within 12 and related division facts. Refer to Situations Involving Operations with Numbers (Appendix A).
MA.3.AR.2.1:	Restate a division problem as a missing factor problem using the relationship between multiplication and division. **Clarifications:** *Clarification 1:* Multiplication is limited to factors within 12 and related division facts. *Clarification 2:* Within this benchmark, the symbolic representation of the missing factor uses any symbol or a letter.
MA.3.AR.2.2:	Determine and explain whether an equation involving multiplication or division is true or false. **Clarifications:** *Clarification 1:* Instruction extends the understanding of the meaning of the equal sign to multiplication and division. *Clarification 2:* Problem types are limited to an equation with three or four terms. The product or quotient can be on either side of the equal sign. *Clarification 3:* Multiplication is limited to factors within 12 and related division facts.
MA.3.AR.2.3:	Determine the unknown whole number in a multiplication or division equation, relating three whole numbers, with the unknown in any position. **Clarifications:** *Clarification 1:* Instruction extends the development of algebraic thinking skills where the symbolic representation of the unknown uses any symbol or a letter. *Clarification 2:* Problems include the unknown on either side of the equal sign. *Clarification 3:* Multiplication is limited to factors within 12 and related division facts. Refer to Situations Involving Operations with Numbers (Appendix A).
MA.3.AR.3.1:	Determine and explain whether a whole number from 1 to 1,000 is even or odd. **Clarifications:** *Clarification 1:* Instruction includes determining and explaining using place value and recognizing patterns.
MA.3.AR.3.2:	Determine whether a whole number from 1 to 144 is a multiple of a given one-digit number. **Clarifications:** *Clarification 1:* Instruction includes determining if a number is a multiple of a given number by using multiplication or division.
MA.3.AR.3.3:	Identify, create and extend numerical patterns. **Clarifications:** *Clarification 1:* The expectation is to use ordinal numbers (1st, 2nd, 3rd, ...) to describe the position of a number within a sequence. *Clarification 2:* Problem types include patterns involving addition, subtraction, multiplication or division of whole numbers.
MA.3.DP.1.1:	Collect and represent numerical and categorical data with whole-number values using tables, scaled pictographs, scaled bar graphs or line plots. Use appropriate titles, labels and units. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is to complete a representation or construct a representation from a data set. *Clarification 2:* Instruction includes the connection between multiplication and the number of data points represented by a bar in scaled bar graph or a scaled column in a pictograph. *Clarification 3:* Data displays are represented both horizontally and vertically.
	Interpret data with whole-number values represented with tables, scaled pictographs, circle graphs, scaled bar graphs or line plots by solving one- and two-step problems.

MA.3.DP.1.2:	**Clarifications:** *Clarification 1:* Problems include the use of data in informal comparisons between two data sets in the same units. *Clarification 2:* Data displays can be represented both horizontally and vertically. *Clarification 3:* Circle graphs are limited to showing the total values in each category.
MA.3.FR.1.1:	Represent and interpret unit fractions in the form 1/n as the quantity formed by one part when a whole is partitioned into n equal parts. **Clarifications:** *Clarification 1:* This benchmark emphasizes conceptual understanding through the use of manipulatives or visual models. *Clarification 2:* Instruction focuses on representing a unit fraction as part of a whole, part of a set, a point on a number line, a visual model or in fractional notation. *Clarification 3:* Denominators are limited to 2, 3, 4, 5, 6, 8, 10 and 12.
MA.3.FR.1.2:	Represent and interpret fractions, including fractions greater than one, in the form of mn as the result of adding the unit fraction 1n to itself *m* times. **Clarifications:** *Clarification 1:* Instruction emphasizes conceptual understanding through the use of manipulatives or visual models, including circle graphs, to represent fractions. *Clarification 2:* Denominators are limited to 2, 3, 4, 5, 6, 8, 10 and 12.
MA.3.FR.1.3:	Read and write fractions, including fractions greater than one, using standard form, numeral-word form and word form. **Clarifications:** *Clarification 1:* Instruction focuses on making connections to reading and writing numbers to develop the understanding that fractions are numbers and to support algebraic thinking in later grades. *Clarification 2:* Denominators are limited to 2, 3, 4, 5, 6, 8, 10 and 12.
MA.3.FR.2.1:	Plot, order and compare fractional numbers with the same numerator or the same denominator. **Clarifications:** *Clarification 1:* Instruction includes making connections between using a ruler and plotting and ordering fractions on a number line. *Clarification 2:* When comparing fractions, instruction includes an appropriately scaled number line and using reasoning about their size. *Clarification 3:* Fractions include fractions greater than one, including mixed numbers, with denominators limited to 2, 3, 4, 5, 6, 8, 10 and 12.
MA.3.FR.2.2:	Identify equivalent fractions and explain why they are equivalent. **Clarifications:** *Clarification 1:* Instruction includes identifying equivalent fractions and explaining why they are equivalent using manipulatives, drawings, and number lines. *Clarification 2:* Within this benchmark, the expectation is not to generate equivalent fractions. *Clarification 3:* Fractions are limited to fractions less than or equal to one with denominators of 2, 3, 4, 5, 6, 8, 10 and 12. Number lines must be given and scaled appropriately.
MA.3.GR.1.1:	Describe and draw points, lines, line segments, rays, intersecting lines, perpendicular lines and parallel lines. Identify these in two-dimensional figures. **Clarifications:** *Clarification 1:* Instruction includes mathematical and real-world context for identifying points, lines, line segments, rays, intersecting lines, perpendicular lines and parallel lines. *Clarification 2:* When working with perpendicular lines, right angles can be called square angles or square corners.
MA.3.GR.1.2:	Identify and draw quadrilaterals based on their defining attributes. Quadrilaterals include parallelograms, rhombi, rectangles, squares and trapezoids. **Clarifications:** *Clarification 1:* Instruction includes a variety of quadrilaterals and a variety of non-examples that lack one or more defining attributes when identifying quadrilaterals. *Clarification 2:* Quadrilaterals will be filled, outlined or both when identifying. *Clarification 3:* Drawing representations must be reasonably accurate.
MA.3.GR.1.3:	Draw line(s) of symmetry in a two-dimensional figure and identify line-symmetric two-dimensional figures. **Clarifications:** *Clarification 1:* Instruction develops the understanding that there could be no line of symmetry, exactly one line of symmetry or more than one line of symmetry. *Clarification 2:* Instruction includes folding paper along a line of symmetry so that both halves match exactly to confirm line-symmetric figures.
MA.3.GR.2.1:	Explore area as an attribute of a two-dimensional figure by covering the figure with unit squares without gaps or overlaps. Find areas of rectangles by counting unit squares. **Clarifications:** *Clarification 1:* Instruction emphasizes the conceptual understanding that area is an attribute that can be measured for a two-dimensional figure. The measurement unit for area is the area of a unit square, which is a square with side length of 1 unit. *Clarification 2:* Two-dimensional figures cannot exceed 12 units by 12 units and responses include the appropriate units in word form (e.g., square centimeter or sq.cm.).
MA.3.GR.2.2:	Find the area of a rectangle with whole-number side lengths using a visual model and a multiplication formula. **Clarifications:** *Clarification 1:* Instruction includes covering the figure with unit squares, a rectangular array or applying a formula. *Clarification 2:* Two-dimensional figures cannot exceed 12 units by 12 units and responses include the appropriate units in word form.

MA.3.GR.2.3:	Solve mathematical and real-world problems involving the perimeter and area of rectangles with whole-number side lengths using a visual model and a formula. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is not to find unknown side lengths. *Clarification 2:* Two-dimensional figures cannot exceed 12 units by 12 units and responses include the appropriate units in word form.
MA.3.GR.2.4:	Solve mathematical and real-world problems involving the perimeter and area of composite figures composed of non-overlapping rectangles with whole-number side lengths. **Clarifications:** *Clarification 1:* Composite figures must be composed of non-overlapping rectangles. *Clarification 2:* Each rectangle within the composite figure cannot exceed 12 units by 12 units and responses include the appropriate units in word form.
MA.3.M.1.1:	Select and use appropriate tools to measure the length of an object, the volume of liquid within a beaker and temperature. **Clarifications:** *Clarification 1:* Instruction focuses on identifying measurement on a linear scale, making the connection to the number line. *Clarification 2:* When measuring the length, limited to the nearest centimeter and half or quarter inch. *Clarification 3:* When measuring the temperature, limited to the nearest degree. *Clarification 4:* When measuring the volume of liquid, limited to nearest milliliter and half or quarter cup.
MA.3.M.1.2:	Solve real-world problems involving any of the four operations with whole-number lengths, masses, weights, temperatures or liquid volumes. **Clarifications:** *Clarification 1:* Within this benchmark, it is the expectation that responses include appropriate units. *Clarification 2:* Problem types are not expected to include measurement conversions. *Clarification 3:* Instruction includes the comparison of attributes measured in the same units. *Clarification 4:* Units are limited to yards, feet, inches; meters, centimeters; pounds, ounces; kilograms, grams; degrees Fahrenheit, degrees Celsius; gallons, quarts, pints, cups; and liters, milliliters.
MA.3.M.2.1:	Using analog and digital clocks tell and write time to the nearest minute using a.m. and p.m. appropriately. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is not to understand military time.
MA.3.M.2.2:	Solve one- and two-step real-world problems involving elapsed time. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is not to include crossing between a.m. and p.m.
MA.3.NSO.1.1:	Read and write numbers from 0 to 10,000 using standard form, expanded form and word form.
MA.3.NSO.1.2:	Compose and decompose four-digit numbers in multiple ways using thousands, hundreds, tens and ones. Demonstrate each composition or decomposition using objects, drawings and expressions or equations.
MA.3.NSO.1.3:	Plot, order and compare whole numbers up to 10,000. **Clarifications:** *Clarification 1:* When comparing numbers, instruction includes using an appropriately scaled number line and using place values of the thousands, hundreds, tens and ones digits. *Clarification 2:* Number lines, scaled by 50s, 100s or 1,000s, must be provided and can be a representation of any range of numbers. *Clarification 3:* Within this benchmark, the expectation is to use symbols (<, > or =).
MA.3.NSO.1.4:	Round whole numbers from 0 to 1,000 to the nearest 10 or 100.
MA.3.NSO.2.1:	Add and subtract multi-digit whole numbers including using a standard algorithm with procedural fluency.
MA.3.NSO.2.2:	Explore multiplication of two whole numbers with products from 0 to 144, and related division facts. **Clarifications:** *Clarification 1:* Instruction includes equal groups, arrays, area models and equations. *Clarification 2:* Within the benchmark, it is the expectation that one problem can be represented in multiple ways and understanding how the different representations are related to each other. *Clarification 3:* Factors and divisors are limited to up to 12.
MA.3.NSO.2.3:	Multiply a one-digit whole number by a multiple of 10, up to 90, or a multiple of 100, up to 900, with procedural reliability. **Clarifications:** *Clarification 1:* When multiplying one-digit numbers by multiples of 10 or 100, instruction focuses on methods that are based on place value.
MA.3.NSO.2.4:	Multiply two whole numbers from 0 to 12 and divide using related facts with procedural reliability. **Clarifications:** *Clarification 1:* Instruction focuses on helping a student choose a method they can use reliably.
MA.4.AR.1.2:	Solve real-world problems involving addition and subtraction of fractions with like denominators, including mixed numbers and fractions greater than one. **Clarifications:** *Clarification 1:* Problems include creating real-world situations based on an equation or representing a real-world problem with a visual model or equation. *Clarification 2:* Fractions within problems must reference the same whole. *Clarification 3:* Within this benchmark, the expectation is not to simplify or use lowest terms. *Clarification 4:* Denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, 16 and 100.

MA.4.AR.2.1:	Determine and explain whether an equation involving any of the four operations with whole numbers is true or false. **Clarifications:** *Clarification 1:* Multiplication is limited to whole number factors within 12 and related division facts.
MA.4.AR.2.2:	Given a mathematical or real-world context, write an equation involving multiplication or division to determine the unknown whole number with the unknown in any position. **Clarifications:** *Clarification 1:* Instruction extends the development of algebraic thinking skills where the symbolic representation of the unknown uses a letter. *Clarification 2:* Problems include the unknown on either side of the equal sign. *Clarification 3:* Multiplication is limited to factors within 12 and related division facts.
MA.4.AR.3.1:	Determine factor pairs for a whole number from 0 to 144. Determine whether a whole number from 0 to 144 is prime, composite or neither. **Clarifications:** *Clarification 1:* Instruction includes the connection to the relationship between multiplication and division and patterns with divisibility rules. *Clarification 2:* The numbers 0 and 1 are neither prime nor composite.
MA.4.AR.3.2:	Generate, describe and extend a numerical pattern that follows a given rule. **Clarifications:** *Clarification 1:* Instruction includes patterns within a mathematical or real-world context.
MA.4.FR.1.1:	Model and express a fraction, including mixed numbers and fractions greater than one, with the denominator 10 as an equivalent fraction with the denominator 100. **Clarifications:** *Clarification 1:* Instruction emphasizes conceptual understanding through the use of manipulatives, visual models, number lines or equations.
MA.4.FR.1.3:	Identify and generate equivalent fractions, including fractions greater than one. Describe how the numerator and denominator are affected when the equivalent fraction is created. **Clarifications:** *Clarification 1:* Instruction includes the use of manipulatives, visual models, number lines or equations. *Clarification 2:* Instruction includes recognizing how the numerator and denominator are affected when equivalent fractions are generated.
MA.4.FR.1.4:	Plot, order and compare fractions, including mixed numbers and fractions greater than one, with different numerators and different denominators. **Clarifications:** *Clarification 1:* When comparing fractions, instruction includes using an appropriately scaled number line and using reasoning about their size. *Clarification 2:* Instruction includes using benchmark quantities, such as 0, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ and 1, to compare fractions. *Clarification 3:* Denominators are limited to 2, 3, 4, 5, 6, 8, 10, 12, 16 and 100. *Clarification 4:* Within this benchmark, the expectation is to use symbols (<, > or =).
MA.4.FR.2.1:	Decompose a fraction, including mixed numbers and fractions greater than one, into a sum of fractions with the same denominator in multiple ways. Demonstrate each decomposition with objects, drawings and equations. **Clarifications:** *Clarification 1:* Denominators are limited to 2, 3, 4, 5, 6, 8, 10, 12, 16 and 100.
MA.4.FR.2.2:	Add and subtract fractions with like denominators, including mixed numbers and fractions greater than one, with procedural reliability. **Clarifications:** *Clarification 1:* Instruction includes the use of word form, manipulatives, drawings, the properties of operations or number lines. *Clarification 2:* Within this benchmark, the expectation is not to simplify or use lowest terms. *Clarification 3:* Denominators are limited to 2, 3, 4, 5, 6, 8, 10, 12, 16 and 100.
MA.4.FR.2.3:	Explore the addition of a fraction with denominator of 10 to a fraction with denominator of 100 using equivalent fractions. **Clarifications:** *Clarification 1:* Instruction includes the use of visual models. *Clarification 2:* Within this benchmark, the expectation is not to simplify or use lowest terms.
MA.4.GR.1.1:	Informally explore angles as an attribute of two-dimensional figures. Identify and classify angles as acute, right, obtuse, straight or reflex. **Clarifications:** *Clarification 1:* Instruction includes classifying angles using benchmark angles of 90° and 180° in two-dimensional figures. *Clarification 2:* When identifying angles, the expectation includes two-dimensional figures and real-world pictures.
MA.4.GR.1.2:	Estimate angle measures. Using a protractor, measure angles in whole-number degrees and draw angles of specified measure in whole-number degrees. Demonstrate that angle measure is additive. **Clarifications:** *Clarification 1:* Instruction includes measuring given angles and drawing angles using protractors. *Clarification 2:* Instruction includes estimating angle measures using benchmark angles (30°, 45°, 60°, 90° and 180°). *Clarification 3:* Instruction focuses on the understanding that angles can be decomposed into non-overlapping angles whose measures sum to the measure of the original angle.
MA.4.GR.1.3:	Solve real-world and mathematical problems involving unknown whole-number angle measures. Write an equation to represent the unknown. **Clarifications:** *Clarification 1:* Instruction includes the connection to angle measure as being additive.

MA.4.GR.2.1:	Solve perimeter and area mathematical and real-world problems, including problems with unknown sides, for rectangles with whole-number side lengths. **Clarifications:** *Clarification 1:* Instruction extends the development of algebraic thinking where the symbolic representation of the unknown uses a letter. *Clarification 2:* Problems involving multiplication are limited to products of up to 3 digits by 2 digits. Problems involving division are limited to up to 4 digits divided by 1 digit. *Clarification 3:* Responses include the appropriate units in word form.
MA.4.GR.2.2:	Solve problems involving rectangles with the same perimeter and different areas or with the same area and different perimeters. **Clarifications:** *Clarification 1:* Instruction focuses on the conceptual understanding of the relationship between perimeter and area. *Clarification 2:* Within this benchmark, rectangles are limited to having whole-number side lengths. *Clarification 3:* Problems involving multiplication are limited to products of up to 3 digits by 2 digits. Problems involving division are limited to up to 4 digits divided by 1 digit. *Clarification 4:* Responses include the appropriate units in word form.
MA.4.NSO.1.2:	Read and write multi-digit whole numbers from 0 to 1,000,000 using standard form, expanded form and word form.
MA.4.NSO.1.3:	Plot, order and compare multi-digit whole numbers up to 1,000,000. **Clarifications:** *Clarification 1:* When comparing numbers, instruction includes using an appropriately scaled number line and using place values of the hundred thousands, ten thousands, thousands, hundreds, tens and ones digits. *Clarification 2:* Scaled number lines must be provided and can be a representation of any range of numbers. *Clarification 3:* Within this benchmark, the expectation is to use symbols (<, > or =).
MA.4.NSO.1.4:	Round whole numbers from 0 to 10,000 to the nearest 10, 100 or 1,000.
MA.4.NSO.2.1:	Recall multiplication facts with factors up to 12 and related division facts with automaticity.
MA.4.NSO.2.2:	Multiply two whole numbers, up to three digits by up to two digits, with procedural reliability. **Clarifications:** *Clarification 1:* Instruction focuses on helping a student choose a method they can use reliably. *Clarification 2:* Instruction includes the use of models or equations based on place value and the distributive property.
MA.4.NSO.2.5:	Explore the multiplication and division of multi-digit whole numbers using estimation, rounding and place value. **Clarifications:** *Clarification 1:* Instruction focuses on previous understanding of multiplication with multiples of 10 and 100, and seeing division as a missing factor problem. *Clarification 2:* Estimating quotients builds the foundation for division using a standard algorithm. *Clarification 3:* When estimating the division of whole numbers, dividends are limited to up to four digits and divisors are limited to up to two digits.
MA.K12.MTR.1.1:	**Actively participate in effortful learning both individually and collectively.** Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task. • Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach. **Clarifications:** Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging. • Develop students’ ability to analyze and problem solve. • Recognize students’ effort when solving challenging problems.
MA.K12.MTR.2.1:	**Demonstrate understanding by representing problems in multiple ways.** Mathematicians who demonstrate understanding by representing problems in multiple ways: • Build understanding through modeling and using manipulatives. • Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. • Progress from modeling problems with objects and drawings to using algorithms and equations. • Express connections between concepts and representations. • Choose a representation based on the given context or purpose. **Clarifications:** Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: • Help students make connections between concepts and representations. • Provide opportunities for students to use manipulatives when investigating concepts. • Guide students from concrete to pictorial to abstract representations as understanding progresses. • Show students that various representations can have different purposes and can be useful in different situations.

MA.K12.MTR.3.1:	**Complete tasks with mathematical fluency.** Mathematicians who complete tasks with mathematical fluency: • Select efficient and appropriate methods for solving problems within the given context. • Maintain flexibility and accuracy while performing procedures and mental calculations. • Complete tasks accurately and with confidence. • Adapt procedures to apply them to a new context. • Use feedback to improve efficiency when performing calculations. **Clarifications:** Teachers who encourage students to complete tasks with mathematical fluency: • Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately. • Offer multiple opportunities for students to practice efficient and generalizable methods. • Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.
MA.K12.MTR.4.1:	**Engage in discussions that reflect on the mathematical thinking of self and others.** Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others: • Communicate mathematical ideas, vocabulary and methods effectively. • Analyze the mathematical thinking of others. • Compare the efficiency of a method to those expressed by others. • Recognize errors and suggest how to correctly solve the task. • Justify results by explaining methods and processes. • Construct possible arguments based on evidence. **Clarifications:** Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: • Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning. • Create opportunities for students to discuss their thinking with peers. • Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. • Develop students' ability to justify methods and compare their responses to the responses of their peers.
MA.K12.MTR.5.1:	**Use patterns and structure to help understand and connect mathematical concepts.** Mathematicians who use patterns and structure to help understand and connect mathematical concepts: • Focus on relevant details within a problem. • Create plans and procedures to logically order events, steps or ideas to solve problems. • Decompose a complex problem into manageable parts. • Relate previously learned concepts to new concepts. • Look for similarities among problems. • Connect solutions of problems to more complicated large-scale situations. **Clarifications:** Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts: • Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts. • Support students to develop generalizations based on the similarities found among problems. • Provide opportunities for students to create plans and procedures to solve problems. • Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.
MA.K12.MTR.6.1:	**Assess the reasonableness of solutions.** Mathematicians who assess the reasonableness of solutions: • Estimate to discover possible solutions. • Use benchmark quantities to determine if a solution makes sense. • Check calculations when solving problems. • Verify possible solutions by explaining the methods used. • Evaluate results based on the given context. **Clarifications:** Teachers who encourage students to assess the reasonableness of solutions: • Have students estimate or predict solutions prior to solving. • Prompt students to continually ask, "Does this solution make sense? How do you know?" • Reinforce that students check their work as they progress within and after a task. • Strengthen students' ability to verify solutions through justifications.
MA.K12.MTR.7.1:	**Apply mathematics to real-world contexts.** Mathematicians who apply mathematics to real-world contexts: • Connect mathematical concepts to everyday experiences. • Use models and methods to understand, represent and solve problems. • Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency. **Clarifications:** Teachers who encourage students to apply mathematics to real-world contexts: • Provide opportunities for students to create models, both concrete and abstract, and perform investigations. • Challenge students to question the accuracy of their models and methods. • Support students as they validate conclusions by comparing them to the given situation. • Indicate how various concepts can be applied to other disciplines.

ELA.K12.EE.1.1:	Cite evidence to explain and justify reasoning. **Clarifications:** K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing. 2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations. 4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they've directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor. 6-8 Students continue with previous skills and use a style guide to create a proper citation. 9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.
ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.
ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like "Why is the girl smiling?" or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
ELA.K12.EE.4.1:	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully. In grades 1-2, students build upon these skills by justifying what they are thinking. For example: "I think _______ because ______." The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
ELA.K12.EE.5.1:	Use the accepted rules governing a specific format to create quality work. **Clarifications:** Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.
ELA.K12.EE.6.1:	Use appropriate voice and tone when speaking or writing. **Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.
ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.

General Course Information and Notes

VERSION DESCRIPTION

In grade 3 accelerated, instructional time will emphasize five areas: (1) extending understanding of place value in multi-digit whole numbers; (2) adding and subtracting multi-digit whole numbers, including using a standard algorithm; (3) building an understanding of multiplication and division, the relationship between them and the connection to area of rectangles; (4) developing an understanding of fractions and (5) extending geometric reasoning to lines, angles and attributes of quadrilaterals.

Curricular content for all subjects must integrate critical-thinking, problem-solving, and workforce-literacy skills; communication, reading, and writing skills; mathematics skills; collaboration skills; contextual and applied-learning skills; technology-literacy skills; information and media-literacy skills; and civic-engagement skills.

General Notes

Honors and Accelerated Level Course Note: Accelerated courses require a greater demand on students through increased academic rigor. Academic rigor is obtained through the application, analysis, evaluation, and creation of complex ideas that are often abstract and multi-faceted. Students are challenged to think and collaborate critically on the content they are learning. Honors level rigor will be achieved by increasing text complexity through text selection, focus on high-level qualitative measures, and complexity of task. Instruction will be structured to give students a deeper understanding of conceptual themes and organization within and across disciplines. Academic rigor is more than simply assigning to students a greater quantity of work.

English Language Development ELD Standards Special Notes Section:

Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link: https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf

General Information

Course Number: 5012055

Course Path: **Section:** Grades PreK to 12 Education Courses > **Grade Group:** Grades PreK to 5 Education Courses > **Subject:** Mathematics > **SubSubject:** General Mathematics >

Abbreviated Title: GR 3 ACCEL MATH

Course Length: Year (Y)

Course Attributes:

- Class Size Core Required

Course Type: Core Academic Course

Course Level: 3

Course Status: State Board Approved

Grade Level(s): K,1,2,3,4,5

Educator Certifications

Elementary Education (Grades K-6)
Elementary Education (Elementary Grades 1-6)
Mathematics (Elementary Grades 1-6)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Grade Four Mathematics (#5012060) 2024 - And Beyond (current)

Course Standards

Name	Description
MA.4.AR.1.1:	Solve real-world problems involving multiplication and division of whole numbers including problems in which remainders must be interpreted within the context. **Clarifications:** *Clarification 1:* Problems involving multiplication include multiplicative comparisons. Refer to Situations Involving Operations with Numbers (Appendix A). *Clarification 2:* Depending on the context, the solution of a division problem with a remainder may be the whole number part of the quotient, the whole number part of the quotient with the remainder, the whole number part of the quotient plus 1, or the remainder. *Clarification 3:* Multiplication is limited to products of up to 3 digits by 2 digits. Division is limited to up to 4 digits divided by 1 digit.
MA.4.AR.1.2:	Solve real-world problems involving addition and subtraction of fractions with like denominators, including mixed numbers and fractions greater than one. **Clarifications:** *Clarification 1:* Problems include creating real-world situations based on an equation or representing a real-world problem with a visual model or equation. *Clarification 2:* Fractions within problems must reference the same whole. *Clarification 3:* Within this benchmark, the expectation is not to simplify or use lowest terms. *Clarification 4:* Denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, 16 and 100.
MA.4.AR.1.3:	Solve real-world problems involving multiplication of a fraction by a whole number or a whole number by a fraction. **Clarifications:** *Clarification 1:* Problems include creating real-world situations based on an equation or representing a real-world problem with a visual model or equation. *Clarification 2:* Fractions within problems must reference the same whole. *Clarification 3:* Within this benchmark, the expectation is not to simplify or use lowest terms. *Clarification 4:* Fractions limited to fractions less than one with denominators of 2, 3, 4, 5, 6, 8, 10, 12, 16 and 100.
MA.4.AR.2.1:	Determine and explain whether an equation involving any of the four operations with whole numbers is true or false. **Clarifications:** *Clarification 1:* Multiplication is limited to whole number factors within 12 and related division facts.
MA.4.AR.2.2:	Given a mathematical or real-world context, write an equation involving multiplication or division to determine the unknown whole number with the unknown in any position. **Clarifications:** *Clarification 1:* Instruction extends the development of algebraic thinking skills where the symbolic representation of the unknown uses a letter. *Clarification 2:* Problems include the unknown on either side of the equal sign. *Clarification 3:* Multiplication is limited to factors within 12 and related division facts.
MA.4.AR.3.1:	Determine factor pairs for a whole number from 0 to 144. Determine whether a whole number from 0 to 144 is prime, composite or neither. **Clarifications:** *Clarification 1:* Instruction includes the connection to the relationship between multiplication and division and patterns with divisibility rules. *Clarification 2:* The numbers 0 and 1 are neither prime nor composite.
MA.4.AR.3.2:	Generate, describe and extend a numerical pattern that follows a given rule. **Clarifications:** *Clarification 1:* Instruction includes patterns within a mathematical or real-world context.
MA.4.DP.1.1:	Collect and represent numerical data, including fractional values, using tables, stem-and-leaf plots or line plots. **Clarifications:** *Clarification 1:* Denominators are limited to 2, 3, 4, 5, 6, 8, 10, 12, 16 and 100.
MA.4.DP.1.2:	Determine the mode, median or range to interpret numerical data including fractional values, represented with tables, stem-and-leaf plots or line plots. **Clarifications:** *Clarification 1:* Instruction includes interpreting data within a real-world context. *Clarification 2:* Instruction includes recognizing that data sets can have one mode, no mode or more than one mode. *Clarification 3:* Within this benchmark, data sets are limited to an odd number when calculating the median. *Clarification 4:* Denominators are limited to 2, 3, 4, 5, 6, 8, 10, 12, 16 and 100.
	Solve real-world problems involving numerical data.

MA.4.DP.1.3:	**Clarifications:** *Clarification 1:* Instruction includes using any of the four operations to solve problems. *Clarification 2:* Data involving fractions with like denominators are limited to 2, 3, 4, 5, 6, 8, 10, 12, 16 and 100. Fractions can be greater than one. *Clarification 3:* Data involving decimals are limited to hundredths.
MA.4.FR.1.1:	Model and express a fraction, including mixed numbers and fractions greater than one, with the denominator 10 as an equivalent fraction with the denominator 100. **Clarifications:** *Clarification 1:* Instruction emphasizes conceptual understanding through the use of manipulatives, visual models, number lines or equations.
MA.4.FR.1.2:	Use decimal notation to represent fractions with denominators of 10 or 100, including mixed numbers and fractions greater than 1, and use fractional notation with denominators of 10 or 100 to represent decimals. **Clarifications:** *Clarification 1:* Instruction emphasizes conceptual understanding through the use of manipulatives visual models, number lines or equations. *Clarification 2:* Instruction includes the understanding that a decimal and fraction that are equivalent represent the same point on the number line and that fractions with denominators of 10 or powers of 10 may be called decimal fractions.
MA.4.FR.1.3:	Identify and generate equivalent fractions, including fractions greater than one. Describe how the numerator and denominator are affected when the equivalent fraction is created. **Clarifications:** *Clarification 1:* Instruction includes the use of manipulatives, visual models, number lines or equations. *Clarification 2:* Instruction includes recognizing how the numerator and denominator are affected when equivalent fractions are generated.
MA.4.FR.1.4:	Plot, order and compare fractions, including mixed numbers and fractions greater than one, with different numerators and different denominators. **Clarifications:** *Clarification 1:* When comparing fractions, instruction includes using an appropriately scaled number line and using reasoning about their size. *Clarification 2:* Instruction includes using benchmark quantities, such as 0, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ and 1, to compare fractions. *Clarification 3:* Denominators are limited to 2, 3, 4, 5, 6, 8, 10, 12, 16 and 100. *Clarification 4:* Within this benchmark, the expectation is to use symbols (<, > or =).
MA.4.FR.2.1:	Decompose a fraction, including mixed numbers and fractions greater than one, into a sum of fractions with the same denominator in multiple ways. Demonstrate each decomposition with objects, drawings and equations. **Clarifications:** *Clarification 1:* Denominators are limited to 2, 3, 4, 5, 6, 8, 10, 12, 16 and 100.
MA.4.FR.2.2:	Add and subtract fractions with like denominators, including mixed numbers and fractions greater than one, with procedural reliability. **Clarifications:** *Clarification 1:* Instruction includes the use of word form, manipulatives, drawings, the properties of operations or number lines. *Clarification 2:* Within this benchmark, the expectation is not to simplify or use lowest terms. *Clarification 3:* Denominators are limited to 2, 3, 4, 5, 6, 8, 10, 12, 16 and 100.
MA.4.FR.2.3:	Explore the addition of a fraction with denominator of 10 to a fraction with denominator of 100 using equivalent fractions. **Clarifications:** *Clarification 1:* Instruction includes the use of visual models. *Clarification 2:* Within this benchmark, the expectation is not to simplify or use lowest terms.
MA.4.FR.2.4:	Extend previous understanding of multiplication to explore the multiplication of a fraction by a whole number or a whole number by a fraction. **Clarifications:** *Clarification 1:* Instruction includes the use of visual models or number lines and the connection to the commutative property of multiplication. Refer to Properties of Operation, Equality and Inequality (Appendix D). *Clarification 2:* Within this benchmark, the expectation is not to simplify or use lowest terms. *Clarification 3:* Fractions multiplied by a whole number are limited to less than 1. All denominators are limited to 2, 3, 4, 5, 6, 8, 10, 12, 16, 100.
MA.4.GR.1.1:	Informally explore angles as an attribute of two-dimensional figures. Identify and classify angles as acute, right, obtuse, straight or reflex. **Clarifications:** *Clarification 1:* Instruction includes classifying angles using benchmark angles of 90° and 180° in two-dimensional figures. *Clarification 2:* When identifying angles, the expectation includes two-dimensional figures and real-world pictures.
MA.4.GR.1.2:	Estimate angle measures. Using a protractor, measure angles in whole-number degrees and draw angles of specified measure in whole-number degrees. Demonstrate that angle measure is additive. **Clarifications:** *Clarification 1:* Instruction includes measuring given angles and drawing angles using protractors. *Clarification 2:* Instruction includes estimating angle measures using benchmark angles (30°, 45°, 60°, 90° and 180°). *Clarification 3:* Instruction focuses on the understanding that angles can be decomposed into non-overlapping angles whose measures sum to the measure of the original angle.
MA.4.GR.1.3:	Solve real-world and mathematical problems involving unknown whole-number angle measures. Write an equation to represent the unknown. **Clarifications:** *Clarification 1:* Instruction includes the connection to angle measure as being additive.

MA.4.GR.2.1:	Solve perimeter and area mathematical and real-world problems, including problems with unknown sides, for rectangles with whole-number side lengths. **Clarifications:** *Clarification 1:* Instruction extends the development of algebraic thinking where the symbolic representation of the unknown uses a letter. *Clarification 2:* Problems involving multiplication are limited to products of up to 3 digits by 2 digits. Problems involving division are limited to up to 4 digits divided by 1 digit. *Clarification 3:* Responses include the appropriate units in word form.
MA.4.GR.2.2:	Solve problems involving rectangles with the same perimeter and different areas or with the same area and different perimeters. **Clarifications:** *Clarification 1:* Instruction focuses on the conceptual understanding of the relationship between perimeter and area. *Clarification 2:* Within this benchmark, rectangles are limited to having whole-number side lengths. *Clarification 3:* Problems involving multiplication are limited to products of up to 3 digits by 2 digits. Problems involving division are limited to up to 4 digits divided by 1 digit. *Clarification 4:* Responses include the appropriate units in word form.
MA.4.M.1.1:	Select and use appropriate tools to measure attributes of objects. **Clarifications:** *Clarification 1:* Attributes include length, volume, weight, mass and temperature. *Clarification 2:* Instruction includes digital measurements and scales that are not linear in appearance. *Clarification 3:* When recording measurements, use fractions and decimals where appropriate.
MA.4.M.1.2:	Convert within a single system of measurement using the units: yards, feet, inches; kilometers, meters, centimeters, millimeters; pounds, ounces; kilograms, grams; gallons, quarts, pints, cups; liter, milliliter; and hours, minutes, seconds. **Clarifications:** *Clarification 1:* Instruction includes the understanding of how to convert from smaller to larger units or from larger to smaller units. *Clarification 2:* Within the benchmark, the expectation is not to convert from grams to kilograms, meters to kilometers or milliliters to liters. *Clarification 3:* Problems involving fractions are limited to denominators of 2, 3, 4, 5, 6, 8, 10, 12, 16 and 100.
MA.4.M.2.1:	Solve two-step real-world problems involving distances and intervals of time using any combination of the four operations. **Clarifications:** *Clarification 1:* Problems involving fractions will include addition and subtraction with like denominators and multiplication of a fraction by a whole number or a whole number by a fraction. *Clarification 2:* Problems involving fractions are limited to denominators of 2, 3, 4, 5, 6, 8, 10, 12, 16 and 100. *Clarification 3:* Within the benchmark, the expectation is not to use decimals.
MA.4.M.2.2:	Solve one- and two-step addition and subtraction real-world problems involving money using decimal notation.
MA.4.NSO.1.1:	Express how the value of a digit in a multi-digit whole number changes if the digit moves one place to the left or right.
MA.4.NSO.1.2:	Read and write multi-digit whole numbers from 0 to 1,000,000 using standard form, expanded form and word form.
MA.4.NSO.1.3:	Plot, order and compare multi-digit whole numbers up to 1,000,000. **Clarifications:** *Clarification 1:* When comparing numbers, instruction includes using an appropriately scaled number line and using place values of the hundred thousands, ten thousands, thousands, hundreds, tens and ones digits. *Clarification 2:* Scaled number lines must be provided and can be a representation of any range of numbers. *Clarification 3:* Within this benchmark, the expectation is to use symbols (<, > or =).
MA.4.NSO.1.4:	Round whole numbers from 0 to 10,000 to the nearest 10, 100 or 1,000.
MA.4.NSO.1.5:	Plot, order and compare decimals up to the hundredths. **Clarifications:** *Clarification 1:* When comparing numbers, instruction includes using an appropriately scaled number line and using place values of the ones, tenths and hundredths digits. *Clarification 2:* Within the benchmark, the expectation is to explain the reasoning for the comparison and use symbols (<, > or =). *Clarification 3:* Scaled number lines must be provided and can be a representation of any range of numbers.
MA.4.NSO.2.1:	Recall multiplication facts with factors up to 12 and related division facts with automaticity.
MA.4.NSO.2.2:	Multiply two whole numbers, up to three digits by up to two digits, with procedural reliability. **Clarifications:** *Clarification 1:* Instruction focuses on helping a student choose a method they can use reliably. *Clarification 2:* Instruction includes the use of models or equations based on place value and the distributive property.
MA.4.NSO.2.3:	Multiply two whole numbers, each up to two digits, including using a standard algorithm with procedural fluency.
MA.4.NSO.2.4:	Divide a whole number up to four digits by a one-digit whole number with procedural reliability. Represent remainders as fractional parts of the divisor. **Clarifications:** *Clarification 1:* Instruction focuses on helping a student choose a method they can use reliably. *Clarification 2:* Instruction includes the use of models based on place value, properties of operations or the relationship between multiplication and division.
	Explore the multiplication and division of multi-digit whole numbers using estimation, rounding and place value. **Clarifications:**

MA.4.NSO.2.5:	*Clarification 1:* Instruction focuses on previous understanding of multiplication with multiples of 10 and 100, and seeing division as a missing factor problem. *Clarification 2:* Estimating quotients builds the foundation for division using a standard algorithm. *Clarification 3:* When estimating the division of whole numbers, dividends are limited to up to four digits and divisors are limited to up to two digits.
MA.4.NSO.2.6:	Identify the number that is one-tenth more, one-tenth less, one-hundredth more and one-hundredth less than a given number.
MA.4.NSO.2.7:	Explore the addition and subtraction of multi-digit numbers with decimals to the hundredths. **Clarifications:** *Clarification 1:* Instruction includes the connection to money and the use of manipulatives and models based on place value.
MA.K12.MTR.1.1:	**Actively participate in effortful learning both individually and collectively.** Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task. • Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach. **Clarifications:** Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging. • Develop students' ability to analyze and problem solve. • Recognize students' effort when solving challenging problems.
MA.K12.MTR.2.1:	**Demonstrate understanding by representing problems in multiple ways.** Mathematicians who demonstrate understanding by representing problems in multiple ways: • Build understanding through modeling and using manipulatives. • Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. • Progress from modeling problems with objects and drawings to using algorithms and equations. • Express connections between concepts and representations. • Choose a representation based on the given context or purpose. **Clarifications:** Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: • Help students make connections between concepts and representations. • Provide opportunities for students to use manipulatives when investigating concepts. • Guide students from concrete to pictorial to abstract representations as understanding progresses. • Show students that various representations can have different purposes and can be useful in different situations.
MA.K12.MTR.3.1:	**Complete tasks with mathematical fluency.** Mathematicians who complete tasks with mathematical fluency: • Select efficient and appropriate methods for solving problems within the given context. • Maintain flexibility and accuracy while performing procedures and mental calculations. • Complete tasks accurately and with confidence. • Adapt procedures to apply them to a new context. • Use feedback to improve efficiency when performing calculations. **Clarifications:** Teachers who encourage students to complete tasks with mathematical fluency: • Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately. • Offer multiple opportunities for students to practice efficient and generalizable methods. • Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.
MA.K12.MTR.4.1:	**Engage in discussions that reflect on the mathematical thinking of self and others.** Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others: • Communicate mathematical ideas, vocabulary and methods effectively. • Analyze the mathematical thinking of others. • Compare the efficiency of a method to those expressed by others. • Recognize errors and suggest how to correctly solve the task. • Justify results by explaining methods and processes. • Construct possible arguments based on evidence. **Clarifications:** Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: • Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning. • Create opportunities for students to discuss their thinking with peers. • Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. • Develop students' ability to justify methods and compare their responses to the responses of their peers.
	Use patterns and structure to help understand and connect mathematical concepts. Mathematicians who use patterns and structure to help understand and connect mathematical concepts:

MA.K12.MTR.5.1:	- Focus on relevant details within a problem. - Create plans and procedures to logically order events, steps or ideas to solve problems. - Decompose a complex problem into manageable parts. - Relate previously learned concepts to new concepts. - Look for similarities among problems. - Connect solutions of problems to more complicated large-scale situations. **Clarifications:** Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts: - Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts. - Support students to develop generalizations based on the similarities found among problems. - Provide opportunities for students to create plans and procedures to solve problems. - Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.
MA.K12.MTR.6.1:	**Assess the reasonableness of solutions.** Mathematicians who assess the reasonableness of solutions: - Estimate to discover possible solutions. - Use benchmark quantities to determine if a solution makes sense. - Check calculations when solving problems. - Verify possible solutions by explaining the methods used. - Evaluate results based on the given context. **Clarifications:** Teachers who encourage students to assess the reasonableness of solutions: - Have students estimate or predict solutions prior to solving. - Prompt students to continually ask, "Does this solution make sense? How do you know?" - Reinforce that students check their work as they progress within and after a task. - Strengthen students' ability to verify solutions through justifications.
MA.K12.MTR.7.1:	**Apply mathematics to real-world contexts.** Mathematicians who apply mathematics to real-world contexts: - Connect mathematical concepts to everyday experiences. - Use models and methods to understand, represent and solve problems. - Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency. **Clarifications:** Teachers who encourage students to apply mathematics to real-world contexts: - Provide opportunities for students to create models, both concrete and abstract, and perform investigations. - Challenge students to question the accuracy of their models and methods. - Support students as they validate conclusions by comparing them to the given situation. - Indicate how various concepts can be applied to other disciplines.
ELA.K12.EE.1.1:	Cite evidence to explain and justify reasoning. **Clarifications:** K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing. 2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations. 4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they've directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor. 6-8 Students continue with previous skills and use a style guide to create a proper citation. 9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.
ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.
ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like "Why is the girl smiling?" or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
ELA.K12.EE.4.1:	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully. In grades 1-2, students build upon these skills by justifying what they are thinking. For example: "I think _______ because ______." The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
	Use the accepted rules governing a specific format to create quality work.

ELA.K12.EE.5.1:	**Clarifications:** Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.
ELA.K12.EE.6.1:	Use appropriate voice and tone when speaking or writing. **Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.
ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.
ELD.K12.ELL.SI.1:	English language learners communicate for social and instructional purposes within the school setting.

General Course Information and Notes

VERSION DESCRIPTION

The benchmarks in this course are mastery goals that students are expected to attain by the end of the year. To build mastery, students will continue to review and apply earlier grade-level benchmarks and expectations.

General Notes

In grade 4, instructional time will emphasize four areas: (1) extending understanding of multi-digit multiplication and division; (2) developing the relationship between fractions and decimals and beginning operations with both; (3) classifying and measuring angles and (4) developing an understanding for interpreting data to include mode, median and range.

Curricular content for all subjects must integrate critical-thinking, problem-solving, and workforce-literacy skills; communication, reading, and writing skills; mathematics skills; collaboration skills; contextual and applied-learning skills; technology-literacy skills; information and media-literacy skills; and civic-engagement skills.

English Language Development ELD Standards Special Notes Section:
Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link:
https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf

General Information

Course Number: 5012060

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades PreK to 5 Education Courses > **Subject:** Mathematics > **SubSubject:** General Mathematics >

Abbreviated Title: GRADE FOUR MATH

Course Length: Year (Y)

Course Type: Core Academic Course

Course Level: 2

Course Status: State Board Approved

Grade Level(s): K,1,2,3,4,5

Educator Certifications

Elementary Education (Elementary Grades 1-6)
Mathematics (Elementary Grades 1-6)
Elementary Education (Grades K-6)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Grade 4 Accelerated Mathematics (#5012065) 2024 - And Beyond

(current)

Course Standards

Name	Description
MA.4.AR.1.1:	Solve real-world problems involving multiplication and division of whole numbers including problems in which remainders must be interpreted within the context. **Clarifications:** *Clarification 1:* Problems involving multiplication include multiplicative comparisons. Refer to Situations Involving Operations with Numbers (Appendix A). *Clarification 2:* Depending on the context, the solution of a division problem with a remainder may be the whole number part of the quotient, the whole number part of the quotient with the remainder, the whole number part of the quotient plus 1, or the remainder. *Clarification 3:* Multiplication is limited to products of up to 3 digits by 2 digits. Division is limited to up to 4 digits divided by 1 digit.
MA.4.AR.1.3:	Solve real-world problems involving multiplication of a fraction by a whole number or a whole number by a fraction. **Clarifications:** *Clarification 1:* Problems include creating real-world situations based on an equation or representing a real-world problem with a visual model or equation. *Clarification 2:* Fractions within problems must reference the same whole. *Clarification 3:* Within this benchmark, the expectation is not to simplify or use lowest terms. *Clarification 4:* Fractions limited to fractions less than one with denominators of 2, 3, 4, 5, 6, 8, 10, 12, 16 and 100.
MA.4.DP.1.1:	Collect and represent numerical data, including fractional values, using tables, stem-and-leaf plots or line plots. **Clarifications:** *Clarification 1:* Denominators are limited to 2, 3, 4, 5, 6, 8, 10, 12, 16 and 100.
MA.4.DP.1.2:	Determine the mode, median or range to interpret numerical data including fractional values, represented with tables, stem-and-leaf plots or line plots. **Clarifications:** *Clarification 1:* Instruction includes interpreting data within a real-world context. *Clarification 2:* Instruction includes recognizing that data sets can have one mode, no mode or more than one mode. *Clarification 3:* Within this benchmark, data sets are limited to an odd number when calculating the median. *Clarification 4:* Denominators are limited to 2, 3, 4, 5, 6, 8, 10, 12, 16 and 100.
MA.4.DP.1.3:	Solve real-world problems involving numerical data. **Clarifications:** *Clarification 1:* Instruction includes using any of the four operations to solve problems. *Clarification 2:* Data involving fractions with like denominators are limited to 2, 3, 4, 5, 6, 8, 10, 12, 16 and 100. Fractions can be greater than one. *Clarification 3:* Data involving decimals are limited to hundredths.
MA.4.FR.1.2:	Use decimal notation to represent fractions with denominators of 10 or 100, including mixed numbers and fractions greater than 1, and use fractional notation with denominators of 10 or 100 to represent decimals. **Clarifications:** *Clarification 1:* Instruction emphasizes conceptual understanding through the use of manipulatives visual models, number lines or equations. *Clarification 2:* Instruction includes the understanding that a decimal and fraction that are equivalent represent the same point on the number line and that fractions with denominators of 10 or powers of 10 may be called decimal fractions.
MA.4.FR.2.4:	Extend previous understanding of multiplication to explore the multiplication of a fraction by a whole number or a whole number by a fraction. **Clarifications:** *Clarification 1:* Instruction includes the use of visual models or number lines and the connection to the commutative property of multiplication. Refer to Properties of Operation, Equality and Inequality (Appendix D). *Clarification 2:* Within this benchmark, the expectation is not to simplify or use lowest terms. *Clarification 3:* Fractions multiplied by a whole number are limited to less than 1. All denominators are limited to 2, 3, 4, 5, 6, 8, 10, 12, 16, 100.
MA.4.M.1.1:	Select and use appropriate tools to measure attributes of objects. **Clarifications:** *Clarification 1:* Attributes include length, volume, weight, mass and temperature. *Clarification 2:* Instruction includes digital measurements and scales that are not linear in appearance. *Clarification 3:* When recording measurements, use fractions and decimals where appropriate.

MA.4.M.1.2:	Convert within a single system of measurement using the units: yards, feet, inches; kilometers, meters, centimeters, millimeters; pounds, ounces; kilograms, grams; gallons, quarts, pints, cups; liter, milliliter; and hours, minutes, seconds. **Clarifications:** *Clarification 1:* Instruction includes the understanding of how to convert from smaller to larger units or from larger to smaller units. *Clarification 2:* Within the benchmark, the expectation is not to convert from grams to kilograms, meters to kilometers or milliliters to liters. *Clarification 3:* Problems involving fractions are limited to denominators of 2, 3, 4, 5, 6, 8, 10, 12, 16 and 100.
MA.4.M.2.1:	Solve two-step real-world problems involving distances and intervals of time using any combination of the four operations. **Clarifications:** *Clarification 1:* Problems involving fractions will include addition and subtraction with like denominators and multiplication of a fraction by a whole number or a whole number by a fraction. *Clarification 2:* Problems involving fractions are limited to denominators of 2, 3, 4, 5, 6, 8, 10, 12, 16 and 100. *Clarification 3:* Within the benchmark, the expectation is not to use decimals.
MA.4.M.2.2:	Solve one- and two-step addition and subtraction real-world problems involving money using decimal notation.
MA.4.NSO.1.1:	Express how the value of a digit in a multi-digit whole number changes if the digit moves one place to the left or right.
MA.4.NSO.1.5:	Plot, order and compare decimals up to the hundredths. **Clarifications:** *Clarification 1:* When comparing numbers, instruction includes using an appropriately scaled number line and using place values of the ones, tenths and hundredths digits. *Clarification 2:* Within the benchmark, the expectation is to explain the reasoning for the comparison and use symbols (<, > or =). *Clarification 3:* Scaled number lines must be provided and can be a representation of any range of numbers.
MA.4.NSO.2.3:	Multiply two whole numbers, each up to two digits, including using a standard algorithm with procedural fluency.
MA.4.NSO.2.4:	Divide a whole number up to four digits by a one-digit whole number with procedural reliability. Represent remainders as fractional parts of the divisor. **Clarifications:** *Clarification 1:* Instruction focuses on helping a student choose a method they can use reliably. *Clarification 2:* Instruction includes the use of models based on place value, properties of operations or the relationship between multiplication and division.
MA.4.NSO.2.6:	Identify the number that is one-tenth more, one-tenth less, one-hundredth more and one-hundredth less than a given number.
MA.4.NSO.2.7:	Explore the addition and subtraction of multi-digit numbers with decimals to the hundredths. **Clarifications:** *Clarification 1:* Instruction includes the connection to money and the use of manipulatives and models based on place value.
MA.5.AR.1.1:	Solve multi-step real-world problems involving any combination of the four operations with whole numbers, including problems in which remainders must be interpreted within the context. **Clarifications:** *Clarification 1:* Depending on the context, the solution of a division problem with a remainder may be the whole number part of the quotient, the whole number part of the quotient with the remainder, the whole number part of the quotient plus 1, or the remainder.
MA.5.AR.1.2:	Solve real-world problems involving the addition, subtraction or multiplication of fractions, including mixed numbers and fractions greater than 1. **Clarifications:** *Clarification 1:* Instruction includes the use of visual models and equations to represent the problem.
MA.5.AR.1.3:	Solve real-world problems involving division of a unit fraction by a whole number and a whole number by a unit fraction. **Clarifications:** *Clarification 1:* Instruction includes the use of visual models and equations to represent the problem.
MA.5.AR.2.1:	Translate written real-world and mathematical descriptions into numerical expressions and numerical expressions into written mathematical descriptions. **Clarifications:** *Clarification 1:* Expressions are limited to any combination of the arithmetic operations, including parentheses, with whole numbers, decimals and fractions. *Clarification 2:* Within this benchmark, the expectation is not to include exponents or nested grouping symbols.
MA.5.AR.2.2:	Evaluate multi-step numerical expressions using order of operations. **Clarifications:** *Clarification 1:* Multi-step expressions are limited to any combination of arithmetic operations, including parentheses, with whole numbers, decimals and fractions. *Clarification 2:* Within this benchmark, the expectation is not to include exponents or nested grouping symbols. *Clarification 3:* Decimals are limited to hundredths. Expressions cannot include division of a fraction by a fraction.
MA.5.AR.2.3:	Determine and explain whether an equation involving any of the four operations is true or false. **Clarifications:** *Clarification 1:* Problem types include equations that include parenthesis but not nested parentheses. *Clarification 2:* Instruction focuses on the connection between properties of equality and order of operations.
MA.5.AR.2.4:	Given a mathematical or real-world context, write an equation involving any of the four operations to determine the unknown whole number with the unknown in any position. **Clarifications:** *Clarification 1:* Instruction extends the development of algebraic thinking where the unknown letter is recognized as a variable.

	Clarification 2: Problems include the unknown and different operations on either side of the equal sign
MA.5.AR.3.1:	Given a numerical pattern, identify and write a rule that can describe the pattern as an expression. **Clarifications:** *Clarification 1:* Rules are limited to one or two operations using whole numbers.
MA.5.AR.3.2:	Given a rule for a numerical pattern, use a two-column table to record the inputs and outputs. **Clarifications:** *Clarification 1:* Instruction builds a foundation for proportional and linear relationships in later grades. *Clarification 2:* Rules are limited to one or two operations using whole numbers.
MA.5.DP.1.1:	Collect and represent numerical data, including fractional and decimal values, using tables, line graphs or line plots. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is for an estimation of fractional and decimal heights on line graphs. *Clarification 2:* Decimal values are limited to hundredths. Denominators are limited to 1, 2, 3 and 4. Fractions can be greater than one.
MA.5.DP.1.2:	Interpret numerical data, with whole-number values, represented with tables or line plots by determining the mean, mode, median or range. **Clarifications:** *Clarification 1:* Instruction includes interpreting the mean in real-world problems as a leveling out, a balance point or an equal share.
MA.5.FR.1.1:	Given a mathematical or real-world problem, represent the division of two whole numbers as a fraction. **Clarifications:** *Clarification 1:* Instruction includes making a connection between fractions and division by understanding that fractions can also represent division of a numerator by a denominator. *Clarification 2:* Within this benchmark, the expectation is not to simplify or use lowest terms. *Clarification 3:* Fractions can include fractions greater than one.
MA.5.FR.2.1:	Add and subtract fractions with unlike denominators, including mixed numbers and fractions greater than 1, with procedural reliability. **Clarifications:** *Clarification 1:* Instruction includes the use of estimation, manipulatives, drawings or the properties of operations. *Clarification 2:* Instruction builds on the understanding from previous grades of factors up to 12 and their multiples.
MA.5.FR.2.2:	Extend previous understanding of multiplication to multiply a fraction by a fraction, including mixed numbers and fractions greater than 1, with procedural reliability. **Clarifications:** *Clarification 1:* Instruction includes the use of manipulatives, drawings or the properties of operations. *Clarification 2:* Denominators limited to whole numbers up to 20.
MA.5.FR.2.3:	When multiplying a given number by a fraction less than 1 or a fraction greater than 1, predict and explain the relative size of the product to the given number without calculating. **Clarifications:** *Clarification 1:* Instruction focuses on the connection to decimals, estimation and assessing the reasonableness of an answer.
MA.5.FR.2.4:	Extend previous understanding of division to explore the division of a unit fraction by a whole number and a whole number by a unit fraction. **Clarifications:** *Clarification 1:* Instruction includes the use of manipulatives, drawings or the properties of operations. *Clarification 2:* Refer to Situations Involving Operations with Numbers (Appendix A).
MA.5.GR.1.1:	Classify triangles or quadrilaterals into different categories based on shared defining attributes. Explain why a triangle or quadrilateral would or would not belong to a category. **Clarifications:** *Clarification 1:* Triangles include scalene, isosceles, equilateral, acute, obtuse and right; quadrilaterals include parallelograms, rhombi, rectangles, squares and trapezoids.
MA.5.GR.1.2:	Identify and classify three-dimensional figures into categories based on their defining attributes. Figures are limited to right pyramids, right prisms, right circular cylinders, right circular cones and spheres. **Clarifications:** *Clarification 1:* Defining attributes include the number and shape of faces, number and shape of bases, whether or not there is an apex, curved or straight edges and curved or flat faces.
MA.5.GR.2.1:	Find the perimeter and area of a rectangle with fractional or decimal side lengths using visual models and formulas. **Clarifications:** *Clarification 1:* Instruction includes finding the area of a rectangle with fractional side lengths by tiling it with squares having unit fraction side lengths and showing that the area is the same as would be found by multiplying the side lengths. *Clarification 2:* Responses include the appropriate units in word form.
MA.5.GR.3.1:	Explore volume as an attribute of three-dimensional figures by packing them with unit cubes without gaps. Find the volume of a right rectangular prism with whole-number side lengths by counting unit cubes. **Clarifications:** *Clarification 1:* Instruction emphasizes the conceptual understanding that volume is an attribute that can be measured for a three-dimensional figure. The measurement unit for volume is the volume of a unit cube, which is a cube with edge length of 1 unit.
	Find the volume of a right rectangular prism with whole-number side lengths using a visual model and a formula. **Clarifications:**

MA.5.GR.3.2:	*Clarification 1:* Instruction includes finding the volume of right rectangular prisms by packing the figure with unit cubes, using a visual model or applying a multiplication formula. *Clarification 2:* Right rectangular prisms cannot exceed two-digit edge lengths and responses include the appropriate units in word form.
MA.5.GR.3.3:	Solve real-world problems involving the volume of right rectangular prisms, including problems with an unknown edge length, with whole-number edge lengths using a visual model or a formula. Write an equation with a variable for the unknown to represent the problem. **Clarifications:** *Clarification 1:* Instruction progresses from right rectangular prisms to composite figures composed of right rectangular prisms. *Clarification 2:* When finding the volume of composite figures composed of right rectangular prisms, recognize volume as additive by adding the volume of non-overlapping parts. *Clarification 3:* Responses include the appropriate units in word form.
MA.5.GR.4.1:	Identify the origin and axes in the coordinate system. Plot and label ordered pairs in the first quadrant of the coordinate plane. **Clarifications:** *Clarification 1:* Instruction includes the connection between two-column tables and coordinates on a coordinate plane. *Clarification 2:* Instruction focuses on the connection of the number line to the x- and y-axis. *Clarification 3:* Coordinate planes include axes scaled by whole numbers. Ordered pairs contain only whole numbers.
MA.5.GR.4.2:	Represent mathematical and real-world problems by plotting points in the first quadrant of the coordinate plane and interpret coordinate values of points in the context of the situation. **Clarifications:** *Clarification 1:* Coordinate planes include axes scaled by whole numbers. Ordered pairs contain only whole numbers.
MA.5.M.1.1:	Solve multi-step real-world problems that involve converting measurement units to equivalent measurements within a single system of measurement. **Clarifications:** *Clarification 1:* Within the benchmark, the expectation is not to memorize the conversions. *Clarification 2:* Conversions include length, time, volume and capacity represented as whole numbers, fractions and decimals.
MA.5.M.2.1:	Solve multi-step real-world problems involving money using decimal notation.
MA.5.NSO.1.1:	Express how the value of a digit in a multi-digit number with decimals to the thousandths changes if the digit moves one or more places to the left or right.
MA.5.NSO.1.2:	Read and write multi-digit numbers with decimals to the thousandths using standard form, word form and expanded form.
MA.5.NSO.1.3:	Compose and decompose multi-digit numbers with decimals to the thousandths in multiple ways using the values of the digits in each place. Demonstrate the compositions or decompositions using objects, drawings and expressions or equations.
MA.5.NSO.1.4:	Plot, order and compare multi-digit numbers with decimals up to the thousandths. **Clarifications:** *Clarification 1:* When comparing numbers, instruction includes using an appropriately scaled number line and using place values of digits. *Clarification 2:* Scaled number lines must be provided and can be a representation of any range of numbers. *Clarification 3:* Within this benchmark, the expectation is to use symbols (<, > or =).
MA.5.NSO.1.5:	Round multi-digit numbers with decimals to the thousandths to the nearest hundredth, tenth or whole number.
MA.5.NSO.2.1:	Multiply multi-digit whole numbers including using a standard algorithm with procedural fluency.
MA.5.NSO.2.2:	Divide multi-digit whole numbers, up to five digits by two digits, including using a standard algorithm with procedural fluency. Represent remainders as fractions. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is not to use simplest form for fractions.
MA.5.NSO.2.3:	Add and subtract multi-digit numbers with decimals to the thousandths, including using a standard algorithm with procedural fluency.
MA.5.NSO.2.4:	Explore the multiplication and division of multi-digit numbers with decimals to the hundredths using estimation, rounding and place value. **Clarifications:** *Clarification 1:* Estimating quotients builds the foundation for division using a standard algorithm. *Clarification 2:* Instruction includes the use of models based on place value and the properties of operations.
MA.5.NSO.2.5:	Multiply and divide a multi-digit number with decimals to the tenths by one-tenth and one-hundredth with procedural reliability. **Clarifications:** *Clarification 1:* Instruction focuses on the place value of the digit when multiplying or dividing.
MA.K12.MTR.1.1:	**Actively participate in effortful learning both individually and collectively.** Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task. • Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach. **Clarifications:** Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging.

	• Develop students' ability to analyze and problem solve. • Recognize students' effort when solving challenging problems.
MA.K12.MTR.2.1:	**Demonstrate understanding by representing problems in multiple ways.** Mathematicians who demonstrate understanding by representing problems in multiple ways: • Build understanding through modeling and using manipulatives. • Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. • Progress from modeling problems with objects and drawings to using algorithms and equations. • Express connections between concepts and representations. • Choose a representation based on the given context or purpose. **Clarifications:** Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: • Help students make connections between concepts and representations. • Provide opportunities for students to use manipulatives when investigating concepts. • Guide students from concrete to pictorial to abstract representations as understanding progresses. • Show students that various representations can have different purposes and can be useful in different situations.
MA.K12.MTR.3.1:	**Complete tasks with mathematical fluency.** Mathematicians who complete tasks with mathematical fluency: • Select efficient and appropriate methods for solving problems within the given context. • Maintain flexibility and accuracy while performing procedures and mental calculations. • Complete tasks accurately and with confidence. • Adapt procedures to apply them to a new context. • Use feedback to improve efficiency when performing calculations. **Clarifications:** Teachers who encourage students to complete tasks with mathematical fluency: • Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately. • Offer multiple opportunities for students to practice efficient and generalizable methods. • Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.
MA.K12.MTR.4.1:	**Engage in discussions that reflect on the mathematical thinking of self and others.** Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others: • Communicate mathematical ideas, vocabulary and methods effectively. • Analyze the mathematical thinking of others. • Compare the efficiency of a method to those expressed by others. • Recognize errors and suggest how to correctly solve the task. • Justify results by explaining methods and processes. • Construct possible arguments based on evidence. **Clarifications:** Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: • Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning. • Create opportunities for students to discuss their thinking with peers. • Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. • Develop students' ability to justify methods and compare their responses to the responses of their peers.
MA.K12.MTR.5.1:	**Use patterns and structure to help understand and connect mathematical concepts.** Mathematicians who use patterns and structure to help understand and connect mathematical concepts: • Focus on relevant details within a problem. • Create plans and procedures to logically order events, steps or ideas to solve problems. • Decompose a complex problem into manageable parts. • Relate previously learned concepts to new concepts. • Look for similarities among problems. • Connect solutions of problems to more complicated large-scale situations. **Clarifications:** Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts: • Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts. • Support students to develop generalizations based on the similarities found among problems. • Provide opportunities for students to create plans and procedures to solve problems. • Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.
MA.K12.MTR.6.1:	**Assess the reasonableness of solutions.** Mathematicians who assess the reasonableness of solutions: • Estimate to discover possible solutions. • Use benchmark quantities to determine if a solution makes sense. • Check calculations when solving problems. • Verify possible solutions by explaining the methods used. • Evaluate results based on the given context. **Clarifications:** Teachers who encourage students to assess the reasonableness of solutions: • Have students estimate or predict solutions prior to solving.

	• Prompt students to continually ask, “Does this solution make sense? How do you know?” • Reinforce that students check their work as they progress within and after a task. • Strengthen students’ ability to verify solutions through justifications.
MA.K12.MTR.7.1:	**Apply mathematics to real-world contexts.** Mathematicians who apply mathematics to real-world contexts: • Connect mathematical concepts to everyday experiences. • Use models and methods to understand, represent and solve problems. • Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency. **Clarifications:** Teachers who encourage students to apply mathematics to real-world contexts: • Provide opportunities for students to create models, both concrete and abstract, and perform investigations. • Challenge students to question the accuracy of their models and methods. • Support students as they validate conclusions by comparing them to the given situation. • Indicate how various concepts can be applied to other disciplines.
ELA.K12.EE.1.1:	Cite evidence to explain and justify reasoning. **Clarifications:** K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing. 2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations. 4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they’ve directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor. 6-8 Students continue with previous skills and use a style guide to create a proper citation. 9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.
ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.
ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like “Why is the girl smiling?” or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
ELA.K12.EE.4.1:	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully. In grades 1-2, students build upon these skills by justifying what they are thinking. For example: “I think _______ because ______.” The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
ELA.K12.EE.5.1:	Use the accepted rules governing a specific format to create quality work. **Clarifications:** Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.
ELA.K12.EE.6.1:	Use appropriate voice and tone when speaking or writing. **Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.
ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.

General Course Information and Notes

VERSION DESCRIPTION

In grade 4 accelerated, instructional time will emphasize six areas: (1) developing the relationship between fractions and decimals; (2) multiplying and dividing multi-digit whole numbers, including using a standard algorithm; (3) adding and subtracting fractions and decimals with procedural fluency, developing an understanding of multiplication and division of fractions and decimals; (4) developing an understanding of the coordinate plane and plotting pairs of numbers in the first quadrant; (5) extending geometric reasoning to include volume and (6) developing an understanding for interpreting data to include mean, mode, median and range.

Curricular content for all subjects must integrate critical-thinking, problem-solving, and workforce-literacy skills; communication, reading, and writing skills; mathematics skills; collaboration skills; contextual and applied-learning skills; technology-literacy skills; information and media-literacy skills; and civic-engagement skills.

General Notes

Honors and Accelerated Level Course Note: Accelerated courses require a greater demand on students through increased academic rigor. Academic rigor is obtained through the application, analysis, evaluation, and creation of complex ideas that are often abstract and multi-faceted. Students are challenged to think and collaborate critically on the content they are learning. Honors level rigor will be achieved by increasing text complexity through text selection, focus on high-level qualitative measures, and complexity of task. Instruction will be structured to give students a deeper understanding of conceptual themes and organization within and across disciplines. Academic rigor is more than simply assigning to students a greater quantity of work.

English Language Development ELD Standards Special Notes Section:

Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link: https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf

General Information

Course Number: 5012065

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades PreK to 5 Education Courses > **Subject:** Mathematics > **SubSubject:** General Mathematics >

Abbreviated Title: GR 4 ACCEL MATH

Course Length: Year (Y)

Course Attributes:

- Class Size Core Required

Course Type: Core Academic Course

Course Level: 3

Course Status: State Board Approved

Grade Level(s): K,1,2,3,4,5

Educator Certifications

Elementary Education (Elementary Grades 1-6)
Elementary Education (Grades K-6)
Mathematics (Elementary Grades 1-6)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Grade Five Mathematics (#5012070) 2024 - And Beyond (current)

Course Standards

Name	Description
MA.5.AR.1.1:	Solve multi-step real-world problems involving any combination of the four operations with whole numbers, including problems in which remainders must be interpreted within the context. **Clarifications:** *Clarification 1:* Depending on the context, the solution of a division problem with a remainder may be the whole number part of the quotient, the whole number part of the quotient with the remainder, the whole number part of the quotient plus 1, or the remainder.
MA.5.AR.1.2:	Solve real-world problems involving the addition, subtraction or multiplication of fractions, including mixed numbers and fractions greater than 1. **Clarifications:** *Clarification 1:* Instruction includes the use of visual models and equations to represent the problem.
MA.5.AR.1.3:	Solve real-world problems involving division of a unit fraction by a whole number and a whole number by a unit fraction. **Clarifications:** *Clarification 1:* Instruction includes the use of visual models and equations to represent the problem.
MA.5.AR.2.1:	Translate written real-world and mathematical descriptions into numerical expressions and numerical expressions into written mathematical descriptions. **Clarifications:** *Clarification 1:* Expressions are limited to any combination of the arithmetic operations, including parentheses, with whole numbers, decimals and fractions. *Clarification 2:* Within this benchmark, the expectation is not to include exponents or nested grouping symbols.
MA.5.AR.2.2:	Evaluate multi-step numerical expressions using order of operations. **Clarifications:** *Clarification 1:* Multi-step expressions are limited to any combination of arithmetic operations, including parentheses, with whole numbers, decimals and fractions. *Clarification 2:* Within this benchmark, the expectation is not to include exponents or nested grouping symbols. *Clarification 3:* Decimals are limited to hundredths. Expressions cannot include division of a fraction by a fraction.
MA.5.AR.2.3:	Determine and explain whether an equation involving any of the four operations is true or false. **Clarifications:** *Clarification 1:* Problem types include equations that include parenthesis but not nested parentheses. *Clarification 2:* Instruction focuses on the connection between properties of equality and order of operations.
MA.5.AR.2.4:	Given a mathematical or real-world context, write an equation involving any of the four operations to determine the unknown whole number with the unknown in any position. **Clarifications:** *Clarification 1:* Instruction extends the development of algebraic thinking where the unknown letter is recognized as a variable. *Clarification 2:* Problems include the unknown and different operations on either side of the equal sign
MA.5.AR.3.1:	Given a numerical pattern, identify and write a rule that can describe the pattern as an expression. **Clarifications:** *Clarification 1:* Rules are limited to one or two operations using whole numbers.
MA.5.AR.3.2:	Given a rule for a numerical pattern, use a two-column table to record the inputs and outputs. **Clarifications:** *Clarification 1:* Instruction builds a foundation for proportional and linear relationships in later grades. *Clarification 2:* Rules are limited to one or two operations using whole numbers.
MA.5.DP.1.1:	Collect and represent numerical data, including fractional and decimal values, using tables, line graphs or line plots. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is for an estimation of fractional and decimal heights on line graphs. *Clarification 2:* Decimal values are limited to hundredths. Denominators are limited to 1, 2, 3 and 4. Fractions can be greater than one.
MA.5.DP.1.2:	Interpret numerical data, with whole-number values, represented with tables or line plots by determining the mean, mode, median or range. **Clarifications:** *Clarification 1:* Instruction includes interpreting the mean in real-world problems as a leveling out, a balance point or an equal share.
MA.5.FR.1.1:	Given a mathematical or real-world problem, represent the division of two whole numbers as a fraction. **Clarifications:** *Clarification 1:* Instruction includes making a connection between fractions and division by understanding that fractions can also represent division of a numerator by a denominator. *Clarification 2:* Within this benchmark, the expectation is not to simplify or use lowest terms. *Clarification 3:* Fractions can include fractions greater than one.

MA.5.FR.2.1:	Add and subtract fractions with unlike denominators, including mixed numbers and fractions greater than 1, with procedural reliability. **Clarifications:** *Clarification 1:* Instruction includes the use of estimation, manipulatives, drawings or the properties of operations. *Clarification 2:* Instruction builds on the understanding from previous grades of factors up to 12 and their multiples.
MA.5.FR.2.2:	Extend previous understanding of multiplication to multiply a fraction by a fraction, including mixed numbers and fractions greater than 1, with procedural reliability. **Clarifications:** *Clarification 1:* Instruction includes the use of manipulatives, drawings or the properties of operations. *Clarification 2:* Denominators limited to whole numbers up to 20.
MA.5.FR.2.3:	When multiplying a given number by a fraction less than 1 or a fraction greater than 1, predict and explain the relative size of the product to the given number without calculating. **Clarifications:** *Clarification 1:* Instruction focuses on the connection to decimals, estimation and assessing the reasonableness of an answer.
MA.5.FR.2.4:	Extend previous understanding of division to explore the division of a unit fraction by a whole number and a whole number by a unit fraction. **Clarifications:** *Clarification 1:* Instruction includes the use of manipulatives, drawings or the properties of operations. *Clarification 2:* Refer to Situations Involving Operations with Numbers (Appendix A).
MA.5.GR.1.1:	Classify triangles or quadrilaterals into different categories based on shared defining attributes. Explain why a triangle or quadrilateral would or would not belong to a category. **Clarifications:** *Clarification 1:* Triangles include scalene, isosceles, equilateral, acute, obtuse and right; quadrilaterals include parallelograms, rhombi, rectangles, squares and trapezoids.
MA.5.GR.1.2:	Identify and classify three-dimensional figures into categories based on their defining attributes. Figures are limited to right pyramids, right prisms, right circular cylinders, right circular cones and spheres. **Clarifications:** *Clarification 1:* Defining attributes include the number and shape of faces, number and shape of bases, whether or not there is an apex, curved or straight edges and curved or flat faces.
MA.5.GR.2.1:	Find the perimeter and area of a rectangle with fractional or decimal side lengths using visual models and formulas. **Clarifications:** *Clarification 1:* Instruction includes finding the area of a rectangle with fractional side lengths by tiling it with squares having unit fraction side lengths and showing that the area is the same as would be found by multiplying the side lengths. *Clarification 2:* Responses include the appropriate units in word form.
MA.5.GR.3.1:	Explore volume as an attribute of three-dimensional figures by packing them with unit cubes without gaps. Find the volume of a right rectangular prism with whole-number side lengths by counting unit cubes. **Clarifications:** *Clarification 1:* Instruction emphasizes the conceptual understanding that volume is an attribute that can be measured for a three-dimensional figure. The measurement unit for volume is the volume of a unit cube, which is a cube with edge length of 1 unit.
MA.5.GR.3.2:	Find the volume of a right rectangular prism with whole-number side lengths using a visual model and a formula. **Clarifications:** *Clarification 1:* Instruction includes finding the volume of right rectangular prisms by packing the figure with unit cubes, using a visual model or applying a multiplication formula. *Clarification 2:* Right rectangular prisms cannot exceed two-digit edge lengths and responses include the appropriate units in word form.
MA.5.GR.3.3:	Solve real-world problems involving the volume of right rectangular prisms, including problems with an unknown edge length, with whole-number edge lengths using a visual model or a formula. Write an equation with a variable for the unknown to represent the problem. **Clarifications:** *Clarification 1:* Instruction progresses from right rectangular prisms to composite figures composed of right rectangular prisms. *Clarification 2:* When finding the volume of composite figures composed of right rectangular prisms, recognize volume as additive by adding the volume of non-overlapping parts. *Clarification 3:* Responses include the appropriate units in word form.
MA.5.GR.4.1:	Identify the origin and axes in the coordinate system. Plot and label ordered pairs in the first quadrant of the coordinate plane. **Clarifications:** *Clarification 1:* Instruction includes the connection between two-column tables and coordinates on a coordinate plane. *Clarification 2:* Instruction focuses on the connection of the number line to the x- and y-axis. *Clarification 3:* Coordinate planes include axes scaled by whole numbers. Ordered pairs contain only whole numbers.
MA.5.GR.4.2:	Represent mathematical and real-world problems by plotting points in the first quadrant of the coordinate plane and interpret coordinate values of points in the context of the situation. **Clarifications:** *Clarification 1:* Coordinate planes include axes scaled by whole numbers. Ordered pairs contain only whole numbers.
MA.5.M.1.1:	Solve multi-step real-world problems that involve converting measurement units to equivalent measurements within a single system of measurement. **Clarifications:** *Clarification 1:* Within the benchmark, the expectation is not to memorize the conversions.

	Clarification 2: Conversions include length, time, volume and capacity represented as whole numbers, fractions and decimals.
MA.5.M.2.1:	Solve multi-step real-world problems involving money using decimal notation.
MA.5.NSO.1.1:	Express how the value of a digit in a multi-digit number with decimals to the thousandths changes if the digit moves one or more places to the left or right.
MA.5.NSO.1.2:	Read and write multi-digit numbers with decimals to the thousandths using standard form, word form and expanded form.
MA.5.NSO.1.3:	Compose and decompose multi-digit numbers with decimals to the thousandths in multiple ways using the values of the digits in each place. Demonstrate the compositions or decompositions using objects, drawings and expressions or equations.
MA.5.NSO.1.4:	Plot, order and compare multi-digit numbers with decimals up to the thousandths. **Clarifications:** *Clarification 1:* When comparing numbers, instruction includes using an appropriately scaled number line and using place values of digits. *Clarification 2:* Scaled number lines must be provided and can be a representation of any range of numbers. *Clarification 3:* Within this benchmark, the expectation is to use symbols (<, > or =).
MA.5.NSO.1.5:	Round multi-digit numbers with decimals to the thousandths to the nearest hundredth, tenth or whole number.
MA.5.NSO.2.1:	Multiply multi-digit whole numbers including using a standard algorithm with procedural fluency.
MA.5.NSO.2.2:	Divide multi-digit whole numbers, up to five digits by two digits, including using a standard algorithm with procedural fluency. Represent remainders as fractions. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is not to use simplest form for fractions.
MA.5.NSO.2.3:	Add and subtract multi-digit numbers with decimals to the thousandths, including using a standard algorithm with procedural fluency.
MA.5.NSO.2.4:	Explore the multiplication and division of multi-digit numbers with decimals to the hundredths using estimation, rounding and place value. **Clarifications:** *Clarification 1:* Estimating quotients builds the foundation for division using a standard algorithm. *Clarification 2:* Instruction includes the use of models based on place value and the properties of operations.
MA.5.NSO.2.5:	Multiply and divide a multi-digit number with decimals to the tenths by one-tenth and one-hundredth with procedural reliability. **Clarifications:** *Clarification 1:* Instruction focuses on the place value of the digit when multiplying or dividing.
MA.K12.MTR.1.1:	**Actively participate in effortful learning both individually and collectively.** Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task. • Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach. **Clarifications:** Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging. • Develop students’ ability to analyze and problem solve. • Recognize students’ effort when solving challenging problems.
MA.K12.MTR.2.1:	**Demonstrate understanding by representing problems in multiple ways.** Mathematicians who demonstrate understanding by representing problems in multiple ways: • Build understanding through modeling and using manipulatives. • Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. • Progress from modeling problems with objects and drawings to using algorithms and equations. • Express connections between concepts and representations. • Choose a representation based on the given context or purpose. **Clarifications:** Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: • Help students make connections between concepts and representations. • Provide opportunities for students to use manipulatives when investigating concepts. • Guide students from concrete to pictorial to abstract representations as understanding progresses. • Show students that various representations can have different purposes and can be useful in different situations.
MA.K12.MTR.3.1:	**Complete tasks with mathematical fluency.** Mathematicians who complete tasks with mathematical fluency: • Select efficient and appropriate methods for solving problems within the given context. • Maintain flexibility and accuracy while performing procedures and mental calculations. • Complete tasks accurately and with confidence. • Adapt procedures to apply them to a new context. • Use feedback to improve efficiency when performing calculations. **Clarifications:** Teachers who encourage students to complete tasks with mathematical fluency: • Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately.

	- Offer multiple opportunities for students to practice efficient and generalizable methods. - Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.
MA.K12.MTR.4.1:	**Engage in discussions that reflect on the mathematical thinking of self and others.** Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others: - Communicate mathematical ideas, vocabulary and methods effectively. - Analyze the mathematical thinking of others. - Compare the efficiency of a method to those expressed by others. - Recognize errors and suggest how to correctly solve the task. - Justify results by explaining methods and processes. - Construct possible arguments based on evidence. **Clarifications:** Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: - Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning. - Create opportunities for students to discuss their thinking with peers. - Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. - Develop students' ability to justify methods and compare their responses to the responses of their peers.
MA.K12.MTR.5.1:	**Use patterns and structure to help understand and connect mathematical concepts.** Mathematicians who use patterns and structure to help understand and connect mathematical concepts: - Focus on relevant details within a problem. - Create plans and procedures to logically order events, steps or ideas to solve problems. - Decompose a complex problem into manageable parts. - Relate previously learned concepts to new concepts. - Look for similarities among problems. - Connect solutions of problems to more complicated large-scale situations. **Clarifications:** Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts: - Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts. - Support students to develop generalizations based on the similarities found among problems. - Provide opportunities for students to create plans and procedures to solve problems. - Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.
MA.K12.MTR.6.1:	**Assess the reasonableness of solutions.** Mathematicians who assess the reasonableness of solutions: - Estimate to discover possible solutions. - Use benchmark quantities to determine if a solution makes sense. - Check calculations when solving problems. - Verify possible solutions by explaining the methods used. - Evaluate results based on the given context. **Clarifications:** Teachers who encourage students to assess the reasonableness of solutions: - Have students estimate or predict solutions prior to solving. - Prompt students to continually ask, "Does this solution make sense? How do you know?" - Reinforce that students check their work as they progress within and after a task. - Strengthen students' ability to verify solutions through justifications.
MA.K12.MTR.7.1:	**Apply mathematics to real-world contexts.** Mathematicians who apply mathematics to real-world contexts: - Connect mathematical concepts to everyday experiences. - Use models and methods to understand, represent and solve problems. - Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency. **Clarifications:** Teachers who encourage students to apply mathematics to real-world contexts: - Provide opportunities for students to create models, both concrete and abstract, and perform investigations. - Challenge students to question the accuracy of their models and methods. - Support students as they validate conclusions by comparing them to the given situation. - Indicate how various concepts can be applied to other disciplines.
ELA.K12.EE.1.1:	Cite evidence to explain and justify reasoning. **Clarifications:** K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing. 2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations. 4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they've directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor. 6-8 Students continue with previous skills and use a style guide to create a proper citation.

	9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.
ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.
ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like “Why is the girl smiling?” or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
ELA.K12.EE.4.1:	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully. In grades 1-2, students build upon these skills by justifying what they are thinking. For example: “I think _______ because ______.” The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
ELA.K12.EE.5.1:	Use the accepted rules governing a specific format to create quality work. **Clarifications:** Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.
ELA.K12.EE.6.1:	Use appropriate voice and tone when speaking or writing. **Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.
ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.
ELD.K12.ELL.SI.1:	English language learners communicate for social and instructional purposes within the school setting.

General Course Information and Notes

VERSION DESCRIPTION

The benchmarks in this course are mastery goals that students are expected to attain by the end of the year. To build mastery, students will continue to review and apply earlier grade-level benchmarks and expectations.

General Notes

In grade 5, instructional time will emphasize five areas: (1) multiplying and dividing multi-digit whole numbers, including using a standard algorithm; (2) adding and subtracting fractions and decimals with procedural fluency, developing an understanding of multiplication and division of fractions and decimals; (3) developing an understanding of the coordinate plane and plotting pairs of numbers in the first quadrant; (4) extending geometric reasoning to include volume and (5) extending understanding of data to include the mean.

Curricular content for all subjects must integrate critical-thinking, problem-solving, and workforce-literacy skills; communication, reading, and writing skills; mathematics skills; collaboration skills; contextual and applied-learning skills; technology-literacy skills; information and media-literacy skills; and civic-engagement skills.

English Language Development ELD Standards Special Notes Section:
Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL’s need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link:
https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf

General Information

Course Number: 5012070

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades PreK to 5 Education Courses > **Subject:** Mathematics > **SubSubject:** General Mathematics >

Abbreviated Title: GRADE FIVE MATH

Course Length: Year (Y)

Course Type: Core Academic Course

Course Level: 2

Course Status: State Board Approved

Grade Level(s): K,1,2,3,4,5

Educator Certifications

Elementary Education (Elementary Grades 1-6)
Mathematics (Elementary Grades 1-6)
Middle Grades Mathematics (Middle Grades 5-9)
Elementary Education (Grades K-6)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

M/J Mathematics Transfer (#1200220) 2015 - And Beyond (current)

General Course Information and Notes

General Notes

SUBJECT AREA TRANSFER NUMBERS

Each course transferred into a Florida public school by an out-of-state or non-public school student should be matched with a course title and number when such course provides substantially the same content. However, a few transfer courses may not be close enough in content to be matched. For those courses a subject area transfer number is provided.

General Information

Course Number: 1200220

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 6 to 8 Education Courses > **Subject:** Mathematics > **SubSubject:** General Mathematics >

Abbreviated Title: M/J MATH TRAN

Course Length: Year (Y)

Course Type: Transfer Course

Course Status: Course Approved

Grade Level(s): 6,7,8

M/J Foundational Skills in Mathematics 6-8 (#1204000) 2024 - And Beyond (current)

Course Standards

Name	Description
MA.6.AR.1.1:	Given a mathematical or real-world context, translate written descriptions into algebraic expressions and translate algebraic expressions into written descriptions.
MA.6.AR.1.2:	Translate a real-world written description into an algebraic inequality in the form of $x > a$, $x < a$, $x \geq a$ or $x \leq a$. Represent the inequality on a number line. **Clarifications:** *Clarification 1:* Variables may be on the left or right side of the inequality symbol.
MA.6.AR.1.3:	Evaluate algebraic expressions using substitution and order of operations. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is to perform all operations with integers. *Clarification 2:* Refer to Properties of Operations, Equality and Inequality (Appendix D).
MA.6.AR.1.4:	Apply the properties of operations to generate equivalent algebraic expressions with integer coefficients. **Clarifications:** *Clarification 1:* Properties include associative, commutative and distributive. *Clarification 2:* Refer to Properties of Operations, Equality and Inequality (Appendix D).
MA.6.AR.2.1:	Given an equation or inequality and a specified set of integer values, determine which values make the equation or inequality true or false. **Clarifications:** *Clarification 1:* Problems include the variable in multiple terms or on either side of the equal sign or inequality symbol.
MA.6.AR.2.2:	Write and solve one-step equations in one variable within a mathematical or real-world context using addition and subtraction, where all terms and solutions are integers. **Clarifications:** *Clarification 1:* Instruction includes using manipulatives, drawings, number lines and inverse operations. *Clarification 2:* Instruction includes equations in the forms x+p=q and p+x=q, where x,p and q are any integer. *Clarification 3:* Problems include equations where the variable may be on either side of the equal sign.
MA.6.AR.2.3:	Write and solve one-step equations in one variable within a mathematical or real-world context using multiplication and division, where all terms and solutions are integers. **Clarifications:** *Clarification 1*: Instruction includes using manipulatives, drawings, number lines and inverse operations. *Clarification 2*: Instruction includes equations in the forms $x/p = q$, where $p \neq 0$, and $px = q$. *Clarification 3*: Problems include equations where the variable may be on either side of the equal sign.
MA.6.AR.2.4:	Determine the unknown decimal or fraction in an equation involving any of the four operations, relating three numbers, with the unknown in any position. **Clarifications:** *Clarification 1:* Instruction focuses on using algebraic reasoning, drawings, and mental math to determine unknowns. *Clarification 2:* Problems include the unknown and different operations on either side of the equal sign. All terms and solutions are limited to positive rational numbers.
MA.6.AR.3.1:	Given a real-world context, write and interpret ratios to show the relative sizes of two quantities using appropriate notation: $\frac{a}{b}$, a to b, or a:b where b $\neq 0$. **Clarifications:** *Clarification 1:* Instruction focuses on the understanding that a ratio can be described as a comparison of two quantities in either the same or different units. *Clarification 2:* Instruction includes using manipulatives, drawings, models and words to interpret part-to-part ratios and part-to-whole ratios. *Clarification 3:* The values of a and b are limited to whole numbers.
MA.6.AR.3.2:	Given a real-world context, determine a rate for a ratio of quantities with different units. Calculate and interpret the corresponding unit rate. **Clarifications:** *Clarification 1:* Instruction includes using manipulatives, drawings, models and words and making connections between ratios, rates and unit rates. *Clarification 2:* Problems will not include conversions between customary and metric systems.
	Extend previous understanding of fractions and numerical patterns to generate or complete a two- or three-column table to display equivalent part-

	to-part ratios and part-to-part-to-whole ratios.
MA.6.AR.3.3:	**Clarifications:** *Clarification 1:* Instruction includes using two-column tables (e.g., a relationship between two variables) and three-column tables (e.g., part-to-part-to-whole relationship) to generate conversion charts and mixture charts.
MA.6.AR.3.4:	Apply ratio relationships to solve mathematical and real-world problems involving percentages using the relationship between two quantities. **Clarifications:** *Clarification 1:* Instruction includes the comparison of $\frac{part}{whole}$ to $\frac{percent}{100}$ in order to determine the percent, the part or the whole.
MA.6.AR.3.5:	Solve mathematical and real-world problems involving ratios, rates and unit rates, including comparisons, mixtures, ratios of lengths and conversions within the same measurement system. **Clarifications:** *Clarification 1:* Instruction includes the use of tables, tape diagrams and number lines.
MA.6.DP.1.1:	Recognize and formulate a statistical question that would generate numerical data.
MA.6.DP.1.2:	Given a numerical data set within a real-world context, find and interpret mean, median, mode and range. **Clarifications:** *Clarification 1:* Numerical data is limited to positive rational numbers.
MA.6.DP.1.3:	Given a box plot within a real-world context, determine the minimum, the lower quartile, the median, the upper quartile and the maximum. Use this summary of the data to describe the spread and distribution of the data. **Clarifications:** *Clarification 1:* Instruction includes describing range, interquartile range, halves and quarters of the data.
MA.6.DP.1.4:	Given a histogram or line plot within a real-world context, qualitatively describe and interpret the spread and distribution of the data, including any symmetry, skewness, gaps, clusters, outliers and the range. **Clarifications:** *Clarification 1:* Refer to K-12 Mathematics Glossary (Appendix C).
MA.6.DP.1.5:	Create box plots and histograms to represent sets of numerical data within real-world contexts. **Clarifications:** *Clarification 1:* Instruction includes collecting data and discussing ways to collect truthful data to construct graphical representations. *Clarification 2:* Within this benchmark, it is the expectation to use appropriate titles, labels, scales and units when constructing graphical representations. *Clarification 3:* Numerical data is limited to positive rational numbers.
MA.6.DP.1.6:	Given a real-world scenario, determine and describe how changes in data values impact measures of center and variation. **Clarifications:** *Clarification 1:* Instruction includes choosing the measure of center or measure of variation depending on the scenario. *Clarification 2:* The measures of center are limited to mean and median. The measures of variation are limited to range and interquartile range. *Clarification 3:* Numerical data is limited to positive rational numbers.
MA.6.GR.1.1:	Extend previous understanding of the coordinate plane to plot rational number ordered pairs in all four quadrants and on both axes. Identify the x- or y-axis as the line of reflection when two ordered pairs have an opposite x- or y-coordinate.
MA.6.GR.1.2:	Find distances between ordered pairs, limited to the same x-coordinate or the same y-coordinate, represented on the coordinate plane.
MA.6.GR.1.3:	Solve mathematical and real-world problems by plotting points on a coordinate plane, including finding the perimeter or area of a rectangle. **Clarifications:** *Clarification 1:* Instruction includes finding distances between points, computing dimensions of a rectangle or determining a fourth vertex of a rectangle. *Clarification 2:* Problems involving rectangles are limited to cases where the sides are parallel to the axes.
MA.6.GR.2.1:	Derive a formula for the area of a right triangle using a rectangle. Apply a formula to find the area of a triangle. **Clarifications:** *Clarification 1:* Instruction focuses on the relationship between the area of a rectangle and the area of a right triangle. *Clarification 2:* Within this benchmark, the expectation is to know from memory a formula for the area of a triangle.
MA.6.GR.2.2:	Solve mathematical and real-world problems involving the area of quadrilaterals and composite figures by decomposing them into triangles or rectangles. **Clarifications:** *Clarification 1:* Problem types include finding area of composite shapes and determining missing dimensions. *Clarification 2:* Within this benchmark, the expectation is to know from memory a formula for the area of a rectangle and triangle. *Clarification 3:* Dimensions are limited to positive rational numbers.
MA.6.GR.2.3:	Solve mathematical and real-world problems involving the volume of right rectangular prisms with positive rational number edge lengths using a visual model and a formula. **Clarifications:** *Clarification 1:* Problem types include finding the volume or a missing dimension of a rectangular prism.
MA.6.GR.2.4:	Given a mathematical or real-world context, find the surface area of right rectangular prisms and right rectangular pyramids using the figure’s net. **Clarifications:** *Clarification 1:* Instruction focuses on representing a right rectangular prism and right rectangular pyramid with its net and on the connection between the surface area of a figure and its net. *Clarification 2:* Within this benchmark, the expectation is to find the surface area when given a net or when given a three-dimensional figure.

	Clarification 3: Problems involving right rectangular pyramids are limited to cases where the heights of triangles are given. *Clarification 4:* Dimensions are limited to positive rational numbers.
MA.6.NSO.1.1:	Extend previous understanding of numbers to define rational numbers. Plot, order and compare rational numbers. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is to plot, order and compare positive and negative rational numbers when given in the same form and to plot, order and compare positive rational numbers when given in different forms (fraction, decimal, percentage). *Clarification 2:* Within this benchmark, the expectation is to use symbols (<, > or =).
MA.6.NSO.1.2:	Given a mathematical or real-world context, represent quantities that have opposite direction using rational numbers. Compare them on a number line and explain the meaning of zero within its context. **Clarifications:** *Clarification 1:* Instruction includes vertical and horizontal number lines, context referring to distances, temperatures and finances and using informal verbal comparisons, such as, lower, warmer or more in debt. *Clarification 2:* Within this benchmark, the expectation is to compare positive and negative rational numbers when given in the same form.
MA.6.NSO.1.3:	Given a mathematical or real-world context, interpret the absolute value of a number as the distance from zero on a number line. Find the absolute value of rational numbers. **Clarifications:** *Clarification 1:* Instruction includes the connection of absolute value to mirror images about zero and to opposites. *Clarification 2:* Instruction includes vertical and horizontal number lines and context referring to distances, temperature and finances.
MA.6.NSO.1.4:	Solve mathematical and real-world problems involving absolute value, including the comparison of absolute value. **Clarifications:** *Clarification 1:* Absolute value situations include distances, temperatures and finances. *Clarification 2:* Problems involving calculations with absolute value are limited to two or fewer operations. *Clarification 3:* Within this benchmark, the expectation is to use integers only.
MA.6.NSO.2.1:	Multiply and divide positive multi-digit numbers with decimals to the thousandths, including using a standard algorithm with procedural fluency. **Clarifications:** *Clarification 1:* Multi-digit decimals are limited to no more than 5 total digits.
MA.6.NSO.2.2:	Extend previous understanding of multiplication and division to compute products and quotients of positive fractions by positive fractions, including mixed numbers, with procedural fluency. **Clarifications:** *Clarification 1:* Instruction focuses on making connections between visual models, the relationship between multiplication and division, reciprocals and algorithms.
MA.6.NSO.2.3:	Solve multi-step real-world problems involving any of the four operations with positive multi-digit decimals or positive fractions, including mixed numbers. **Clarifications:** *Clarification 1:* Within this benchmark, it is not the expectation to include both decimals and fractions within a single problem.
MA.6.NSO.3.1:	Given a mathematical or real-world context, find the greatest common factor and least common multiple of two whole numbers. **Clarifications:** *Clarification 1:* Within this benchmark, expectations include finding greatest common factor within 1,000 and least common multiple with factors to 25. *Clarification 2*: Instruction includes finding the greatest common factor of the numerator and denominator of a fraction to simplify a fraction.
MA.6.NSO.3.2:	Rewrite the sum of two composite whole numbers having a common factor, as a common factor multiplied by the sum of two whole numbers. **Clarifications:** *Clarification 1:* Instruction includes using the distributive property to generate equivalent expressions.
MA.6.NSO.3.3:	Evaluate positive rational numbers and integers with natural number exponents. **Clarifications:** *Clarification 1:* Within this benchmark, expectations include using natural number exponents up to 5.
MA.6.NSO.3.4:	Express composite whole numbers as a product of prime factors with natural number exponents.
MA.6.NSO.3.5:	Rewrite positive rational numbers in different but equivalent forms including fractions, terminating decimals and percentages. **Clarifications:** *Clarification 1:* Rational numbers include decimal equivalence up to the thousandths place.
MA.6.NSO.4.1:	Apply and extend previous understandings of operations with whole numbers to add and subtract integers with procedural fluency. **Clarifications:** *Clarification 1:* Instruction begins with the use of manipulatives, models and number lines working towards becoming procedurally fluent by the end of grade 6. *Clarification 2:* Instruction focuses on the inverse relationship between the operations of addition and subtraction. If p and q are integers, then p-q=p+(-q) and p+q=p-(-q).
MA.6.NSO.4.2:	Apply and extend previous understandings of operations with whole numbers to multiply and divide integers with procedural fluency. **Clarifications:** *Clarification 1:* Instruction includes the use of models and number lines and the inverse relationship between multiplication and division, working towards becoming procedurally fluent by the end of grade 6. *Clarification 2:* Instruction focuses on the understanding that integers can be divided, provided that the divisor is not zero, and every quotient of

	integers (with non-zero divisor) is a rational number. If p and q are integers where q≠0, then $-\left(\frac{p}{q}\right) = \frac{-p}{q}$, $-\left(\frac{p}{q}\right) = \frac{p}{-q}$ and $\frac{p}{q} = \frac{-p}{-q}$.
MA.7.AR.1.1:	Apply properties of operations to add and subtract linear expressions with rational coefficients. **Clarifications:** *Clarification 1:* Instruction includes linear expressions in the form ax±b or b±ax, where a and b are rational numbers. *Clarification 2:* Refer to Properties of Operations, Equality and Inequality (Appendix D).
MA.7.AR.1.2:	Determine whether two linear expressions are equivalent. **Clarifications:** *Clarification 1:* Instruction includes using properties of operations accurately and efficiently. *Clarification 2:* Instruction includes linear expressions in any form with rational coefficients. *Clarification 3:* Refer to Properties of Operations, Equality and Inequality (Appendix D).
MA.7.AR.2.1:	Write and solve one-step inequalities in one variable within a mathematical context and represent solutions algebraically or graphically. **Clarifications:** *Clarification 1:* Instruction focuses on the properties of inequality. Refer to Properties of Operations, Equality and Inequality (Appendix D). *Clarification 2:* Instruction includes inequalities in the forms $px > q$; $\frac{x}{p} > q$; x±p>q and p±x>q, where p and q are specific rational numbers and any inequality symbol can be represented. *Clarification 3:* Problems include inequalities where the variable may be on either side of the inequality symbol.
MA.7.AR.2.2:	Write and solve two-step equations in one variable within a mathematical or real-world context, where all terms are rational numbers. **Clarifications:** *Clarification 1:* Instruction focuses the application of the properties of equality. Refer to Properties of Operations, Equality and Inequality (Appendix D). *Clarification 2:* Instruction includes equations in the forms px±q=r and p(x±q)=r, where p, q and r are specific rational numbers. *Clarification 3:* Problems include linear equations where the variable may be on either side of the equal sign.
MA.7.AR.3.1:	Apply previous understanding of percentages and ratios to solve multi-step real-world percent problems. **Clarifications:** *Clarification 1:* Instruction includes discounts, markups, simple interest, tax, tips, fees, percent increase, percent decrease and percent error.
MA.7.AR.3.2:	Apply previous understanding of ratios to solve real-world problems involving proportions.
MA.7.AR.3.3:	Solve mathematical and real-world problems involving the conversion of units across different measurement systems.
MA.7.AR.4.1:	Determine whether two quantities have a proportional relationship by examining a table, graph or written description. **Clarifications:** *Clarification 1:* Instruction focuses on the connection to ratios and on the constant of proportionality, which is the ratio between two quantities in a proportional relationship.
MA.7.AR.4.2:	Determine the constant of proportionality within a mathematical or real-world context given a table, graph or written description of a proportional relationship.
MA.7.AR.4.3:	Given a mathematical or real-world context, graph proportional relationships from a table, equation or a written description. **Clarifications:** *Clarification 1:* Instruction includes equations of proportional relationships in the form of y=px, where p is the constant of proportionality.
MA.7.AR.4.4:	Given any representation of a proportional relationship, translate the representation to a written description, table or equation. **Clarifications:** *Clarification 1:* Given representations are limited to a written description, graph, table or equation. *Clarification 2:* Instruction includes equations of proportional relationships in the form of y=px, where p is the constant of proportionality.
MA.7.AR.4.5:	Solve real-world problems involving proportional relationships.
MA.7.DP.1.1:	Determine an appropriate measure of center or measure of variation to summarize numerical data, represented numerically or graphically, taking into consideration the context and any outliers. **Clarifications:** *Clarification 1:* Instruction includes recognizing whether a measure of center or measure of variation is appropriate and can be justified based on the given context or the statistical purpose. *Clarification 2:* Graphical representations are limited to histograms, line plots, box plots and stem-and-leaf plots. *Clarification 3:* The measure of center is limited to mean and median. The measure of variation is limited to range and interquartile range.
MA.7.DP.1.2:	Given two numerical or graphical representations of data, use the measure(s) of center and measure(s) of variability to make comparisons, interpret results and draw conclusions about the two populations. **Clarifications:** *Clarification 1:* Graphical representations are limited to histograms, line plots, box plots and stem-and-leaf plots. *Clarification 2:* The measure of center is limited to mean and median. The measure of variation is limited to range and interquartile range.
MA.7.DP.1.3:	Given categorical data from a random sample, use proportional relationships to make predictions about a population.
MA.7.DP.1.4:	Use proportional reasoning to construct, display and interpret data in circle graphs. **Clarifications:** *Clarification 1:* Data is limited to no more than 6 categories.
MA.7.DP.1.5:	Given a real-world numerical or categorical data set, choose and create an appropriate graphical representation. **Clarifications:**

	Clarification 1: Graphical representations are limited to histograms, bar charts, circle graphs, line plots, box plots and stem-and-leaf plots.
MA.7.DP.2.1:	Determine the sample space for a simple experiment. **Clarifications:** *Clarification 1:* Simple experiments include tossing a fair coin, rolling a fair die, picking a card randomly from a deck, picking marbles randomly from a bag and spinning a fair spinner.
MA.7.DP.2.2:	Given the probability of a chance event, interpret the likelihood of it occurring. Compare the probabilities of chance events. **Clarifications:** *Clarification 1:* Instruction includes representing probability as a fraction, percentage or decimal between 0 and 1 with probabilities close to 1 corresponding to highly likely events and probabilities close to 0 corresponding to highly unlikely events. *Clarification 2:* Instruction includes P(event) notation. *Clarification 3:* Instruction includes representing probability as a fraction, percentage or decimal.
MA.7.DP.2.3:	Find the theoretical probability of an event related to a simple experiment. **Clarifications:** *Clarification 1:* Instruction includes representing probability as a fraction, percentage or decimal. *Clarification 2:* Simple experiments include tossing a fair coin, rolling a fair die, picking a card randomly from a deck, picking marbles randomly from a bag and spinning a fair spinner.
MA.7.DP.2.4:	Use a simulation of a simple experiment to find experimental probabilities and compare them to theoretical probabilities. **Clarifications:** *Clarification 1:* Instruction includes representing probability as a fraction, percentage or decimal. *Clarification 2:* Instruction includes recognizing that experimental probabilities may differ from theoretical probabilities due to random variation. As the number of repetitions increases experimental probabilities will typically better approximate the theoretical probabilities. *Clarification 3:* Experiments include tossing a fair coin, rolling a fair die, picking a card randomly from a deck, picking marbles randomly from a bag and spinning a fair spinner.
MA.7.GR.1.1:	Apply formulas to find the areas of trapezoids, parallelograms and rhombi. **Clarifications:** *Clarification 1:* Instruction focuses on the connection from the areas of trapezoids, parallelograms and rhombi to the areas of rectangles or triangles. *Clarification 2:* Within this benchmark, the expectation is not to memorize area formulas for trapezoids, parallelograms and rhombi.
MA.7.GR.1.2:	Solve mathematical or real-world problems involving the area of polygons or composite figures by decomposing them into triangles or quadrilaterals. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is not to find areas of figures on the coordinate plane or to find missing dimensions.
MA.7.GR.1.3:	Explore the proportional relationship between circumferences and diameters of circles. Apply a formula for the circumference of a circle to solve mathematical and real-world problems. **Clarifications:** *Clarification 1:* Instruction includes the exploration and analysis of circular objects to examine the proportional relationship between circumference and diameter and arrive at an approximation of pi (π) as the constant of proportionality. *Clarification 2:* Solutions may be represented in terms of pi (π) or approximately.
MA.7.GR.1.4:	Explore and apply a formula to find the area of a circle to solve mathematical and real-world problems. **Clarifications:** *Clarification 1:* Instruction focuses on the connection between formulas for the area of a rectangle and the area of a circle. *Clarification 2:* Problem types include finding areas of fractional parts of a circle. *Clarification 3:* Solutions may be represented in terms of pi (π) or approximately.
MA.7.GR.1.5:	Solve mathematical and real-world problems involving dimensions and areas of geometric figures, including scale drawings and scale factors. **Clarifications:** *Clarification 1:* Instruction focuses on seeing the scale factor as a constant of proportionality between corresponding lengths in the scale drawing and the original object. *Clarification 2:* Instruction includes the understanding that if the scaling factor is k, then the constant of proportionality between corresponding areas is k^2 . *Clarification 3:* Problem types include finding the scale factor given a set of dimensions as well as finding dimensions when given a scale factor.
MA.7.GR.2.1:	Given a mathematical or real-world context, find the surface area of a right circular cylinder using the figure's net. **Clarifications:** *Clarification 1:* Instruction focuses on representing a right circular cylinder with its net and on the connection between surface area of a figure and its net. *Clarification 2:* Within this benchmark, the expectation is to find the surface area when given a net or when given a three-dimensional figure. *Clarification 3:* Within this benchmark, the expectation is not to memorize the surface area formula for a right circular cylinder. Clarification 4: Solutions may be represented in terms of pi (π) or approximately.
MA.7.GR.2.2:	Solve real-world problems involving surface area of right circular cylinders. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is not to memorize the surface area formula for a right circular cylinder or to find radius as a missing dimension. *Clarification 2:* Solutions may be represented in terms of pi (π) or approximately.

MA.7.GR.2.3:	Solve mathematical and real-world problems involving volume of right circular cylinders. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is not to memorize the volume formula for a right circular cylinder or to find radius as a missing dimension. *Clarification 2:* Solutions may be represented in terms of pi (π) or approximately.
MA.7.NSO.1.1:	Know and apply the Laws of Exponents to evaluate numerical expressions and generate equivalent numerical expressions, limited to whole-number exponents and rational number bases. **Clarifications:** *Clarification 1:* Instruction focuses on building the Laws of Exponents from specific examples. Refer to the K-12 Formulas (Appendix E) for the Laws of Exponents. *Clarification 2:* Problems in the form $\frac{a^n}{a^m} = a^p$ must result in a whole-number value for p.
MA.7.NSO.1.2:	Rewrite rational numbers in different but equivalent forms including fractions, mixed numbers, repeating decimals and percentages to solve mathematical and real-world problems.
MA.7.NSO.2.1:	Solve mathematical problems using multi-step order of operations with rational numbers including grouping symbols, whole-number exponents and absolute value. **Clarifications:** *Clarification 1:* Multi-step expressions are limited to 6 or fewer steps.
MA.7.NSO.2.2:	Add, subtract, multiply and divide rational numbers with procedural fluency.
MA.7.NSO.2.3:	Solve real-world problems involving any of the four operations with rational numbers. **Clarifications:** *Clarification 1:* Instruction includes using one or more operations to solve problems.
MA.8.AR.1.1:	Apply the Laws of Exponents to generate equivalent algebraic expressions, limited to integer exponents and monomial bases. **Clarifications:** *Clarification 1:* Refer to the K-12 Formulas (Appendix E) for the Laws of Exponents.
MA.8.AR.1.2:	Apply properties of operations to multiply two linear expressions with rational coefficients. **Clarifications:** *Clarification 1:* Problems are limited to products where at least one of the factors is a monomial. *Clarification 2:* Refer to Properties of Operations, Equality and Inequality (Appendix D).
MA.8.AR.1.3:	Rewrite the sum of two algebraic expressions having a common monomial factor as a common factor multiplied by the sum of two algebraic expressions.
MA.8.AR.2.1:	Solve multi-step linear equations in one variable, with rational number coefficients. Include equations with variables on both sides. **Clarifications:** *Clarification 1:* Problem types include examples of one-variable linear equations that generate one solution, infinitely many solutions or no solution.
MA.8.AR.2.2:	Solve two-step linear inequalities in one variable and represent solutions algebraically and graphically. **Clarifications:** *Clarification 1:* Instruction includes inequalities in the forms $px\pm q>r$ and $p(x\pm q)>r$, where p, q and r are specific rational numbers and where any inequality symbol can be represented. *Clarification 2:* Problems include inequalities where the variable may be on either side of the inequality.
MA.8.AR.2.3:	Given an equation in the form of $x^2=p$ and $x^3=q$, where p is a whole number and q is an integer, determine the real solutions. **Clarifications:** *Clarification 1:* Instruction focuses on understanding that when solving $x^2=p$, there is both a positive and negative solution. *Clarification 2:* Within this benchmark, the expectation is to calculate square roots of perfect squares up to 225 and cube roots of perfect cubes from -125 to 125.
MA.8.AR.3.1:	Determine if a linear relationship is also a proportional relationship. **Clarifications:** *Clarification 1:* Instruction focuses on the understanding that proportional relationships are linear relationships whose graph passes through the origin. *Clarification 2:* Instruction includes the representation of relationships using tables, graphs, equations and written descriptions.
MA.8.AR.3.2:	Given a table, graph or written description of a linear relationship, determine the slope. **Clarifications:** *Clarification 1:* Problem types include cases where two points are given to determine the slope. *Clarification 2:* Instruction includes making connections of slope to the constant of proportionality and to similar triangles represented on the coordinate plane.
MA.8.AR.3.3:	Given a table, graph or written description of a linear relationship, write an equation in slope-intercept form.
MA.8.AR.3.4:	Given a mathematical or real-world context, graph a two-variable linear equation from a written description, a table or an equation in slope-intercept form.
MA.8.AR.3.5:	Given a real-world context, determine and interpret the slope and y-intercept of a two-variable linear equation from a written description, a table, a graph or an equation in slope-intercept form. **Clarifications:** *Clarification 1:* Problems include conversions with temperature and equations of lines of fit in scatter plots.
	Given a system of two linear equations and a specified set of possible solutions, determine which ordered pairs satisfy the system of linear equations.

MA.8.AR.4.1:	**Clarifications:** *Clarification 1:* Instruction focuses on the understanding that a solution to a system of equations satisfies both linear equations simultaneously.
MA.8.AR.4.2:	Given a system of two linear equations represented graphically on the same coordinate plane, determine whether there is one solution, no solution or infinitely many solutions.
MA.8.AR.4.3:	Given a mathematical or real-world context, solve systems of two linear equations by graphing. **Clarifications:** *Clarification 1:* Instruction includes approximating non-integer solutions. *Clarification 2:* Within this benchmark, it is the expectation to represent systems of linear equations in slope-intercept form only. *Clarification 3:* Instruction includes recognizing that parallel lines have the same slope.
MA.8.DP.1.1:	Given a set of real-world bivariate numerical data, construct a scatter plot or a line graph as appropriate for the context. **Clarifications:** *Clarification 1:* Instruction includes recognizing similarities and differences between scatter plots and line graphs, and on determining which is more appropriate as a representation of the data based on the context. *Clarification 2:* Sets of data are limited to 20 points.
MA.8.DP.1.2:	Given a scatter plot within a real-world context, describe patterns of association. **Clarifications:** *Clarification 1:* Descriptions include outliers; positive or negative association; linear or nonlinear association; strong or weak association.
MA.8.DP.1.3:	Given a scatter plot with a linear association, informally fit a straight line. **Clarifications:** *Clarification 1:* Instruction focuses on the connection to linear functions. *Clarification 2:* Instruction includes using a variety of tools, including a ruler, to draw a line with approximately the same number of points above and below the line.
MA.8.DP.2.1:	Determine the sample space for a repeated experiment. **Clarifications:** *Clarification 1:* Instruction includes recording sample spaces for repeated experiments using organized lists, tables or tree diagrams. *Clarification 2:* Experiments to be repeated are limited to tossing a fair coin, rolling a fair die, picking a card randomly from a deck with replacement, picking marbles randomly from a bag with replacement and spinning a fair spinner. *Clarification 3:* Repetition of experiments is limited to two times except for tossing a coin.
MA.8.DP.2.2:	Find the theoretical probability of an event related to a repeated experiment. **Clarifications:** *Clarification 1:* Instruction includes representing probability as a fraction, percentage or decimal. *Clarification 2:* Experiments to be repeated are limited to tossing a fair coin, rolling a fair die, picking a card randomly from a deck with replacement, picking marbles randomly from a bag with replacement and spinning a fair spinner. *Clarification 3:* Repetition of experiments is limited to two times except for tossing a coin.
MA.8.DP.2.3:	Solve real-world problems involving probabilities related to single or repeated experiments, including making predictions based on theoretical probability. **Clarifications:** *Clarification 1:* Instruction includes making connections to proportional relationships and representing probability as a fraction, percentage or decimal. *Clarification 2:* Experiments to be repeated are limited to tossing a fair coin, rolling a fair die, picking a card randomly from a deck with replacement, picking marbles randomly from a bag with replacement and spinning a fair spinner. *Clarification 3:* Repetition of experiments is limited to two times except for tossing a coin.
MA.8.F.1.1:	Given a set of ordered pairs, a table, a graph or mapping diagram, determine whether the relationship is a function. Identify the domain and range of the relation. **Clarifications:** *Clarification 1:* Instruction includes referring to the input as the independent variable and the output as the dependent variable. *Clarification 2:* Within this benchmark, it is the expectation to represent domain and range as a list of numbers or as an inequality.
MA.8.F.1.2:	Given a function defined by a graph or an equation, determine whether the function is a linear function. Given an input-output table, determine whether it could represent a linear function. **Clarifications:** *Clarification 1:* Instruction includes recognizing that a table may not determine a function.
MA.8.F.1.3:	Analyze a real-world written description or graphical representation of a functional relationship between two quantities and identify where the function is increasing, decreasing or constant. **Clarifications:** *Clarification 1:* Problem types are limited to continuous functions. *Clarification 2:* Analysis includes writing a description of a graphical representation or sketching a graph from a written description.
MA.8.GR.1.1:	Apply the Pythagorean Theorem to solve mathematical and real-world problems involving unknown side lengths in right triangles. **Clarifications:** *Clarification 1:* Instruction includes exploring right triangles with natural-number side lengths to illustrate the Pythagorean Theorem. *Clarification 2:* Within this benchmark, the expectation is to memorize the Pythagorean Theorem. *Clarification 3:* Radicands are limited to whole numbers up to 225.

MA.8.GR.1.2:	Apply the Pythagorean Theorem to solve mathematical and real-world problems involving the distance between two points in a coordinate plane. **Clarifications:** *Clarification 1:* Instruction includes making connections between distance on the coordinate plane and right triangles. *Clarification 2:* Within this benchmark, the expectation is to memorize the Pythagorean Theorem. It is not the expectation to use the distance formula. *Clarification 3:* Radicands are limited to whole numbers up to 225.
MA.8.GR.1.3:	Use the Triangle Inequality Theorem to determine if a triangle can be formed from a given set of sides. Use the converse of the Pythagorean Theorem to determine if a right triangle can be formed from a given set of sides.
MA.8.GR.1.4:	Solve mathematical problems involving the relationships between supplementary, complementary, vertical or adjacent angles.
MA.8.GR.1.5:	Solve problems involving the relationships of interior and exterior angles of a triangle. **Clarifications:** *Clarification 1:* Problems include using the Triangle Sum Theorem and representing angle measures as algebraic expressions.
MA.8.GR.1.6:	Develop and use formulas for the sums of the interior angles of regular polygons by decomposing them into triangles. **Clarifications:** *Clarification 1:* Problems include representing angle measures as algebraic expressions.
MA.8.GR.2.1:	Given a preimage and image generated by a single transformation, identify the transformation that describes the relationship. **Clarifications:** *Clarification 1:* Within this benchmark, transformations are limited to reflections, translations or rotations of images. *Clarification 2:* Instruction focuses on the preservation of congruence so that a figure maps onto a copy of itself.
MA.8.GR.2.2:	Given a preimage and image generated by a single dilation, identify the scale factor that describes the relationship. **Clarifications:** *Clarification 1:* Instruction includes the connection to scale drawings and proportions. *Clarification 2:* Instruction focuses on the preservation of similarity and the lack of preservation of congruence when a figure maps onto a scaled copy of itself, unless the scaling factor is 1.
MA.8.GR.2.3:	Describe and apply the effect of a single transformation on two-dimensional figures using coordinates and the coordinate plane. **Clarifications:** *Clarification 1:* Within this benchmark, transformations are limited to reflections, translations, rotations or dilations of images. *Clarification 2:* Lines of reflection are limited to the x-axis, y-axis or lines parallel to the axes. *Clarification 3:* Rotations must be about the origin and are limited to 90°, 180°, 270° or 360°. *Clarification 4:* Dilations must be centered at the origin.
MA.8.GR.2.4:	Solve mathematical and real-world problems involving proportional relationships between similar triangles.
MA.8.NSO.1.1:	Extend previous understanding of rational numbers to define irrational numbers within the real number system. Locate an approximate value of a numerical expression involving irrational numbers on a number line. **Clarifications:** *Clarification 1:* Instruction includes the use of number line and rational number approximations, and recognizing pi (π) as an irrational number. *Clarification 2:* Within this benchmark, the expectation is to approximate numerical expressions involving one arithmetic operation and estimating square roots or pi (π).
MA.8.NSO.1.2:	Plot, order and compare rational and irrational numbers, represented in various forms. **Clarifications:** *Clarification 1:* Within this benchmark, it is not the expectation to work with the number e. *Clarification 2:* Within this benchmark, the expectation is to plot, order and compare square roots and cube roots. *Clarification 3:* Within this benchmark, the expectation is to use symbols (<, > or =).
MA.8.NSO.1.3:	Extend previous understanding of the Laws of Exponents to include integer exponents. Apply the Laws of Exponents to evaluate numerical expressions and generate equivalent numerical expressions, limited to integer exponents and rational number bases, with procedural fluency. **Clarifications:** *Clarification 1:* Refer to the K-12 Formulas (Appendix E) for the Laws of Exponents.
MA.8.NSO.1.4:	Express numbers in scientific notation to represent and approximate very large or very small quantities. Determine how many times larger or smaller one number is compared to a second number.
MA.8.NSO.1.5:	Add, subtract, multiply and divide numbers expressed in scientific notation with procedural fluency. **Clarifications:** *Clarification 1:* Within this benchmark, for addition and subtraction with numbers expressed in scientific notation, exponents are limited to within 2 of each other.
MA.8.NSO.1.6:	Solve real-world problems involving operations with numbers expressed in scientific notation. **Clarifications:** *Clarification 1:* Instruction includes recognizing the importance of significant digits when physical measurements are involved. *Clarification 2:* Within this benchmark, for addition and subtraction with numbers expressed in scientific notation, exponents are limited to within 2 of each other.
MA.8.NSO.1.7:	Solve multi-step mathematical and real-world problems involving the order of operations with rational numbers including exponents and radicals. **Clarifications:** *Clarification 1:* Multi-step expressions are limited to 6 or fewer steps. *Clarification 2:* Within this benchmark, the expectation is to simplify radicals by factoring square roots of perfect squares up to 225 and cube

	roots of perfect cubes from -125 to 125.
MA.K12.MTR.1.1:	**Actively participate in effortful learning both individually and collectively.** Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task. • Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach. **Clarifications:** Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging. • Develop students' ability to analyze and problem solve. • Recognize students' effort when solving challenging problems.
MA.K12.MTR.2.1:	**Demonstrate understanding by representing problems in multiple ways.** Mathematicians who demonstrate understanding by representing problems in multiple ways: • Build understanding through modeling and using manipulatives. • Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. • Progress from modeling problems with objects and drawings to using algorithms and equations. • Express connections between concepts and representations. • Choose a representation based on the given context or purpose. **Clarifications:** Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: • Help students make connections between concepts and representations. • Provide opportunities for students to use manipulatives when investigating concepts. • Guide students from concrete to pictorial to abstract representations as understanding progresses. • Show students that various representations can have different purposes and can be useful in different situations.
MA.K12.MTR.3.1:	**Complete tasks with mathematical fluency.** Mathematicians who complete tasks with mathematical fluency: • Select efficient and appropriate methods for solving problems within the given context. • Maintain flexibility and accuracy while performing procedures and mental calculations. • Complete tasks accurately and with confidence. • Adapt procedures to apply them to a new context. • Use feedback to improve efficiency when performing calculations. **Clarifications:** Teachers who encourage students to complete tasks with mathematical fluency: • Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately. • Offer multiple opportunities for students to practice efficient and generalizable methods. • Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.
MA.K12.MTR.4.1:	**Engage in discussions that reflect on the mathematical thinking of self and others.** Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others: • Communicate mathematical ideas, vocabulary and methods effectively. • Analyze the mathematical thinking of others. • Compare the efficiency of a method to those expressed by others. • Recognize errors and suggest how to correctly solve the task. • Justify results by explaining methods and processes. • Construct possible arguments based on evidence. **Clarifications:** Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: • Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning. • Create opportunities for students to discuss their thinking with peers. • Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. • Develop students' ability to justify methods and compare their responses to the responses of their peers.
MA.K12.MTR.5.1:	**Use patterns and structure to help understand and connect mathematical concepts.** Mathematicians who use patterns and structure to help understand and connect mathematical concepts: • Focus on relevant details within a problem. • Create plans and procedures to logically order events, steps or ideas to solve problems. • Decompose a complex problem into manageable parts. • Relate previously learned concepts to new concepts. • Look for similarities among problems. • Connect solutions of problems to more complicated large-scale situations. **Clarifications:** Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts:

	• Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts. • Support students to develop generalizations based on the similarities found among problems. • Provide opportunities for students to create plans and procedures to solve problems. • Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.
MA.K12.MTR.6.1:	**Assess the reasonableness of solutions.** Mathematicians who assess the reasonableness of solutions: • Estimate to discover possible solutions. • Use benchmark quantities to determine if a solution makes sense. • Check calculations when solving problems. • Verify possible solutions by explaining the methods used. • Evaluate results based on the given context. **Clarifications:** Teachers who encourage students to assess the reasonableness of solutions: • Have students estimate or predict solutions prior to solving. • Prompt students to continually ask, "Does this solution make sense? How do you know?" • Reinforce that students check their work as they progress within and after a task. • Strengthen students' ability to verify solutions through justifications.
MA.K12.MTR.7.1:	**Apply mathematics to real-world contexts.** Mathematicians who apply mathematics to real-world contexts: • Connect mathematical concepts to everyday experiences. • Use models and methods to understand, represent and solve problems. • Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency. **Clarifications:** Teachers who encourage students to apply mathematics to real-world contexts: • Provide opportunities for students to create models, both concrete and abstract, and perform investigations. • Challenge students to question the accuracy of their models and methods. • Support students as they validate conclusions by comparing them to the given situation. • Indicate how various concepts can be applied to other disciplines.
ELA.K12.EE.1.1:	Cite evidence to explain and justify reasoning. **Clarifications:** K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing. 2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations. 4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they've directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor. 6-8 Students continue with previous skills and use a style guide to create a proper citation. 9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.
ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.
ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like "Why is the girl smiling?" or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
ELA.K12.EE.4.1:	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully. In grades 1-2, students build upon these skills by justifying what they are thinking. For example: "I think _______ because ______." The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
ELA.K12.EE.5.1:	Use the accepted rules governing a specific format to create quality work. **Clarifications:** Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.
ELA.K12.EE.6.1:	Use appropriate voice and tone when speaking or writing. **Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.

ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.

General Course Information and Notes

VERSION DESCRIPTION

This course supports students who need additional instruction in foundational mathematics skills as it relates to core instruction. Instruction will use explicit, systematic, and sequential approaches to mathematics instruction addressing all strands including number sense & operations, algebraic reasoning, functions, geometric reasoning and data analysis & probability. Teachers will use the listed benchmarks that correspond to each students' needs.

Effective instruction matches instruction to the need of the students in the group and provides multiple opportunities to practice the skill and receive feedback. The additional time allotted for this course is in addition to core instruction. The intervention includes materials and strategies designed to supplement core instruction.

General Notes

Florida's Benchmarks for Excellent Student Thinking (B.E.S.T.) Standards
This course includes Florida's B.E.S.T. ELA Expectations (EE) and Mathematical Thinking and Reasoning Standards (MTRs) for students. Florida educators should intentionally embed these standards within the content and their instruction as applicable. For guidance on the implementation of the EEs and MTRs, please visit https://www.cpalms.org/Standards/BEST_Standards.aspx and select the appropriate B.E.S.T. Standards package.

English Language Development ELD Standards Special Notes Section:
Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link: https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf

General Information

Course Number: 1204000

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 6 to 8 Education Courses > **Subject:** Mathematics > **SubSubject:** Remedial Mathematics >

Abbreviated Title: M/J FDNSKLS MATH 6-8

Course Length: Multiple (M) - Course length can vary

Course Attributes:

- Class Size Core Required

Course Type: Elective Course

Course Level: 2

Course Status: State Board Approved

Grade Level(s): 6,7,8

Educator Certifications

Mathematics (Grades 6-12)
Middle Grades Mathematics (Middle Grades 5-9)
Middle Grades Integrated Curriculum (Middle Grades 5-9)
Elementary Education (Grades K-6)
Elementary Education (Elementary Grades 1-6)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

M/J Grade 6 Mathematics (#1205010) 2024 - And Beyond (current)

Course Standards

Name	Description
MA.6.AR.1.1:	Given a mathematical or real-world context, translate written descriptions into algebraic expressions and translate algebraic expressions into written descriptions.
MA.6.AR.1.2:	Translate a real-world written description into an algebraic inequality in the form of $x > a$, $x < a$, $x \geq a$ or $x \leq a$. Represent the inequality on a number line. **Clarifications:** *Clarification 1:* Variables may be on the left or right side of the inequality symbol.
MA.6.AR.1.3:	Evaluate algebraic expressions using substitution and order of operations. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is to perform all operations with integers. *Clarification 2:* Refer to Properties of Operations, Equality and Inequality (Appendix D).
MA.6.AR.1.4:	Apply the properties of operations to generate equivalent algebraic expressions with integer coefficients. **Clarifications:** *Clarification 1:* Properties include associative, commutative and distributive. *Clarification 2:* Refer to Properties of Operations, Equality and Inequality (Appendix D).
MA.6.AR.2.1:	Given an equation or inequality and a specified set of integer values, determine which values make the equation or inequality true or false. **Clarifications:** *Clarification 1:* Problems include the variable in multiple terms or on either side of the equal sign or inequality symbol.
MA.6.AR.2.2:	Write and solve one-step equations in one variable within a mathematical or real-world context using addition and subtraction, where all terms and solutions are integers. **Clarifications:** *Clarification 1:* Instruction includes using manipulatives, drawings, number lines and inverse operations. *Clarification 2:* Instruction includes equations in the forms x+p=q and p+x=q, where x,p and q are any integer. *Clarification 3:* Problems include equations where the variable may be on either side of the equal sign.
MA.6.AR.2.3:	Write and solve one-step equations in one variable within a mathematical or real-world context using multiplication and division, where all terms and solutions are integers. **Clarifications:** *Clarification 1*: Instruction includes using manipulatives, drawings, number lines and inverse operations. *Clarification 2*: Instruction includes equations in the forms $x/p = q$, where $p \neq 0$, and $px = q$. *Clarification 3*: Problems include equations where the variable may be on either side of the equal sign.
MA.6.AR.2.4:	Determine the unknown decimal or fraction in an equation involving any of the four operations, relating three numbers, with the unknown in any position. **Clarifications:** *Clarification 1:* Instruction focuses on using algebraic reasoning, drawings, and mental math to determine unknowns. *Clarification 2:* Problems include the unknown and different operations on either side of the equal sign. All terms and solutions are limited to positive rational numbers.
MA.6.AR.3.1:	Given a real-world context, write and interpret ratios to show the relative sizes of two quantities using appropriate notation: $\frac{a}{b}$, a to b, or a:b where b $\neq$ 0. **Clarifications:** *Clarification 1:* Instruction focuses on the understanding that a ratio can be described as a comparison of two quantities in either the same or different units. *Clarification 2:* Instruction includes using manipulatives, drawings, models and words to interpret part-to-part ratios and part-to-whole ratios. *Clarification 3:* The values of a and b are limited to whole numbers.
MA.6.AR.3.2:	Given a real-world context, determine a rate for a ratio of quantities with different units. Calculate and interpret the corresponding unit rate. **Clarifications:** *Clarification 1:* Instruction includes using manipulatives, drawings, models and words and making connections between ratios, rates and unit rates. *Clarification 2:* Problems will not include conversions between customary and metric systems.
MA.6.AR.3.3:	Extend previous understanding of fractions and numerical patterns to generate or complete a two- or three-column table to display equivalent part-to-part ratios and part-to-part-to-whole ratios. **Clarifications:** *Clarification 1:* Instruction includes using two-column tables (e.g., a relationship between two variables) and three-column tables (e.g., part-to-

	part-to-whole relationship) to generate conversion charts and mixture charts.
MA.6.AR.3.4:	Apply ratio relationships to solve mathematical and real-world problems involving percentages using the relationship between two quantities. **Clarifications:** *Clarification 1:* Instruction includes the comparison of $\frac{part}{whole}$ to $\frac{percent}{100}$ in order to determine the percent, the part or the whole.
MA.6.AR.3.5:	Solve mathematical and real-world problems involving ratios, rates and unit rates, including comparisons, mixtures, ratios of lengths and conversions within the same measurement system. **Clarifications:** *Clarification 1:* Instruction includes the use of tables, tape diagrams and number lines.
MA.6.DP.1.1:	Recognize and formulate a statistical question that would generate numerical data.
MA.6.DP.1.2:	Given a numerical data set within a real-world context, find and interpret mean, median, mode and range. **Clarifications:** *Clarification 1:* Numerical data is limited to positive rational numbers.
MA.6.DP.1.3:	Given a box plot within a real-world context, determine the minimum, the lower quartile, the median, the upper quartile and the maximum. Use this summary of the data to describe the spread and distribution of the data. **Clarifications:** *Clarification 1:* Instruction includes describing range, interquartile range, halves and quarters of the data.
MA.6.DP.1.4:	Given a histogram or line plot within a real-world context, qualitatively describe and interpret the spread and distribution of the data, including any symmetry, skewness, gaps, clusters, outliers and the range. **Clarifications:** *Clarification 1:* Refer to K-12 Mathematics Glossary (Appendix C).
MA.6.DP.1.5:	Create box plots and histograms to represent sets of numerical data within real-world contexts. **Clarifications:** *Clarification 1:* Instruction includes collecting data and discussing ways to collect truthful data to construct graphical representations. *Clarification 2:* Within this benchmark, it is the expectation to use appropriate titles, labels, scales and units when constructing graphical representations. *Clarification 3:* Numerical data is limited to positive rational numbers.
MA.6.DP.1.6:	Given a real-world scenario, determine and describe how changes in data values impact measures of center and variation. **Clarifications:** *Clarification 1:* Instruction includes choosing the measure of center or measure of variation depending on the scenario. *Clarification 2:* The measures of center are limited to mean and median. The measures of variation are limited to range and interquartile range. *Clarification 3:* Numerical data is limited to positive rational numbers.
MA.6.GR.1.1:	Extend previous understanding of the coordinate plane to plot rational number ordered pairs in all four quadrants and on both axes. Identify the x- or y-axis as the line of reflection when two ordered pairs have an opposite x- or y-coordinate.
MA.6.GR.1.2:	Find distances between ordered pairs, limited to the same x-coordinate or the same y-coordinate, represented on the coordinate plane.
MA.6.GR.1.3:	Solve mathematical and real-world problems by plotting points on a coordinate plane, including finding the perimeter or area of a rectangle. **Clarifications:** *Clarification 1:* Instruction includes finding distances between points, computing dimensions of a rectangle or determining a fourth vertex of a rectangle. *Clarification 2:* Problems involving rectangles are limited to cases where the sides are parallel to the axes.
MA.6.GR.2.1:	Derive a formula for the area of a right triangle using a rectangle. Apply a formula to find the area of a triangle. **Clarifications:** *Clarification 1:* Instruction focuses on the relationship between the area of a rectangle and the area of a right triangle. *Clarification 2:* Within this benchmark, the expectation is to know from memory a formula for the area of a triangle.
MA.6.GR.2.2:	Solve mathematical and real-world problems involving the area of quadrilaterals and composite figures by decomposing them into triangles or rectangles. **Clarifications:** *Clarification 1:* Problem types include finding area of composite shapes and determining missing dimensions. *Clarification 2:* Within this benchmark, the expectation is to know from memory a formula for the area of a rectangle and triangle. *Clarification 3:* Dimensions are limited to positive rational numbers.
MA.6.GR.2.3:	Solve mathematical and real-world problems involving the volume of right rectangular prisms with positive rational number edge lengths using a visual model and a formula. **Clarifications:** *Clarification 1:* Problem types include finding the volume or a missing dimension of a rectangular prism.
MA.6.GR.2.4:	Given a mathematical or real-world context, find the surface area of right rectangular prisms and right rectangular pyramids using the figure's net. **Clarifications:** *Clarification 1:* Instruction focuses on representing a right rectangular prism and right rectangular pyramid with its net and on the connection between the surface area of a figure and its net. *Clarification 2:* Within this benchmark, the expectation is to find the surface area when given a net or when given a three-dimensional figure. *Clarification 3:* Problems involving right rectangular pyramids are limited to cases where the heights of triangles are given. *Clarification 4:* Dimensions are limited to positive rational numbers.

MA.6.NSO.1.1:	Extend previous understanding of numbers to define rational numbers. Plot, order and compare rational numbers. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is to plot, order and compare positive and negative rational numbers when given in the same form and to plot, order and compare positive rational numbers when given in different forms (fraction, decimal, percentage). *Clarification 2:* Within this benchmark, the expectation is to use symbols (<, > or =).
MA.6.NSO.1.2:	Given a mathematical or real-world context, represent quantities that have opposite direction using rational numbers. Compare them on a number line and explain the meaning of zero within its context. **Clarifications:** *Clarification 1:* Instruction includes vertical and horizontal number lines, context referring to distances, temperatures and finances and using informal verbal comparisons, such as, lower, warmer or more in debt. *Clarification 2:* Within this benchmark, the expectation is to compare positive and negative rational numbers when given in the same form.
MA.6.NSO.1.3:	Given a mathematical or real-world context, interpret the absolute value of a number as the distance from zero on a number line. Find the absolute value of rational numbers. **Clarifications:** *Clarification 1:* Instruction includes the connection of absolute value to mirror images about zero and to opposites. *Clarification 2:* Instruction includes vertical and horizontal number lines and context referring to distances, temperature and finances.
MA.6.NSO.1.4:	Solve mathematical and real-world problems involving absolute value, including the comparison of absolute value. **Clarifications:** *Clarification 1:* Absolute value situations include distances, temperatures and finances. *Clarification 2:* Problems involving calculations with absolute value are limited to two or fewer operations. *Clarification 3:* Within this benchmark, the expectation is to use integers only.
MA.6.NSO.2.1:	Multiply and divide positive multi-digit numbers with decimals to the thousandths, including using a standard algorithm with procedural fluency. **Clarifications:** *Clarification 1:* Multi-digit decimals are limited to no more than 5 total digits.
MA.6.NSO.2.2:	Extend previous understanding of multiplication and division to compute products and quotients of positive fractions by positive fractions, including mixed numbers, with procedural fluency. **Clarifications:** *Clarification 1:* Instruction focuses on making connections between visual models, the relationship between multiplication and division, reciprocals and algorithms.
MA.6.NSO.2.3:	Solve multi-step real-world problems involving any of the four operations with positive multi-digit decimals or positive fractions, including mixed numbers. **Clarifications:** *Clarification 1:* Within this benchmark, it is not the expectation to include both decimals and fractions within a single problem.
MA.6.NSO.3.1:	Given a mathematical or real-world context, find the greatest common factor and least common multiple of two whole numbers. **Clarifications:** *Clarification 1:* Within this benchmark, expectations include finding greatest common factor within 1,000 and least common multiple with factors to 25. *Clarification 2*: Instruction includes finding the greatest common factor of the numerator and denominator of a fraction to simplify a fraction.
MA.6.NSO.3.2:	Rewrite the sum of two composite whole numbers having a common factor, as a common factor multiplied by the sum of two whole numbers. **Clarifications:** *Clarification 1:* Instruction includes using the distributive property to generate equivalent expressions.
MA.6.NSO.3.3:	Evaluate positive rational numbers and integers with natural number exponents. **Clarifications:** *Clarification 1:* Within this benchmark, expectations include using natural number exponents up to 5.
MA.6.NSO.3.4:	Express composite whole numbers as a product of prime factors with natural number exponents.
MA.6.NSO.3.5:	Rewrite positive rational numbers in different but equivalent forms including fractions, terminating decimals and percentages. **Clarifications:** *Clarification 1:* Rational numbers include decimal equivalence up to the thousandths place.
MA.6.NSO.4.1:	Apply and extend previous understandings of operations with whole numbers to add and subtract integers with procedural fluency. **Clarifications:** *Clarification 1:* Instruction begins with the use of manipulatives, models and number lines working towards becoming procedurally fluent by the end of grade 6. *Clarification 2:* Instruction focuses on the inverse relationship between the operations of addition and subtraction. If p and q are integers, then p-q=p+(-q) and p+q=p-(-q).
MA.6.NSO.4.2:	Apply and extend previous understandings of operations with whole numbers to multiply and divide integers with procedural fluency. **Clarifications:** *Clarification 1:* Instruction includes the use of models and number lines and the inverse relationship between multiplication and division, working towards becoming procedurally fluent by the end of grade 6. *Clarification 2:* Instruction focuses on the understanding that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers where q≠0, then $-\left(\frac{p}{q}\right)=\frac{-p}{q}$, $-\left(\frac{p}{q}\right)=\frac{p}{-q}$ and $\frac{p}{q}=\frac{-p}{-q}$.
	Actively participate in effortful learning both individually and collectively.

MA.K12.MTR.1.1:	Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task. • Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach. **Clarifications:** Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging. • Develop students' ability to analyze and problem solve. • Recognize students' effort when solving challenging problems.
MA.K12.MTR.2.1:	**Demonstrate understanding by representing problems in multiple ways.** Mathematicians who demonstrate understanding by representing problems in multiple ways: • Build understanding through modeling and using manipulatives. • Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. • Progress from modeling problems with objects and drawings to using algorithms and equations. • Express connections between concepts and representations. • Choose a representation based on the given context or purpose. **Clarifications:** Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: • Help students make connections between concepts and representations. • Provide opportunities for students to use manipulatives when investigating concepts. • Guide students from concrete to pictorial to abstract representations as understanding progresses. • Show students that various representations can have different purposes and can be useful in different situations.
MA.K12.MTR.3.1:	**Complete tasks with mathematical fluency.** Mathematicians who complete tasks with mathematical fluency: • Select efficient and appropriate methods for solving problems within the given context. • Maintain flexibility and accuracy while performing procedures and mental calculations. • Complete tasks accurately and with confidence. • Adapt procedures to apply them to a new context. • Use feedback to improve efficiency when performing calculations. **Clarifications:** Teachers who encourage students to complete tasks with mathematical fluency: • Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately. • Offer multiple opportunities for students to practice efficient and generalizable methods. • Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.
MA.K12.MTR.4.1:	**Engage in discussions that reflect on the mathematical thinking of self and others.** Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others: • Communicate mathematical ideas, vocabulary and methods effectively. • Analyze the mathematical thinking of others. • Compare the efficiency of a method to those expressed by others. • Recognize errors and suggest how to correctly solve the task. • Justify results by explaining methods and processes. • Construct possible arguments based on evidence. **Clarifications:** Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: • Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning. • Create opportunities for students to discuss their thinking with peers. • Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. • Develop students' ability to justify methods and compare their responses to the responses of their peers.
MA.K12.MTR.5.1:	**Use patterns and structure to help understand and connect mathematical concepts.** Mathematicians who use patterns and structure to help understand and connect mathematical concepts: • Focus on relevant details within a problem. • Create plans and procedures to logically order events, steps or ideas to solve problems. • Decompose a complex problem into manageable parts. • Relate previously learned concepts to new concepts. • Look for similarities among problems. • Connect solutions of problems to more complicated large-scale situations. **Clarifications:** Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts: • Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts. • Support students to develop generalizations based on the similarities found among problems.

	• Provide opportunities for students to create plans and procedures to solve problems. • Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.
MA.K12.MTR.6.1:	**Assess the reasonableness of solutions.** Mathematicians who assess the reasonableness of solutions: • Estimate to discover possible solutions. • Use benchmark quantities to determine if a solution makes sense. • Check calculations when solving problems. • Verify possible solutions by explaining the methods used. • Evaluate results based on the given context. **Clarifications:** Teachers who encourage students to assess the reasonableness of solutions: • Have students estimate or predict solutions prior to solving. • Prompt students to continually ask, "Does this solution make sense? How do you know?" • Reinforce that students check their work as they progress within and after a task. • Strengthen students' ability to verify solutions through justifications.
MA.K12.MTR.7.1:	**Apply mathematics to real-world contexts.** Mathematicians who apply mathematics to real-world contexts: • Connect mathematical concepts to everyday experiences. • Use models and methods to understand, represent and solve problems. • Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency. **Clarifications:** Teachers who encourage students to apply mathematics to real-world contexts: • Provide opportunities for students to create models, both concrete and abstract, and perform investigations. • Challenge students to question the accuracy of their models and methods. • Support students as they validate conclusions by comparing them to the given situation. • Indicate how various concepts can be applied to other disciplines.
ELA.K12.EE.1.1:	Cite evidence to explain and justify reasoning. **Clarifications:** K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing. 2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations. 4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they've directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor. 6-8 Students continue with previous skills and use a style guide to create a proper citation. 9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.
ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.
ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like "Why is the girl smiling?" or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
ELA.K12.EE.4.1:	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully. In grades 1-2, students build upon these skills by justifying what they are thinking. For example: "I think _______ because ______." The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
ELA.K12.EE.5.1:	Use the accepted rules governing a specific format to create quality work. **Clarifications:** Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.
ELA.K12.EE.6.1:	Use appropriate voice and tone when speaking or writing. **Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.
ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.
ELD.K12.ELL.SI.1:	English language learners communicate for social and instructional purposes within the school setting.

General Course Information and Notes

VERSION DESCRIPTION

The benchmarks in this course are mastery goals that students are expected to attain by the end of the year. To build mastery, students will continue to review and apply earlier grade-level benchmarks and expectations.

General Notes

In grade 6, instructional time will emphasize five areas: (1) performing all four operations with integers, positive decimals and positive fractions with procedural fluency; (2) exploring and applying concepts of ratios, rates and percent to solve problems; (3) creating, interpreting and using expressions and equations; (4) extending geometric reasoning to plotting points on the coordinate plane, area and volume of geometric figures and (5) extending understanding of statistical thinking.

Curricular content for all subjects must integrate critical-thinking, problem-solving, and workforce-literacy skills; communication, reading, and writing skills; mathematics skills; collaboration skills; contextual and applied-learning skills; technology-literacy skills; information and media-literacy skills; and civic-engagement skills.

English Language Development ELD Standards Special Notes Section:
Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link:
https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf

General Information

Course Number: 1205010

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 6 to 8 Education Courses > **Subject:** Mathematics > **SubSubject:** General Mathematics >

Abbreviated Title: M/J GRADE 6 MATH

Course Length: Year (Y)

Course Type: Core Academic Course

Course Level: 2

Course Status: State Board Approved

Grade Level(s): 6,7,8

Educator Certifications

Mathematics (Elementary Grades 1-6)
Middle Grades Mathematics (Middle Grades 5-9)
Middle Grades Integrated Curriculum (Middle Grades 5-9)
Mathematics (Grades 6-12)
Elementary Education (Grades K-6)
Elementary Education (Elementary Grades 1-6)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

M/J Accelerated Mathematics Grade 6 (#1205020) 2024 - And Beyond (current)

Course Standards

Name	Description
MA.6.AR.1.1:	Given a mathematical or real-world context, translate written descriptions into algebraic expressions and translate algebraic expressions into written descriptions.
MA.6.AR.1.2:	Translate a real-world written description into an algebraic inequality in the form of $x > a$, $x < a$, $x \geq a$ or $x \leq a$. Represent the inequality on a number line. **Clarifications:** *Clarification 1:* Variables may be on the left or right side of the inequality symbol.
MA.6.AR.1.3:	Evaluate algebraic expressions using substitution and order of operations. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is to perform all operations with integers. *Clarification 2:* Refer to Properties of Operations, Equality and Inequality (Appendix D).
MA.6.AR.1.4:	Apply the properties of operations to generate equivalent algebraic expressions with integer coefficients. **Clarifications:** *Clarification 1:* Properties include associative, commutative and distributive. *Clarification 2:* Refer to Properties of Operations, Equality and Inequality (Appendix D).
MA.6.AR.2.1:	Given an equation or inequality and a specified set of integer values, determine which values make the equation or inequality true or false. **Clarifications:** *Clarification 1:* Problems include the variable in multiple terms or on either side of the equal sign or inequality symbol.
MA.6.AR.2.2:	Write and solve one-step equations in one variable within a mathematical or real-world context using addition and subtraction, where all terms and solutions are integers. **Clarifications:** *Clarification 1:* Instruction includes using manipulatives, drawings, number lines and inverse operations. *Clarification 2:* Instruction includes equations in the forms $x+p=q$ and $p+x=q$, where x,p and q are any integer. *Clarification 3:* Problems include equations where the variable may be on either side of the equal sign.
MA.6.AR.2.3:	Write and solve one-step equations in one variable within a mathematical or real-world context using multiplication and division, where all terms and solutions are integers. **Clarifications:** *Clarification 1*: Instruction includes using manipulatives, drawings, number lines and inverse operations. *Clarification 2*: Instruction includes equations in the forms $x/p = q$, where $p \neq 0$, and $px = q$. *Clarification 3*: Problems include equations where the variable may be on either side of the equal sign.
MA.6.AR.2.4:	Determine the unknown decimal or fraction in an equation involving any of the four operations, relating three numbers, with the unknown in any position. **Clarifications:** *Clarification 1:* Instruction focuses on using algebraic reasoning, drawings, and mental math to determine unknowns. *Clarification 2:* Problems include the unknown and different operations on either side of the equal sign. All terms and solutions are limited to positive rational numbers.
MA.6.AR.3.1:	Given a real-world context, write and interpret ratios to show the relative sizes of two quantities using appropriate notation: $\frac{a}{b}$, a to b, or a:b where b $\neq$ 0. **Clarifications:** *Clarification 1:* Instruction focuses on the understanding that a ratio can be described as a comparison of two quantities in either the same or different units. *Clarification 2:* Instruction includes using manipulatives, drawings, models and words to interpret part-to-part ratios and part-to-whole ratios. *Clarification 3:* The values of a and b are limited to whole numbers.
MA.6.AR.3.2:	Given a real-world context, determine a rate for a ratio of quantities with different units. Calculate and interpret the corresponding unit rate. **Clarifications:** *Clarification 1:* Instruction includes using manipulatives, drawings, models and words and making connections between ratios, rates and unit rates. *Clarification 2:* Problems will not include conversions between customary and metric systems.
	Extend previous understanding of fractions and numerical patterns to generate or complete a two- or three-column table to display equivalent part-

	to-part ratios and part-to-part-to-whole ratios.
MA.6.AR.3.3:	**Clarifications:** *Clarification 1:* Instruction includes using two-column tables (e.g., a relationship between two variables) and three-column tables (e.g., part-to-part-to-whole relationship) to generate conversion charts and mixture charts.
MA.6.AR.3.4:	Apply ratio relationships to solve mathematical and real-world problems involving percentages using the relationship between two quantities. **Clarifications:** *Clarification 1:* Instruction includes the comparison of $\frac{part}{whole}$ to $\frac{percent}{100}$ in order to determine the percent, the part or the whole.
MA.6.AR.3.5:	Solve mathematical and real-world problems involving ratios, rates and unit rates, including comparisons, mixtures, ratios of lengths and conversions within the same measurement system. **Clarifications:** *Clarification 1:* Instruction includes the use of tables, tape diagrams and number lines.
MA.6.DP.1.1:	Recognize and formulate a statistical question that would generate numerical data.
MA.6.DP.1.2:	Given a numerical data set within a real-world context, find and interpret mean, median, mode and range. **Clarifications:** *Clarification 1:* Numerical data is limited to positive rational numbers.
MA.6.DP.1.3:	Given a box plot within a real-world context, determine the minimum, the lower quartile, the median, the upper quartile and the maximum. Use this summary of the data to describe the spread and distribution of the data. **Clarifications:** *Clarification 1:* Instruction includes describing range, interquartile range, halves and quarters of the data.
MA.6.DP.1.4:	Given a histogram or line plot within a real-world context, qualitatively describe and interpret the spread and distribution of the data, including any symmetry, skewness, gaps, clusters, outliers and the range. **Clarifications:** *Clarification 1:* Refer to K-12 Mathematics Glossary (Appendix C).
MA.6.DP.1.5:	Create box plots and histograms to represent sets of numerical data within real-world contexts. **Clarifications:** *Clarification 1:* Instruction includes collecting data and discussing ways to collect truthful data to construct graphical representations. *Clarification 2:* Within this benchmark, it is the expectation to use appropriate titles, labels, scales and units when constructing graphical representations. *Clarification 3:* Numerical data is limited to positive rational numbers.
MA.6.DP.1.6:	Given a real-world scenario, determine and describe how changes in data values impact measures of center and variation. **Clarifications:** *Clarification 1:* Instruction includes choosing the measure of center or measure of variation depending on the scenario. *Clarification 2:* The measures of center are limited to mean and median. The measures of variation are limited to range and interquartile range. *Clarification 3:* Numerical data is limited to positive rational numbers.
MA.6.GR.1.1:	Extend previous understanding of the coordinate plane to plot rational number ordered pairs in all four quadrants and on both axes. Identify the x- or y-axis as the line of reflection when two ordered pairs have an opposite x- or y-coordinate.
MA.6.GR.1.2:	Find distances between ordered pairs, limited to the same x-coordinate or the same y-coordinate, represented on the coordinate plane.
MA.6.GR.1.3:	Solve mathematical and real-world problems by plotting points on a coordinate plane, including finding the perimeter or area of a rectangle. **Clarifications:** *Clarification 1:* Instruction includes finding distances between points, computing dimensions of a rectangle or determining a fourth vertex of a rectangle. *Clarification 2:* Problems involving rectangles are limited to cases where the sides are parallel to the axes.
MA.6.GR.2.1:	Derive a formula for the area of a right triangle using a rectangle. Apply a formula to find the area of a triangle. **Clarifications:** *Clarification 1:* Instruction focuses on the relationship between the area of a rectangle and the area of a right triangle. *Clarification 2:* Within this benchmark, the expectation is to know from memory a formula for the area of a triangle.
MA.6.GR.2.2:	Solve mathematical and real-world problems involving the area of quadrilaterals and composite figures by decomposing them into triangles or rectangles. **Clarifications:** *Clarification 1:* Problem types include finding area of composite shapes and determining missing dimensions. *Clarification 2:* Within this benchmark, the expectation is to know from memory a formula for the area of a rectangle and triangle. *Clarification 3:* Dimensions are limited to positive rational numbers.
MA.6.GR.2.3:	Solve mathematical and real-world problems involving the volume of right rectangular prisms with positive rational number edge lengths using a visual model and a formula. **Clarifications:** *Clarification 1:* Problem types include finding the volume or a missing dimension of a rectangular prism.
MA.6.GR.2.4:	Given a mathematical or real-world context, find the surface area of right rectangular prisms and right rectangular pyramids using the figure’s net. **Clarifications:** *Clarification 1:* Instruction focuses on representing a right rectangular prism and right rectangular pyramid with its net and on the connection between the surface area of a figure and its net. *Clarification 2:* Within this benchmark, the expectation is to find the surface area when given a net or when given a three-dimensional figure.

	Clarification 3: Problems involving right rectangular pyramids are limited to cases where the heights of triangles are given. *Clarification 4:* Dimensions are limited to positive rational numbers.
MA.6.NSO.1.1:	Extend previous understanding of numbers to define rational numbers. Plot, order and compare rational numbers. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is to plot, order and compare positive and negative rational numbers when given in the same form and to plot, order and compare positive rational numbers when given in different forms (fraction, decimal, percentage). *Clarification 2:* Within this benchmark, the expectation is to use symbols (<, > or =).
MA.6.NSO.1.2:	Given a mathematical or real-world context, represent quantities that have opposite direction using rational numbers. Compare them on a number line and explain the meaning of zero within its context. **Clarifications:** *Clarification 1:* Instruction includes vertical and horizontal number lines, context referring to distances, temperatures and finances and using informal verbal comparisons, such as, lower, warmer or more in debt. *Clarification 2:* Within this benchmark, the expectation is to compare positive and negative rational numbers when given in the same form.
MA.6.NSO.1.3:	Given a mathematical or real-world context, interpret the absolute value of a number as the distance from zero on a number line. Find the absolute value of rational numbers. **Clarifications:** *Clarification 1:* Instruction includes the connection of absolute value to mirror images about zero and to opposites. *Clarification 2:* Instruction includes vertical and horizontal number lines and context referring to distances, temperature and finances.
MA.6.NSO.1.4:	Solve mathematical and real-world problems involving absolute value, including the comparison of absolute value. **Clarifications:** *Clarification 1:* Absolute value situations include distances, temperatures and finances. *Clarification 2:* Problems involving calculations with absolute value are limited to two or fewer operations. *Clarification 3:* Within this benchmark, the expectation is to use integers only.
MA.6.NSO.2.1:	Multiply and divide positive multi-digit numbers with decimals to the thousandths, including using a standard algorithm with procedural fluency. **Clarifications:** *Clarification 1:* Multi-digit decimals are limited to no more than 5 total digits.
MA.6.NSO.2.2:	Extend previous understanding of multiplication and division to compute products and quotients of positive fractions by positive fractions, including mixed numbers, with procedural fluency. **Clarifications:** *Clarification 1:* Instruction focuses on making connections between visual models, the relationship between multiplication and division, reciprocals and algorithms.
MA.6.NSO.2.3:	Solve multi-step real-world problems involving any of the four operations with positive multi-digit decimals or positive fractions, including mixed numbers. **Clarifications:** *Clarification 1:* Within this benchmark, it is not the expectation to include both decimals and fractions within a single problem.
MA.6.NSO.3.1:	Given a mathematical or real-world context, find the greatest common factor and least common multiple of two whole numbers. **Clarifications:** *Clarification 1:* Within this benchmark, expectations include finding greatest common factor within 1,000 and least common multiple with factors to 25. *Clarification 2*: Instruction includes finding the greatest common factor of the numerator and denominator of a fraction to simplify a fraction.
MA.6.NSO.3.2:	Rewrite the sum of two composite whole numbers having a common factor, as a common factor multiplied by the sum of two whole numbers. **Clarifications:** *Clarification 1:* Instruction includes using the distributive property to generate equivalent expressions.
MA.6.NSO.3.3:	Evaluate positive rational numbers and integers with natural number exponents. **Clarifications:** *Clarification 1:* Within this benchmark, expectations include using natural number exponents up to 5.
MA.6.NSO.3.4:	Express composite whole numbers as a product of prime factors with natural number exponents.
MA.6.NSO.3.5:	Rewrite positive rational numbers in different but equivalent forms including fractions, terminating decimals and percentages. **Clarifications:** *Clarification 1:* Rational numbers include decimal equivalence up to the thousandths place.
MA.6.NSO.4.1:	Apply and extend previous understandings of operations with whole numbers to add and subtract integers with procedural fluency. **Clarifications:** *Clarification 1:* Instruction begins with the use of manipulatives, models and number lines working towards becoming procedurally fluent by the end of grade 6. *Clarification 2:* Instruction focuses on the inverse relationship between the operations of addition and subtraction. If p and q are integers, then p-q=p+(-q) and p+q=p-(-q).
MA.6.NSO.4.2:	Apply and extend previous understandings of operations with whole numbers to multiply and divide integers with procedural fluency. **Clarifications:** *Clarification 1:* Instruction includes the use of models and number lines and the inverse relationship between multiplication and division, working towards becoming procedurally fluent by the end of grade 6. *Clarification 2:* Instruction focuses on the understanding that integers can be divided, provided that the divisor is not zero, and every quotient of

	integers (with non-zero divisor) is a rational number. If p and q are integers where q≠0, then $-\left(\frac{p}{q}\right)=\frac{-p}{q}$, $-\left(\frac{p}{q}\right)=\frac{p}{-q}$ and $\frac{-p}{q}=\frac{p}{-q}$.
MA.7.AR.1.1:	Apply properties of operations to add and subtract linear expressions with rational coefficients. **Clarifications:** *Clarification 1:* Instruction includes linear expressions in the form ax±b or b±ax, where a and b are rational numbers. *Clarification 2:* Refer to Properties of Operations, Equality and Inequality (Appendix D).
MA.7.AR.1.2:	Determine whether two linear expressions are equivalent. **Clarifications:** *Clarification 1:* Instruction includes using properties of operations accurately and efficiently. *Clarification 2:* Instruction includes linear expressions in any form with rational coefficients. *Clarification 3:* Refer to Properties of Operations, Equality and Inequality (Appendix D).
MA.7.AR.2.1:	Write and solve one-step inequalities in one variable within a mathematical context and represent solutions algebraically or graphically. **Clarifications:** *Clarification 1:* Instruction focuses on the properties of inequality. Refer to Properties of Operations, Equality and Inequality (Appendix D). *Clarification 2:* Instruction includes inequalities in the forms $px > q$; $\frac{x}{p} > q$; x±p>q and p±x>q, where p and q are specific rational numbers and any inequality symbol can be represented. *Clarification 3:* Problems include inequalities where the variable may be on either side of the inequality symbol.
MA.7.AR.3.1:	Apply previous understanding of percentages and ratios to solve multi-step real-world percent problems. **Clarifications:** *Clarification 1:* Instruction includes discounts, markups, simple interest, tax, tips, fees, percent increase, percent decrease and percent error.
MA.7.AR.3.2:	Apply previous understanding of ratios to solve real-world problems involving proportions.
MA.7.DP.1.1:	Determine an appropriate measure of center or measure of variation to summarize numerical data, represented numerically or graphically, taking into consideration the context and any outliers. **Clarifications:** *Clarification 1:* Instruction includes recognizing whether a measure of center or measure of variation is appropriate and can be justified based on the given context or the statistical purpose. *Clarification 2:* Graphical representations are limited to histograms, line plots, box plots and stem-and-leaf plots. *Clarification 3:* The measure of center is limited to mean and median. The measure of variation is limited to range and interquartile range.
MA.7.DP.1.2:	Given two numerical or graphical representations of data, use the measure(s) of center and measure(s) of variability to make comparisons, interpret results and draw conclusions about the two populations. **Clarifications:** *Clarification 1:* Graphical representations are limited to histograms, line plots, box plots and stem-and-leaf plots. *Clarification 2:* The measure of center is limited to mean and median. The measure of variation is limited to range and interquartile range.
MA.7.DP.1.3:	Given categorical data from a random sample, use proportional relationships to make predictions about a population.
MA.7.DP.2.1:	Determine the sample space for a simple experiment. **Clarifications:** *Clarification 1:* Simple experiments include tossing a fair coin, rolling a fair die, picking a card randomly from a deck, picking marbles randomly from a bag and spinning a fair spinner.
MA.7.DP.2.2:	Given the probability of a chance event, interpret the likelihood of it occurring. Compare the probabilities of chance events. **Clarifications:** *Clarification 1:* Instruction includes representing probability as a fraction, percentage or decimal between 0 and 1 with probabilities close to 1 corresponding to highly likely events and probabilities close to 0 corresponding to highly unlikely events. *Clarification 2:* Instruction includes P(event) notation. *Clarification 3:* Instruction includes representing probability as a fraction, percentage or decimal.
MA.7.DP.2.3:	Find the theoretical probability of an event related to a simple experiment. **Clarifications:** *Clarification 1:* Instruction includes representing probability as a fraction, percentage or decimal. *Clarification 2:* Simple experiments include tossing a fair coin, rolling a fair die, picking a card randomly from a deck, picking marbles randomly from a bag and spinning a fair spinner.
MA.7.DP.2.4:	Use a simulation of a simple experiment to find experimental probabilities and compare them to theoretical probabilities. **Clarifications:** *Clarification 1:* Instruction includes representing probability as a fraction, percentage or decimal. *Clarification 2:* Instruction includes recognizing that experimental probabilities may differ from theoretical probabilities due to random variation. As the number of repetitions increases experimental probabilities will typically better approximate the theoretical probabilities. *Clarification 3:* Experiments include tossing a fair coin, rolling a fair die, picking a card randomly from a deck, picking marbles randomly from a bag and spinning a fair spinner.
MA.7.GR.1.1:	Apply formulas to find the areas of trapezoids, parallelograms and rhombi. **Clarifications:** *Clarification 1:* Instruction focuses on the connection from the areas of trapezoids, parallelograms and rhombi to the areas of rectangles or triangles.

	Clarification 2: Within this benchmark, the expectation is not to memorize area formulas for trapezoids, parallelograms and rhombi.
MA.7.GR.1.2:	Solve mathematical or real-world problems involving the area of polygons or composite figures by decomposing them into triangles or quadrilaterals. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is not to find areas of figures on the coordinate plane or to find missing dimensions.
MA.7.NSO.2.1:	Solve mathematical problems using multi-step order of operations with rational numbers including grouping symbols, whole-number exponents and absolute value. **Clarifications:** *Clarification 1:* Multi-step expressions are limited to 6 or fewer steps.
MA.7.NSO.2.2:	Add, subtract, multiply and divide rational numbers with procedural fluency.
MA.7.NSO.2.3:	Solve real-world problems involving any of the four operations with rational numbers. **Clarifications:** *Clarification 1:* Instruction includes using one or more operations to solve problems.
MA.K12.MTR.1.1:	**Actively participate in effortful learning both individually and collectively.** Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task. • Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach. **Clarifications:** Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging. • Develop students' ability to analyze and problem solve. • Recognize students' effort when solving challenging problems.
MA.K12.MTR.2.1:	**Demonstrate understanding by representing problems in multiple ways.** Mathematicians who demonstrate understanding by representing problems in multiple ways: • Build understanding through modeling and using manipulatives. • Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. • Progress from modeling problems with objects and drawings to using algorithms and equations. • Express connections between concepts and representations. • Choose a representation based on the given context or purpose. **Clarifications:** Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: • Help students make connections between concepts and representations. • Provide opportunities for students to use manipulatives when investigating concepts. • Guide students from concrete to pictorial to abstract representations as understanding progresses. • Show students that various representations can have different purposes and can be useful in different situations.
MA.K12.MTR.3.1:	**Complete tasks with mathematical fluency.** Mathematicians who complete tasks with mathematical fluency: • Select efficient and appropriate methods for solving problems within the given context. • Maintain flexibility and accuracy while performing procedures and mental calculations. • Complete tasks accurately and with confidence. • Adapt procedures to apply them to a new context. • Use feedback to improve efficiency when performing calculations. **Clarifications:** Teachers who encourage students to complete tasks with mathematical fluency: • Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately. • Offer multiple opportunities for students to practice efficient and generalizable methods. • Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.
MA.K12.MTR.4.1:	**Engage in discussions that reflect on the mathematical thinking of self and others.** Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others: • Communicate mathematical ideas, vocabulary and methods effectively. • Analyze the mathematical thinking of others. • Compare the efficiency of a method to those expressed by others. • Recognize errors and suggest how to correctly solve the task. • Justify results by explaining methods and processes. • Construct possible arguments based on evidence. **Clarifications:** Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: • Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning. • Create opportunities for students to discuss their thinking with peers.

	• Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. • Develop students' ability to justify methods and compare their responses to the responses of their peers.
MA.K12.MTR.5.1:	**Use patterns and structure to help understand and connect mathematical concepts.** Mathematicians who use patterns and structure to help understand and connect mathematical concepts: • Focus on relevant details within a problem. • Create plans and procedures to logically order events, steps or ideas to solve problems. • Decompose a complex problem into manageable parts. • Relate previously learned concepts to new concepts. • Look for similarities among problems. • Connect solutions of problems to more complicated large-scale situations. **Clarifications:** Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts: • Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts. • Support students to develop generalizations based on the similarities found among problems. • Provide opportunities for students to create plans and procedures to solve problems. • Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.
MA.K12.MTR.6.1:	**Assess the reasonableness of solutions.** Mathematicians who assess the reasonableness of solutions: • Estimate to discover possible solutions. • Use benchmark quantities to determine if a solution makes sense. • Check calculations when solving problems. • Verify possible solutions by explaining the methods used. • Evaluate results based on the given context. **Clarifications:** Teachers who encourage students to assess the reasonableness of solutions: • Have students estimate or predict solutions prior to solving. • Prompt students to continually ask, "Does this solution make sense? How do you know?" • Reinforce that students check their work as they progress within and after a task. • Strengthen students' ability to verify solutions through justifications.
MA.K12.MTR.7.1:	**Apply mathematics to real-world contexts.** Mathematicians who apply mathematics to real-world contexts: • Connect mathematical concepts to everyday experiences. • Use models and methods to understand, represent and solve problems. • Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency. **Clarifications:** Teachers who encourage students to apply mathematics to real-world contexts: • Provide opportunities for students to create models, both concrete and abstract, and perform investigations. • Challenge students to question the accuracy of their models and methods. • Support students as they validate conclusions by comparing them to the given situation. • Indicate how various concepts can be applied to other disciplines.
ELA.K12.EE.1.1:	Cite evidence to explain and justify reasoning. **Clarifications:** K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing. 2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations. 4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they've directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor. 6-8 Students continue with previous skills and use a style guide to create a proper citation. 9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.
ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.
ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like "Why is the girl smiling?" or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully.

ELA.K12.EE.4.1:	In grades 1-2, students build upon these skills by justifying what they are thinking. For example: “I think _______ because ______.” The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
ELA.K12.EE.5.1:	Use the accepted rules governing a specific format to create quality work. **Clarifications:** Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.
ELA.K12.EE.6.1:	Use appropriate voice and tone when speaking or writing. **Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.
ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.

General Course Information and Notes

VERSION DESCRIPTION

In grade 6 accelerated, instructional time will emphasize five areas: (1) performing all four operations with rational numbers with procedural fluency; (2) exploring and applying concepts of ratios, rates, percentages and proportions to solve problems; (3) creating, interpreting and using expressions, equations and inequalities; (4) extending geometric reasoning to plotting points on the coordinate plane, area and volume of geometric figures and (5) extending understanding of statistical thinking to represent and compare categorical and numerical data.

Curricular content for all subjects must integrate critical-thinking, problem-solving, and workforce-literacy skills; communication, reading, and writing skills; mathematics skills; collaboration skills; contextual and applied-learning skills; technology-literacy skills; information and media-literacy skills; and civic-engagement skills.

General Notes

Florida’s Benchmarks for Excellent Student Thinking (B.E.S.T.) Standards
This course includes Florida’s B.E.S.T. ELA Expectations (EE) and Mathematical Thinking and Reasoning Standards (MTRs) for students. Florida educators should intentionally embed these standards within the content and their instruction as applicable. For guidance on the implementation of the EEs and MTRs, please visit https://www.cpalms.org/Standards/BEST_Standards.aspx and select the appropriate B.E.S.T. Standards package.

English Language Development ELD Standards Special Notes Section:
Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL’s need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link:
https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf

General Information

Course Number: 1205020

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 6 to 8 Education Courses > **Subject:** Mathematics > **SubSubject:** General Mathematics >

Abbreviated Title: M/J ACCEL MATH GR 6

Course Length: Year (Y)

Course Attributes:

- Honors
- Class Size Core Required

Course Type: Core Academic Course
Course Status: State Board Approved
Grade Level(s): 6

Course Level: 3

Educator Certifications

Mathematics (Grades 6-12)
Middle Grades Mathematics (Middle Grades 5-9)
Middle Grades Integrated Curriculum (Middle Grades 5-9)
Classical Education - Restricted (Elementary and Secondary Grades K-12)

Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

M/J Mathematics 1 Cambridge Lower Secondary (#1205030) 2024 - And Beyond (current)

General Course Information and Notes

General Notes

For more information about this Cambridge course, visit Cambridge Lower Secondary curriculum.

General Information

Course Number: 1205030

Course Path: **Section:** Grades PreK to 12 Education Courses > **Grade Group:** Grades 6 to 8 Education Courses > **Subject:** Mathematics > **SubSubject:** General Mathematics >

Abbreviated Title: M/J MATH 1 CLS

Course Length: Year (Y)

Course Attributes:

- Advanced International Certificate of Education (AICE)
- External Course Description

Course Type: Core Academic Course

Course Level: 3

Course Status: Course Approved

Grade Level(s): 6,7,8

Educator Certifications

Mathematics (Elementary Grades 1-6)
Middle Grades Mathematics (Middle Grades 5-9)
Mathematics (Grades 6-12)
Middle Grades Integrated Curriculum (Middle Grades 5-9)
Elementary Education (Grades K-6)
Elementary Education (Elementary Grades 1-6)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

M/J Grade 7 Mathematics (#1205040) 2024 - And Beyond (current)

Course Standards

Name	Description
MA.7.AR.1.1:	Apply properties of operations to add and subtract linear expressions with rational coefficients. **Clarifications:** *Clarification 1:* Instruction includes linear expressions in the form ax±b or b±ax, where a and b are rational numbers. *Clarification 2:* Refer to Properties of Operations, Equality and Inequality (Appendix D).
MA.7.AR.1.2:	Determine whether two linear expressions are equivalent. **Clarifications:** *Clarification 1:* Instruction includes using properties of operations accurately and efficiently. *Clarification 2:* Instruction includes linear expressions in any form with rational coefficients. *Clarification 3:* Refer to Properties of Operations, Equality and Inequality (Appendix D).
MA.7.AR.2.1:	Write and solve one-step inequalities in one variable within a mathematical context and represent solutions algebraically or graphically. **Clarifications:** *Clarification 1:* Instruction focuses on the properties of inequality. Refer to Properties of Operations, Equality and Inequality (Appendix D). *Clarification 2:* Instruction includes inequalities in the forms $px > q$; $\frac{x}{p} > q$; x±p>q and p±x>q, where p and q are specific rational numbers and any inequality symbol can be represented. *Clarification 3:* Problems include inequalities where the variable may be on either side of the inequality symbol.
MA.7.AR.2.2:	Write and solve two-step equations in one variable within a mathematical or real-world context, where all terms are rational numbers. **Clarifications:** *Clarification 1:* Instruction focuses the application of the properties of equality. Refer to Properties of Operations, Equality and Inequality (Appendix D). *Clarification 2:* Instruction includes equations in the forms px±q=r and p(x±q)=r, where p, q and r are specific rational numbers. *Clarification 3:* Problems include linear equations where the variable may be on either side of the equal sign.
MA.7.AR.3.1:	Apply previous understanding of percentages and ratios to solve multi-step real-world percent problems. **Clarifications:** *Clarification 1:* Instruction includes discounts, markups, simple interest, tax, tips, fees, percent increase, percent decrease and percent error.
MA.7.AR.3.2:	Apply previous understanding of ratios to solve real-world problems involving proportions.
MA.7.AR.3.3:	Solve mathematical and real-world problems involving the conversion of units across different measurement systems.
MA.7.AR.4.1:	Determine whether two quantities have a proportional relationship by examining a table, graph or written description. **Clarifications:** *Clarification 1:* Instruction focuses on the connection to ratios and on the constant of proportionality, which is the ratio between two quantities in a proportional relationship.
MA.7.AR.4.2:	Determine the constant of proportionality within a mathematical or real-world context given a table, graph or written description of a proportional relationship.
MA.7.AR.4.3:	Given a mathematical or real-world context, graph proportional relationships from a table, equation or a written description. **Clarifications:** *Clarification 1:* Instruction includes equations of proportional relationships in the form of y=px, where p is the constant of proportionality.
MA.7.AR.4.4:	Given any representation of a proportional relationship, translate the representation to a written description, table or equation. **Clarifications:** *Clarification 1:* Given representations are limited to a written description, graph, table or equation. *Clarification 2:* Instruction includes equations of proportional relationships in the form of y=px, where p is the constant of proportionality.
MA.7.AR.4.5:	Solve real-world problems involving proportional relationships.
MA.7.DP.1.1:	Determine an appropriate measure of center or measure of variation to summarize numerical data, represented numerically or graphically, taking into consideration the context and any outliers. **Clarifications:** *Clarification 1:* Instruction includes recognizing whether a measure of center or measure of variation is appropriate and can be justified based on the given context or the statistical purpose. *Clarification 2:* Graphical representations are limited to histograms, line plots, box plots and stem-and-leaf plots. *Clarification 3:* The measure of center is limited to mean and median. The measure of variation is limited to range and interquartile range.
MA.7.DP.1.2:	Given two numerical or graphical representations of data, use the measure(s) of center and measure(s) of variability to make comparisons, interpret results and draw conclusions about the two populations. **Clarifications:** *Clarification 1:* Graphical representations are limited to histograms, line plots, box plots and stem-and-leaf plots.

	Clarification 2: The measure of center is limited to mean and median. The measure of variation is limited to range and interquartile range.
MA.7.DP.1.3:	Given categorical data from a random sample, use proportional relationships to make predictions about a population.
MA.7.DP.1.4:	Use proportional reasoning to construct, display and interpret data in circle graphs. **Clarifications:** *Clarification 1:* Data is limited to no more than 6 categories.
MA.7.DP.1.5:	Given a real-world numerical or categorical data set, choose and create an appropriate graphical representation. **Clarifications:** *Clarification 1:* Graphical representations are limited to histograms, bar charts, circle graphs, line plots, box plots and stem-and-leaf plots.
MA.7.DP.2.1:	Determine the sample space for a simple experiment. **Clarifications:** *Clarification 1:* Simple experiments include tossing a fair coin, rolling a fair die, picking a card randomly from a deck, picking marbles randomly from a bag and spinning a fair spinner.
MA.7.DP.2.2:	Given the probability of a chance event, interpret the likelihood of it occurring. Compare the probabilities of chance events. **Clarifications:** *Clarification 1:* Instruction includes representing probability as a fraction, percentage or decimal between 0 and 1 with probabilities close to 1 corresponding to highly likely events and probabilities close to 0 corresponding to highly unlikely events. *Clarification 2:* Instruction includes P(event) notation. *Clarification 3:* Instruction includes representing probability as a fraction, percentage or decimal.
MA.7.DP.2.3:	Find the theoretical probability of an event related to a simple experiment. **Clarifications:** *Clarification 1:* Instruction includes representing probability as a fraction, percentage or decimal. *Clarification 2:* Simple experiments include tossing a fair coin, rolling a fair die, picking a card randomly from a deck, picking marbles randomly from a bag and spinning a fair spinner.
MA.7.DP.2.4:	Use a simulation of a simple experiment to find experimental probabilities and compare them to theoretical probabilities. **Clarifications:** *Clarification 1:* Instruction includes representing probability as a fraction, percentage or decimal. *Clarification 2:* Instruction includes recognizing that experimental probabilities may differ from theoretical probabilities due to random variation. As the number of repetitions increases experimental probabilities will typically better approximate the theoretical probabilities. *Clarification 3:* Experiments include tossing a fair coin, rolling a fair die, picking a card randomly from a deck, picking marbles randomly from a bag and spinning a fair spinner.
MA.7.GR.1.1:	Apply formulas to find the areas of trapezoids, parallelograms and rhombi. **Clarifications:** *Clarification 1:* Instruction focuses on the connection from the areas of trapezoids, parallelograms and rhombi to the areas of rectangles or triangles. *Clarification 2:* Within this benchmark, the expectation is not to memorize area formulas for trapezoids, parallelograms and rhombi.
MA.7.GR.1.2:	Solve mathematical or real-world problems involving the area of polygons or composite figures by decomposing them into triangles or quadrilaterals. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is not to find areas of figures on the coordinate plane or to find missing dimensions.
MA.7.GR.1.3:	Explore the proportional relationship between circumferences and diameters of circles. Apply a formula for the circumference of a circle to solve mathematical and real-world problems. **Clarifications:** *Clarification 1:* Instruction includes the exploration and analysis of circular objects to examine the proportional relationship between circumference and diameter and arrive at an approximation of pi (π) as the constant of proportionality. *Clarification 2:* Solutions may be represented in terms of pi (π) or approximately.
MA.7.GR.1.4:	Explore and apply a formula to find the area of a circle to solve mathematical and real-world problems. **Clarifications:** *Clarification 1:* Instruction focuses on the connection between formulas for the area of a rectangle and the area of a circle. *Clarification 2:* Problem types include finding areas of fractional parts of a circle. *Clarification 3:* Solutions may be represented in terms of pi (π) or approximately.
MA.7.GR.1.5:	Solve mathematical and real-world problems involving dimensions and areas of geometric figures, including scale drawings and scale factors. **Clarifications:** *Clarification 1:* Instruction focuses on seeing the scale factor as a constant of proportionality between corresponding lengths in the scale drawing and the original object. *Clarification 2:* Instruction includes the understanding that if the scaling factor is k, then the constant of proportionality between corresponding areas is k^2 . *Clarification 3:* Problem types include finding the scale factor given a set of dimensions as well as finding dimensions when given a scale factor.
MA.7.GR.2.1:	Given a mathematical or real-world context, find the surface area of a right circular cylinder using the figure's net. **Clarifications:** *Clarification 1:* Instruction focuses on representing a right circular cylinder with its net and on the connection between surface area of a figure and its net. *Clarification 2:* Within this benchmark, the expectation is to find the surface area when given a net or when given a three-dimensional figure.

	Clarification 3: Within this benchmark, the expectation is not to memorize the surface area formula for a right circular cylinder. Clarification 4: Solutions may be represented in terms of pi (π) or approximately.
MA.7.GR.2.2:	Solve real-world problems involving surface area of right circular cylinders. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is not to memorize the surface area formula for a right circular cylinder or to find radius as a missing dimension. *Clarification 2:* Solutions may be represented in terms of pi (π) or approximately.
MA.7.GR.2.3:	Solve mathematical and real-world problems involving volume of right circular cylinders. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is not to memorize the volume formula for a right circular cylinder or to find radius as a missing dimension. *Clarification 2:* Solutions may be represented in terms of pi (π) or approximately.
MA.7.NSO.1.1:	Know and apply the Laws of Exponents to evaluate numerical expressions and generate equivalent numerical expressions, limited to whole-number exponents and rational number bases. **Clarifications:** *Clarification 1:* Instruction focuses on building the Laws of Exponents from specific examples. Refer to the K-12 Formulas (Appendix E) for the Laws of Exponents. *Clarification 2:* Problems in the form $\frac{a^n}{a^m} = a^p$ must result in a whole-number value for p.
MA.7.NSO.1.2:	Rewrite rational numbers in different but equivalent forms including fractions, mixed numbers, repeating decimals and percentages to solve mathematical and real-world problems.
MA.7.NSO.2.1:	Solve mathematical problems using multi-step order of operations with rational numbers including grouping symbols, whole-number exponents and absolute value. **Clarifications:** *Clarification 1:* Multi-step expressions are limited to 6 or fewer steps.
MA.7.NSO.2.2:	Add, subtract, multiply and divide rational numbers with procedural fluency.
MA.7.NSO.2.3:	Solve real-world problems involving any of the four operations with rational numbers. **Clarifications:** *Clarification 1:* Instruction includes using one or more operations to solve problems.
MA.K12.MTR.1.1:	**Actively participate in effortful learning both individually and collectively.** Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task. • Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach. **Clarifications:** Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging. • Develop students' ability to analyze and problem solve. • Recognize students' effort when solving challenging problems.
MA.K12.MTR.2.1:	**Demonstrate understanding by representing problems in multiple ways.** Mathematicians who demonstrate understanding by representing problems in multiple ways: • Build understanding through modeling and using manipulatives. • Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. • Progress from modeling problems with objects and drawings to using algorithms and equations. • Express connections between concepts and representations. • Choose a representation based on the given context or purpose. **Clarifications:** Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: • Help students make connections between concepts and representations. • Provide opportunities for students to use manipulatives when investigating concepts. • Guide students from concrete to pictorial to abstract representations as understanding progresses. • Show students that various representations can have different purposes and can be useful in different situations.
MA.K12.MTR.3.1:	**Complete tasks with mathematical fluency.** Mathematicians who complete tasks with mathematical fluency: • Select efficient and appropriate methods for solving problems within the given context. • Maintain flexibility and accuracy while performing procedures and mental calculations. • Complete tasks accurately and with confidence. • Adapt procedures to apply them to a new context. • Use feedback to improve efficiency when performing calculations.

	Clarifications: Teachers who encourage students to complete tasks with mathematical fluency: • Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately. • Offer multiple opportunities for students to practice efficient and generalizable methods. • Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.
MA.K12.MTR.4.1:	**Engage in discussions that reflect on the mathematical thinking of self and others.** Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others: • Communicate mathematical ideas, vocabulary and methods effectively. • Analyze the mathematical thinking of others. • Compare the efficiency of a method to those expressed by others. • Recognize errors and suggest how to correctly solve the task. • Justify results by explaining methods and processes. • Construct possible arguments based on evidence. **Clarifications:** Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: • Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning. • Create opportunities for students to discuss their thinking with peers. • Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. • Develop students' ability to justify methods and compare their responses to the responses of their peers.
MA.K12.MTR.5.1:	**Use patterns and structure to help understand and connect mathematical concepts.** Mathematicians who use patterns and structure to help understand and connect mathematical concepts: • Focus on relevant details within a problem. • Create plans and procedures to logically order events, steps or ideas to solve problems. • Decompose a complex problem into manageable parts. • Relate previously learned concepts to new concepts. • Look for similarities among problems. • Connect solutions of problems to more complicated large-scale situations. **Clarifications:** Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts: • Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts. • Support students to develop generalizations based on the similarities found among problems. • Provide opportunities for students to create plans and procedures to solve problems. • Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.
MA.K12.MTR.6.1:	**Assess the reasonableness of solutions.** Mathematicians who assess the reasonableness of solutions: • Estimate to discover possible solutions. • Use benchmark quantities to determine if a solution makes sense. • Check calculations when solving problems. • Verify possible solutions by explaining the methods used. • Evaluate results based on the given context. **Clarifications:** Teachers who encourage students to assess the reasonableness of solutions: • Have students estimate or predict solutions prior to solving. • Prompt students to continually ask, "Does this solution make sense? How do you know?" • Reinforce that students check their work as they progress within and after a task. • Strengthen students' ability to verify solutions through justifications.
MA.K12.MTR.7.1:	**Apply mathematics to real-world contexts.** Mathematicians who apply mathematics to real-world contexts: • Connect mathematical concepts to everyday experiences. • Use models and methods to understand, represent and solve problems. • Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency. **Clarifications:** Teachers who encourage students to apply mathematics to real-world contexts: • Provide opportunities for students to create models, both concrete and abstract, and perform investigations. • Challenge students to question the accuracy of their models and methods. • Support students as they validate conclusions by comparing them to the given situation. • Indicate how various concepts can be applied to other disciplines.
ELA.K12.EE.1.1:	Cite evidence to explain and justify reasoning. **Clarifications:** K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing. 2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations. 4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they've directly

	quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor. 6-8 Students continue with previous skills and use a style guide to create a proper citation. 9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.
ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.
ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like "Why is the girl smiling?" or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
ELA.K12.EE.4.1:	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully. In grades 1-2, students build upon these skills by justifying what they are thinking. For example: "I think _______ because ______." The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
ELA.K12.EE.5.1:	Use the accepted rules governing a specific format to create quality work. **Clarifications:** Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.
ELA.K12.EE.6.1:	Use appropriate voice and tone when speaking or writing. **Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.
ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.
ELD.K12.ELL.SI.1:	English language learners communicate for social and instructional purposes within the school setting.

General Course Information and Notes

VERSION DESCRIPTION

The benchmarks in this course are mastery goals that students are expected to attain by the end of the year. To build mastery, students will continue to review and apply earlier grade-level benchmarks and expectations.

General Notes

In grade 7, instructional time will emphasize five areas: (1) recognizing that fractions, decimals and percentages are different representations of rational numbers and performing all four operations with rational numbers with procedural fluency; (2) creating equivalent expressions and solving equations and inequalities; (3) developing understanding of and applying proportional relationships in two variables; (4) extending analysis of two- and three-dimensional figures to include circles and cylinders and (5) representing and comparing categorical and numerical data and developing understanding of probability.

Curricular content for all subjects must integrate critical-thinking, problem-solving, and workforce-literacy skills; communication, reading, and writing skills; mathematics skills; collaboration skills; contextual and applied-learning skills; technology-literacy skills; information and media-literacy skills; and civic-engagement skills.

English Language Development ELD Standards Special Notes Section:
Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link:
https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf

General Information

Course Number: 1205040	**Course Path: Section:** Grades PreK to 12 Education Courses > **Grade Group:** Grades 6 to 8 Education Courses > **Subject:** Mathematics > **SubSubject:** General Mathematics > **Abbreviated Title:** M/J GRADE 7 MATH

Course Length: Year (Y)

Course Type: Core Academic Course

Course Level: 2

Course Status: State Board Approved

Grade Level(s): 7

Educator Certifications

Middle Grades Mathematics (Middle Grades 5-9)
Middle Grades Integrated Curriculum (Middle Grades 5-9)
Mathematics (Grades 6-12)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

M/J Accelerated Mathematics Grade 7 (#1205050) 2024 - And Beyond (current)

Course Standards

Name	Description
MA.7.AR.2.2:	Write and solve two-step equations in one variable within a mathematical or real-world context, where all terms are rational numbers. **Clarifications:** *Clarification 1:* Instruction focuses the application of the properties of equality. Refer to Properties of Operations, Equality and Inequality (Appendix D). *Clarification 2:* Instruction includes equations in the forms $px\pm q=r$ and $p(x\pm q)=r$, where p, q and r are specific rational numbers. *Clarification 3:* Problems include linear equations where the variable may be on either side of the equal sign.
MA.7.AR.3.3:	Solve mathematical and real-world problems involving the conversion of units across different measurement systems.
MA.7.AR.4.1:	Determine whether two quantities have a proportional relationship by examining a table, graph or written description. **Clarifications:** *Clarification 1:* Instruction focuses on the connection to ratios and on the constant of proportionality, which is the ratio between two quantities in a proportional relationship.
MA.7.AR.4.2:	Determine the constant of proportionality within a mathematical or real-world context given a table, graph or written description of a proportional relationship.
MA.7.AR.4.3:	Given a mathematical or real-world context, graph proportional relationships from a table, equation or a written description. **Clarifications:** *Clarification 1:* Instruction includes equations of proportional relationships in the form of $y=px$, where p is the constant of proportionality.
MA.7.AR.4.4:	Given any representation of a proportional relationship, translate the representation to a written description, table or equation. **Clarifications:** *Clarification 1:* Given representations are limited to a written description, graph, table or equation. *Clarification 2:* Instruction includes equations of proportional relationships in the form of $y=px$, where p is the constant of proportionality.
MA.7.AR.4.5:	Solve real-world problems involving proportional relationships.
MA.7.DP.1.4:	Use proportional reasoning to construct, display and interpret data in circle graphs. **Clarifications:** *Clarification 1:* Data is limited to no more than 6 categories.
MA.7.DP.1.5:	Given a real-world numerical or categorical data set, choose and create an appropriate graphical representation. **Clarifications:** *Clarification 1:* Graphical representations are limited to histograms, bar charts, circle graphs, line plots, box plots and stem-and-leaf plots.
MA.7.GR.1.3:	Explore the proportional relationship between circumferences and diameters of circles. Apply a formula for the circumference of a circle to solve mathematical and real-world problems. **Clarifications:** *Clarification 1:* Instruction includes the exploration and analysis of circular objects to examine the proportional relationship between circumference and diameter and arrive at an approximation of pi (π) as the constant of proportionality. *Clarification 2:* Solutions may be represented in terms of pi (π) or approximately.
MA.7.GR.1.4:	Explore and apply a formula to find the area of a circle to solve mathematical and real-world problems. **Clarifications:** *Clarification 1:* Instruction focuses on the connection between formulas for the area of a rectangle and the area of a circle. *Clarification 2:* Problem types include finding areas of fractional parts of a circle. *Clarification 3:* Solutions may be represented in terms of pi (π) or approximately.
MA.7.GR.1.5:	Solve mathematical and real-world problems involving dimensions and areas of geometric figures, including scale drawings and scale factors. **Clarifications:** *Clarification 1:* Instruction focuses on seeing the scale factor as a constant of proportionality between corresponding lengths in the scale drawing and the original object. *Clarification 2:* Instruction includes the understanding that if the scaling factor is k, then the constant of proportionality between corresponding areas is k^2 . *Clarification 3:* Problem types include finding the scale factor given a set of dimensions as well as finding dimensions when given a scale factor.
	Given a mathematical or real-world context, find the surface area of a right circular cylinder using the figure's net. **Clarifications:** *Clarification 1:* Instruction focuses on representing a right circular cylinder with its net and on the connection between surface area of a figure

MA.7.GR.2.1:	and its net. *Clarification 2:* Within this benchmark, the expectation is to find the surface area when given a net or when given a three-dimensional figure. *Clarification 3:* Within this benchmark, the expectation is not to memorize the surface area formula for a right circular cylinder. Clarification 4: Solutions may be represented in terms of pi (π) or approximately.
MA.7.GR.2.2:	Solve real-world problems involving surface area of right circular cylinders. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is not to memorize the surface area formula for a right circular cylinder or to find radius as a missing dimension. *Clarification 2:* Solutions may be represented in terms of pi (π) or approximately.
MA.7.GR.2.3:	Solve mathematical and real-world problems involving volume of right circular cylinders. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is not to memorize the volume formula for a right circular cylinder or to find radius as a missing dimension. *Clarification 2:* Solutions may be represented in terms of pi (π) or approximately.
MA.7.NSO.1.1:	Know and apply the Laws of Exponents to evaluate numerical expressions and generate equivalent numerical expressions, limited to whole-number exponents and rational number bases. **Clarifications:** *Clarification 1:* Instruction focuses on building the Laws of Exponents from specific examples. Refer to the K-12 Formulas (Appendix E) for the Laws of Exponents. *Clarification 2:* Problems in the form $\frac{a^n}{a^m} = a^p$ must result in a whole-number value for p.
MA.7.NSO.1.2:	Rewrite rational numbers in different but equivalent forms including fractions, mixed numbers, repeating decimals and percentages to solve mathematical and real-world problems.
MA.8.AR.1.1:	Apply the Laws of Exponents to generate equivalent algebraic expressions, limited to integer exponents and monomial bases. **Clarifications:** *Clarification 1:* Refer to the K-12 Formulas (Appendix E) for the Laws of Exponents.
MA.8.AR.1.2:	Apply properties of operations to multiply two linear expressions with rational coefficients. **Clarifications:** *Clarification 1:* Problems are limited to products where at least one of the factors is a monomial. *Clarification 2:* Refer to Properties of Operations, Equality and Inequality (Appendix D).
MA.8.AR.1.3:	Rewrite the sum of two algebraic expressions having a common monomial factor as a common factor multiplied by the sum of two algebraic expressions.
MA.8.AR.2.1:	Solve multi-step linear equations in one variable, with rational number coefficients. Include equations with variables on both sides. **Clarifications:** *Clarification 1:* Problem types include examples of one-variable linear equations that generate one solution, infinitely many solutions or no solution.
MA.8.AR.2.2:	Solve two-step linear inequalities in one variable and represent solutions algebraically and graphically. **Clarifications:** *Clarification 1:* Instruction includes inequalities in the forms $px\pm q>r$ and $p(x\pm q)>r$, where p, q and r are specific rational numbers and where any inequality symbol can be represented. *Clarification 2:* Problems include inequalities where the variable may be on either side of the inequality.
MA.8.AR.2.3:	Given an equation in the form of $x^2=p$ and $x^3=q$, where p is a whole number and q is an integer, determine the real solutions. **Clarifications:** *Clarification 1:* Instruction focuses on understanding that when solving $x^2=p$, there is both a positive and negative solution. *Clarification 2:* Within this benchmark, the expectation is to calculate square roots of perfect squares up to 225 and cube roots of perfect cubes from -125 to 125.
MA.8.AR.3.1:	Determine if a linear relationship is also a proportional relationship. **Clarifications:** *Clarification 1:* Instruction focuses on the understanding that proportional relationships are linear relationships whose graph passes through the origin. *Clarification 2:* Instruction includes the representation of relationships using tables, graphs, equations and written descriptions.
MA.8.AR.3.2:	Given a table, graph or written description of a linear relationship, determine the slope. **Clarifications:** *Clarification 1:* Problem types include cases where two points are given to determine the slope. *Clarification 2:* Instruction includes making connections of slope to the constant of proportionality and to similar triangles represented on the coordinate plane.
MA.8.AR.3.3:	Given a table, graph or written description of a linear relationship, write an equation in slope-intercept form.
MA.8.AR.3.4:	Given a mathematical or real-world context, graph a two-variable linear equation from a written description, a table or an equation in slope-intercept form.
MA.8.AR.3.5:	Given a real-world context, determine and interpret the slope and y-intercept of a two-variable linear equation from a written description, a table, graph or an equation in slope-intercept form. **Clarifications:**

	Clarification 1: Problems include conversions with temperature and equations of lines of fit in scatter plots.
MA.8.AR.4.1:	Given a system of two linear equations and a specified set of possible solutions, determine which ordered pairs satisfy the system of linear equations. **Clarifications:** *Clarification 1:* Instruction focuses on the understanding that a solution to a system of equations satisfies both linear equations simultaneously.
MA.8.AR.4.2:	Given a system of two linear equations represented graphically on the same coordinate plane, determine whether there is one solution, no solution or infinitely many solutions.
MA.8.AR.4.3:	Given a mathematical or real-world context, solve systems of two linear equations by graphing. **Clarifications:** *Clarification 1:* Instruction includes approximating non-integer solutions. *Clarification 2:* Within this benchmark, it is the expectation to represent systems of linear equations in slope-intercept form only. *Clarification 3:* Instruction includes recognizing that parallel lines have the same slope.
MA.8.DP.1.1:	Given a set of real-world bivariate numerical data, construct a scatter plot or a line graph as appropriate for the context. **Clarifications:** *Clarification 1:* Instruction includes recognizing similarities and differences between scatter plots and line graphs, and on determining which is more appropriate as a representation of the data based on the context. *Clarification 2:* Sets of data are limited to 20 points.
MA.8.DP.1.2:	Given a scatter plot within a real-world context, describe patterns of association. **Clarifications:** *Clarification 1:* Descriptions include outliers; positive or negative association; linear or nonlinear association; strong or weak association.
MA.8.DP.1.3:	Given a scatter plot with a linear association, informally fit a straight line. **Clarifications:** *Clarification 1:* Instruction focuses on the connection to linear functions. *Clarification 2:* Instruction includes using a variety of tools, including a ruler, to draw a line with approximately the same number of points above and below the line.
MA.8.DP.2.1:	Determine the sample space for a repeated experiment. **Clarifications:** *Clarification 1:* Instruction includes recording sample spaces for repeated experiments using organized lists, tables or tree diagrams. *Clarification 2:* Experiments to be repeated are limited to tossing a fair coin, rolling a fair die, picking a card randomly from a deck with replacement, picking marbles randomly from a bag with replacement and spinning a fair spinner. *Clarification 3:* Repetition of experiments is limited to two times except for tossing a coin.
MA.8.DP.2.2:	Find the theoretical probability of an event related to a repeated experiment. **Clarifications:** *Clarification 1:* Instruction includes representing probability as a fraction, percentage or decimal. *Clarification 2:* Experiments to be repeated are limited to tossing a fair coin, rolling a fair die, picking a card randomly from a deck with replacement, picking marbles randomly from a bag with replacement and spinning a fair spinner. *Clarification 3:* Repetition of experiments is limited to two times except for tossing a coin.
MA.8.DP.2.3:	Solve real-world problems involving probabilities related to single or repeated experiments, including making predictions based on theoretical probability. **Clarifications:** *Clarification 1:* Instruction includes making connections to proportional relationships and representing probability as a fraction, percentage or decimal. *Clarification 2:* Experiments to be repeated are limited to tossing a fair coin, rolling a fair die, picking a card randomly from a deck with replacement, picking marbles randomly from a bag with replacement and spinning a fair spinner. *Clarification 3:* Repetition of experiments is limited to two times except for tossing a coin.
MA.8.F.1.1:	Given a set of ordered pairs, a table, a graph or mapping diagram, determine whether the relationship is a function. Identify the domain and range of the relation. **Clarifications:** *Clarification 1:* Instruction includes referring to the input as the independent variable and the output as the dependent variable. *Clarification 2:* Within this benchmark, it is the expectation to represent domain and range as a list of numbers or as an inequality.
MA.8.F.1.2:	Given a function defined by a graph or an equation, determine whether the function is a linear function. Given an input-output table, determine whether it could represent a linear function. **Clarifications:** *Clarification 1:* Instruction includes recognizing that a table may not determine a function.
MA.8.F.1.3:	Analyze a real-world written description or graphical representation of a functional relationship between two quantities and identify where the function is increasing, decreasing or constant. **Clarifications:** *Clarification 1:* Problem types are limited to continuous functions. *Clarification 2:* Analysis includes writing a description of a graphical representation or sketching a graph from a written description.
	Apply the Pythagorean Theorem to solve mathematical and real-world problems involving unknown side lengths in right triangles. **Clarifications:**

MA.8.GR.1.1:	*Clarification 1:* Instruction includes exploring right triangles with natural-number side lengths to illustrate the Pythagorean Theorem. *Clarification 2:* Within this benchmark, the expectation is to memorize the Pythagorean Theorem. *Clarification 3:* Radicands are limited to whole numbers up to 225.
MA.8.GR.1.2:	Apply the Pythagorean Theorem to solve mathematical and real-world problems involving the distance between two points in a coordinate plane. **Clarifications:** *Clarification 1:* Instruction includes making connections between distance on the coordinate plane and right triangles. *Clarification 2:* Within this benchmark, the expectation is to memorize the Pythagorean Theorem. It is not the expectation to use the distance formula. *Clarification 3:* Radicands are limited to whole numbers up to 225.
MA.8.GR.1.3:	Use the Triangle Inequality Theorem to determine if a triangle can be formed from a given set of sides. Use the converse of the Pythagorean Theorem to determine if a right triangle can be formed from a given set of sides.
MA.8.GR.1.4:	Solve mathematical problems involving the relationships between supplementary, complementary, vertical or adjacent angles.
MA.8.GR.1.5:	Solve problems involving the relationships of interior and exterior angles of a triangle. **Clarifications:** *Clarification 1:* Problems include using the Triangle Sum Theorem and representing angle measures as algebraic expressions.
MA.8.GR.1.6:	Develop and use formulas for the sums of the interior angles of regular polygons by decomposing them into triangles. **Clarifications:** *Clarification 1:* Problems include representing angle measures as algebraic expressions.
MA.8.GR.2.1:	Given a preimage and image generated by a single transformation, identify the transformation that describes the relationship. **Clarifications:** *Clarification 1:* Within this benchmark, transformations are limited to reflections, translations or rotations of images. *Clarification 2:* Instruction focuses on the preservation of congruence so that a figure maps onto a copy of itself.
MA.8.GR.2.2:	Given a preimage and image generated by a single dilation, identify the scale factor that describes the relationship. **Clarifications:** *Clarification 1:* Instruction includes the connection to scale drawings and proportions. *Clarification 2:* Instruction focuses on the preservation of similarity and the lack of preservation of congruence when a figure maps onto a scaled copy of itself, unless the scaling factor is 1.
MA.8.GR.2.3:	Describe and apply the effect of a single transformation on two-dimensional figures using coordinates and the coordinate plane. **Clarifications:** *Clarification 1:* Within this benchmark, transformations are limited to reflections, translations, rotations or dilations of images. *Clarification 2:* Lines of reflection are limited to the x-axis, y-axis or lines parallel to the axes. *Clarification 3:* Rotations must be about the origin and are limited to 90°, 180°, 270° or 360°. *Clarification 4:* Dilations must be centered at the origin.
MA.8.GR.2.4:	Solve mathematical and real-world problems involving proportional relationships between similar triangles.
MA.8.NSO.1.1:	Extend previous understanding of rational numbers to define irrational numbers within the real number system. Locate an approximate value of a numerical expression involving irrational numbers on a number line. **Clarifications:** *Clarification 1:* Instruction includes the use of number line and rational number approximations, and recognizing pi (π) as an irrational number. *Clarification 2:* Within this benchmark, the expectation is to approximate numerical expressions involving one arithmetic operation and estimating square roots or pi (π).
MA.8.NSO.1.2:	Plot, order and compare rational and irrational numbers, represented in various forms. **Clarifications:** *Clarification 1:* Within this benchmark, it is not the expectation to work with the number e. *Clarification 2:* Within this benchmark, the expectation is to plot, order and compare square roots and cube roots. *Clarification 3:* Within this benchmark, the expectation is to use symbols ($<$, $>$ or $=$).
MA.8.NSO.1.3:	Extend previous understanding of the Laws of Exponents to include integer exponents. Apply the Laws of Exponents to evaluate numerical expressions and generate equivalent numerical expressions, limited to integer exponents and rational number bases, with procedural fluency. **Clarifications:** *Clarification 1:* Refer to the K-12 Formulas (Appendix E) for the Laws of Exponents.
MA.8.NSO.1.4:	Express numbers in scientific notation to represent and approximate very large or very small quantities. Determine how many times larger or smaller one number is compared to a second number.
MA.8.NSO.1.5:	Add, subtract, multiply and divide numbers expressed in scientific notation with procedural fluency. **Clarifications:** *Clarification 1:* Within this benchmark, for addition and subtraction with numbers expressed in scientific notation, exponents are limited to within 2 of each other.
MA.8.NSO.1.6:	Solve real-world problems involving operations with numbers expressed in scientific notation. **Clarifications:** *Clarification 1:* Instruction includes recognizing the importance of significant digits when physical measurements are involved. *Clarification 2:* Within this benchmark, for addition and subtraction with numbers expressed in scientific notation, exponents are limited to within 2 of each other.

MA.8.NSO.1.7:	Solve multi-step mathematical and real-world problems involving the order of operations with rational numbers including exponents and radicals. **Clarifications:** *Clarification 1:* Multi-step expressions are limited to 6 or fewer steps. *Clarification 2:* Within this benchmark, the expectation is to simplify radicals by factoring square roots of perfect squares up to 225 and cube roots of perfect cubes from -125 to 125.
MA.K12.MTR.1.1:	**Actively participate in effortful learning both individually and collectively.** Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task. • Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach. **Clarifications:** Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging. • Develop students' ability to analyze and problem solve. • Recognize students' effort when solving challenging problems.
MA.K12.MTR.2.1:	**Demonstrate understanding by representing problems in multiple ways.** Mathematicians who demonstrate understanding by representing problems in multiple ways: • Build understanding through modeling and using manipulatives. • Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. • Progress from modeling problems with objects and drawings to using algorithms and equations. • Express connections between concepts and representations. • Choose a representation based on the given context or purpose. **Clarifications:** Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: • Help students make connections between concepts and representations. • Provide opportunities for students to use manipulatives when investigating concepts. • Guide students from concrete to pictorial to abstract representations as understanding progresses. • Show students that various representations can have different purposes and can be useful in different situations.
MA.K12.MTR.3.1:	**Complete tasks with mathematical fluency.** Mathematicians who complete tasks with mathematical fluency: • Select efficient and appropriate methods for solving problems within the given context. • Maintain flexibility and accuracy while performing procedures and mental calculations. • Complete tasks accurately and with confidence. • Adapt procedures to apply them to a new context. • Use feedback to improve efficiency when performing calculations. **Clarifications:** Teachers who encourage students to complete tasks with mathematical fluency: • Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately. • Offer multiple opportunities for students to practice efficient and generalizable methods. • Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.
MA.K12.MTR.4.1:	**Engage in discussions that reflect on the mathematical thinking of self and others.** Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others: • Communicate mathematical ideas, vocabulary and methods effectively. • Analyze the mathematical thinking of others. • Compare the efficiency of a method to those expressed by others. • Recognize errors and suggest how to correctly solve the task. • Justify results by explaining methods and processes. • Construct possible arguments based on evidence. **Clarifications:** Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: • Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning. • Create opportunities for students to discuss their thinking with peers. • Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. • Develop students' ability to justify methods and compare their responses to the responses of their peers.
	Use patterns and structure to help understand and connect mathematical concepts. Mathematicians who use patterns and structure to help understand and connect mathematical concepts: • Focus on relevant details within a problem. • Create plans and procedures to logically order events, steps or ideas to solve problems. • Decompose a complex problem into manageable parts. • Relate previously learned concepts to new concepts.

MA.K12.MTR.5.1:	• Look for similarities among problems. • Connect solutions of problems to more complicated large-scale situations. **Clarifications:** Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts: • Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts. • Support students to develop generalizations based on the similarities found among problems. • Provide opportunities for students to create plans and procedures to solve problems. • Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.
MA.K12.MTR.6.1:	**Assess the reasonableness of solutions.** Mathematicians who assess the reasonableness of solutions: • Estimate to discover possible solutions. • Use benchmark quantities to determine if a solution makes sense. • Check calculations when solving problems. • Verify possible solutions by explaining the methods used. • Evaluate results based on the given context. **Clarifications:** Teachers who encourage students to assess the reasonableness of solutions: • Have students estimate or predict solutions prior to solving. • Prompt students to continually ask, "Does this solution make sense? How do you know?" • Reinforce that students check their work as they progress within and after a task. • Strengthen students' ability to verify solutions through justifications.
MA.K12.MTR.7.1:	**Apply mathematics to real-world contexts.** Mathematicians who apply mathematics to real-world contexts: • Connect mathematical concepts to everyday experiences. • Use models and methods to understand, represent and solve problems. • Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency. **Clarifications:** Teachers who encourage students to apply mathematics to real-world contexts: • Provide opportunities for students to create models, both concrete and abstract, and perform investigations. • Challenge students to question the accuracy of their models and methods. • Support students as they validate conclusions by comparing them to the given situation. • Indicate how various concepts can be applied to other disciplines.
ELA.K12.EE.1.1:	Cite evidence to explain and justify reasoning. **Clarifications:** K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing. 2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations. 4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they've directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor. 6-8 Students continue with previous skills and use a style guide to create a proper citation. 9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.
ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.
ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like "Why is the girl smiling?" or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
ELA.K12.EE.4.1:	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully. In grades 1-2, students build upon these skills by justifying what they are thinking. For example: "I think _______ because ______." The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
ELA.K12.EE.5.1:	Use the accepted rules governing a specific format to create quality work. **Clarifications:** Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.

ELA.K12.EE.6.1:	Use appropriate voice and tone when speaking or writing. **Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.
ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.

General Course Information and Notes

VERSION DESCRIPTION

In grade 7 accelerated, instructional time will emphasize six areas: (1) representing numbers in scientific notation and extending the set of numbers to the system of real numbers, which includes irrational numbers; (2) generating equivalent numeric and algebraic expressions including using the Laws of Exponents; (3) creating and reasoning about linear relationships including modeling an association in bivariate data with a linear equation; (4) solving linear equations, inequalities and systems of linear equations; (5) developing an understanding of the concept of a function and (6) analyzing two-dimensional figures, particularly triangles, using distance, angle and applying the Pythagorean Theorem.

Curricular content for all subjects must integrate critical-thinking, problem-solving, and workforce-literacy skills; communication, reading, and writing skills; mathematics skills; collaboration skills; contextual and applied-learning skills; technology-literacy skills; information and media-literacy skills; and civic-engagement skills.

General Notes

Honors and Accelerated Level Course Note: Accelerated courses require a greater demand on students through increased academic rigor. Academic rigor is obtained through the application, analysis, evaluation, and creation of complex ideas that are often abstract and multi-faceted. Students are challenged to think and collaborate critically on the content they are learning. Honors level rigor will be achieved by increasing text complexity through text selection, focus on high-level qualitative measures, and complexity of task. Instruction will be structured to give students a deeper understanding of conceptual themes and organization within and across disciplines. Academic rigor is more than simply assigning to students a greater quantity of work.

Florida's Benchmarks for Excellent Student Thinking (B.E.S.T.) Standards
This course includes Florida's B.E.S.T. ELA Expectations (EE) and Mathematical Thinking and Reasoning Standards (MTRs) for students. Florida educators should intentionally embed these standards within the content and their instruction as applicable. For guidance on the implementation of the EEs and MTRs, please visit https://www.cpalms.org/Standards/BEST_Standards.aspx and select the appropriate B.E.S.T. Standards package.

English Language Development ELD Standards Special Notes Section:
Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link:
https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf

General Information

Course Number: 1205050

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 6 to 8 Education Courses > **Subject:** Mathematics > **SubSubject:** General Mathematics >

Abbreviated Title: M/J ACCEL MATH GR 7

Course Length: Year (Y)

Course Attributes:

- Honors
- Class Size Core Required

Course Type: Core Academic Course

Course Level: 3

Course Status: State Board Approved

Grade Level(s): 7

Educator Certifications

Mathematics (Grades 6-12)
Middle Grades Mathematics (Middle Grades 5-9)
Middle Grades Integrated Curriculum (Middle Grades 5-9)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

M/J Mathematics 2 Cambridge Lower Secondary (#1205055) 2024 - And Beyond (current)

General Course Information and Notes

General Notes

For more information about this Cambridge course, visit Cambridge Lower Secondary curriculum.

General Information

Course Number: 1205055

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 6 to 8 Education Courses > **Subject:** Mathematics > **SubSubject:** General Mathematics >

Abbreviated Title: M/J MATH 2 CLS

Course Length: Year (Y)

Course Attributes:

- Advanced International Certificate of Education (AICE)
- External Course Description

Course Type: Core Academic Course

Course Level: 3

Course Status: Course Approved

Grade Level(s): 6,7,8

Educator Certifications

Mathematics (Elementary Grades 1-6)
Middle Grades Mathematics (Middle Grades 5-9)
Mathematics (Grades 6-12)
Middle Grades Integrated Curriculum (Middle Grades 5-9)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

M/J Mathematics 3 Cambridge Lower Secondary (#1205060) 2024 - And Beyond (current)

General Course Information and Notes

General Notes

For more information about this Cambridge course, visit Cambridge Lower Secondary curriculum.

General Information

Course Number: 1205060

Course Path: **Section:** Grades PreK to 12 Education Courses > **Grade Group:** Grades 6 to 8 Education Courses > **Subject:** Mathematics > **SubSubject:** General Mathematics >

Abbreviated Title: M/J MATH 3 CLS

Course Length: Year (Y)

Course Attributes:

- Advanced International Certificate of Education (AICE)
- External Course Description

Course Type: Core Academic Course

Course Level: 3

Course Status: Course Approved

Grade Level(s): 6,7,8

Educator Certifications

Mathematics (Elementary Grades 1-6)
Middle Grades Integrated Curriculum (Middle Grades 5-9)
Middle Grades Mathematics (Middle Grades 5-9)
Mathematics (Grades 6-12)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

M/J Grade 8 Pre-Algebra (#1205070) 2024 - And Beyond (current)

Course Standards

Name	Description
MA.8.AR.1.1:	Apply the Laws of Exponents to generate equivalent algebraic expressions, limited to integer exponents and monomial bases. **Clarifications:** *Clarification 1:* Refer to the K-12 Formulas (Appendix E) for the Laws of Exponents.
MA.8.AR.1.2:	Apply properties of operations to multiply two linear expressions with rational coefficients. **Clarifications:** *Clarification 1:* Problems are limited to products where at least one of the factors is a monomial. *Clarification 2:* Refer to Properties of Operations, Equality and Inequality (Appendix D).
MA.8.AR.1.3:	Rewrite the sum of two algebraic expressions having a common monomial factor as a common factor multiplied by the sum of two algebraic expressions.
MA.8.AR.2.1:	Solve multi-step linear equations in one variable, with rational number coefficients. Include equations with variables on both sides. **Clarifications:** *Clarification 1:* Problem types include examples of one-variable linear equations that generate one solution, infinitely many solutions or no solution.
MA.8.AR.2.2:	Solve two-step linear inequalities in one variable and represent solutions algebraically and graphically. **Clarifications:** *Clarification 1:* Instruction includes inequalities in the forms $px \pm q > r$ and $p(x \pm q) > r$, where p, q and r are specific rational numbers and where any inequality symbol can be represented. *Clarification 2:* Problems include inequalities where the variable may be on either side of the inequality.
MA.8.AR.2.3:	Given an equation in the form of $x^2=p$ and $x^3=q$, where p is a whole number and q is an integer, determine the real solutions. **Clarifications:** *Clarification 1:* Instruction focuses on understanding that when solving $x^2=p$, there is both a positive and negative solution. *Clarification 2:* Within this benchmark, the expectation is to calculate square roots of perfect squares up to 225 and cube roots of perfect cubes from -125 to 125.
MA.8.AR.3.1:	Determine if a linear relationship is also a proportional relationship. **Clarifications:** *Clarification 1:* Instruction focuses on the understanding that proportional relationships are linear relationships whose graph passes through the origin. *Clarification 2:* Instruction includes the representation of relationships using tables, graphs, equations and written descriptions.
MA.8.AR.3.2:	Given a table, graph or written description of a linear relationship, determine the slope. **Clarifications:** *Clarification 1:* Problem types include cases where two points are given to determine the slope. *Clarification 2:* Instruction includes making connections of slope to the constant of proportionality and to similar triangles represented on the coordinate plane.
MA.8.AR.3.3:	Given a table, graph or written description of a linear relationship, write an equation in slope-intercept form.
MA.8.AR.3.4:	Given a mathematical or real-world context, graph a two-variable linear equation from a written description, a table or an equation in slope-intercept form.
MA.8.AR.3.5:	Given a real-world context, determine and interpret the slope and y-intercept of a two-variable linear equation from a written description, a table, a graph or an equation in slope-intercept form. **Clarifications:** *Clarification 1:* Problems include conversions with temperature and equations of lines of fit in scatter plots.
MA.8.AR.4.1:	Given a system of two linear equations and a specified set of possible solutions, determine which ordered pairs satisfy the system of linear equations. **Clarifications:** *Clarification 1:* Instruction focuses on the understanding that a solution to a system of equations satisfies both linear equations simultaneously.
MA.8.AR.4.2:	Given a system of two linear equations represented graphically on the same coordinate plane, determine whether there is one solution, no solution or infinitely many solutions.
MA.8.AR.4.3:	Given a mathematical or real-world context, solve systems of two linear equations by graphing. **Clarifications:** *Clarification 1:* Instruction includes approximating non-integer solutions. *Clarification 2:* Within this benchmark, it is the expectation to represent systems of linear equations in slope-intercept form only. *Clarification 3:* Instruction includes recognizing that parallel lines have the same slope.
	Given a set of real-world bivariate numerical data, construct a scatter plot or a line graph as appropriate for the context. **Clarifications:**

MA.8.DP.1.1:	*Clarification 1:* Instruction includes recognizing similarities and differences between scatter plots and line graphs, and on determining which is more appropriate as a representation of the data based on the context. *Clarification 2:* Sets of data are limited to 20 points.
MA.8.DP.1.2:	Given a scatter plot within a real-world context, describe patterns of association. **Clarifications:** *Clarification 1:* Descriptions include outliers; positive or negative association; linear or nonlinear association; strong or weak association.
MA.8.DP.1.3:	Given a scatter plot with a linear association, informally fit a straight line. **Clarifications:** *Clarification 1:* Instruction focuses on the connection to linear functions. *Clarification 2:* Instruction includes using a variety of tools, including a ruler, to draw a line with approximately the same number of points above and below the line.
MA.8.DP.2.1:	Determine the sample space for a repeated experiment. **Clarifications:** *Clarification 1:* Instruction includes recording sample spaces for repeated experiments using organized lists, tables or tree diagrams. *Clarification 2:* Experiments to be repeated are limited to tossing a fair coin, rolling a fair die, picking a card randomly from a deck with replacement, picking marbles randomly from a bag with replacement and spinning a fair spinner. *Clarification 3:* Repetition of experiments is limited to two times except for tossing a coin.
MA.8.DP.2.2:	Find the theoretical probability of an event related to a repeated experiment. **Clarifications:** *Clarification 1:* Instruction includes representing probability as a fraction, percentage or decimal. *Clarification 2:* Experiments to be repeated are limited to tossing a fair coin, rolling a fair die, picking a card randomly from a deck with replacement, picking marbles randomly from a bag with replacement and spinning a fair spinner. *Clarification 3:* Repetition of experiments is limited to two times except for tossing a coin.
MA.8.DP.2.3:	Solve real-world problems involving probabilities related to single or repeated experiments, including making predictions based on theoretical probability. **Clarifications:** *Clarification 1:* Instruction includes making connections to proportional relationships and representing probability as a fraction, percentage or decimal. *Clarification 2:* Experiments to be repeated are limited to tossing a fair coin, rolling a fair die, picking a card randomly from a deck with replacement, picking marbles randomly from a bag with replacement and spinning a fair spinner. *Clarification 3:* Repetition of experiments is limited to two times except for tossing a coin.
MA.8.F.1.1:	Given a set of ordered pairs, a table, a graph or mapping diagram, determine whether the relationship is a function. Identify the domain and range of the relation. **Clarifications:** *Clarification 1:* Instruction includes referring to the input as the independent variable and the output as the dependent variable. *Clarification 2:* Within this benchmark, it is the expectation to represent domain and range as a list of numbers or as an inequality.
MA.8.F.1.2:	Given a function defined by a graph or an equation, determine whether the function is a linear function. Given an input-output table, determine whether it could represent a linear function. **Clarifications:** *Clarification 1:* Instruction includes recognizing that a table may not determine a function.
MA.8.F.1.3:	Analyze a real-world written description or graphical representation of a functional relationship between two quantities and identify where the function is increasing, decreasing or constant. **Clarifications:** *Clarification 1:* Problem types are limited to continuous functions. *Clarification 2:* Analysis includes writing a description of a graphical representation or sketching a graph from a written description.
MA.8.GR.1.1:	Apply the Pythagorean Theorem to solve mathematical and real-world problems involving unknown side lengths in right triangles. **Clarifications:** *Clarification 1:* Instruction includes exploring right triangles with natural-number side lengths to illustrate the Pythagorean Theorem. *Clarification 2:* Within this benchmark, the expectation is to memorize the Pythagorean Theorem. *Clarification 3:* Radicands are limited to whole numbers up to 225.
MA.8.GR.1.2:	Apply the Pythagorean Theorem to solve mathematical and real-world problems involving the distance between two points in a coordinate plane. **Clarifications:** *Clarification 1:* Instruction includes making connections between distance on the coordinate plane and right triangles. *Clarification 2:* Within this benchmark, the expectation is to memorize the Pythagorean Theorem. It is not the expectation to use the distance formula. *Clarification 3:* Radicands are limited to whole numbers up to 225.
MA.8.GR.1.3:	Use the Triangle Inequality Theorem to determine if a triangle can be formed from a given set of sides. Use the converse of the Pythagorean Theorem to determine if a right triangle can be formed from a given set of sides.
MA.8.GR.1.4:	Solve mathematical problems involving the relationships between supplementary, complementary, vertical or adjacent angles.
	Solve problems involving the relationships of interior and exterior angles of a triangle.

MA.8.GR.1.5:	**Clarifications:** *Clarification 1:* Problems include using the Triangle Sum Theorem and representing angle measures as algebraic expressions.
MA.8.GR.1.6:	Develop and use formulas for the sums of the interior angles of regular polygons by decomposing them into triangles. **Clarifications:** *Clarification 1:* Problems include representing angle measures as algebraic expressions.
MA.8.GR.2.1:	Given a preimage and image generated by a single transformation, identify the transformation that describes the relationship. **Clarifications:** *Clarification 1:* Within this benchmark, transformations are limited to reflections, translations or rotations of images. *Clarification 2:* Instruction focuses on the preservation of congruence so that a figure maps onto a copy of itself.
MA.8.GR.2.2:	Given a preimage and image generated by a single dilation, identify the scale factor that describes the relationship. **Clarifications:** *Clarification 1:* Instruction includes the connection to scale drawings and proportions. *Clarification 2:* Instruction focuses on the preservation of similarity and the lack of preservation of congruence when a figure maps onto a scaled copy of itself, unless the scaling factor is 1.
MA.8.GR.2.3:	Describe and apply the effect of a single transformation on two-dimensional figures using coordinates and the coordinate plane. **Clarifications:** *Clarification 1:* Within this benchmark, transformations are limited to reflections, translations, rotations or dilations of images. *Clarification 2:* Lines of reflection are limited to the x-axis, y-axis or lines parallel to the axes. *Clarification 3:* Rotations must be about the origin and are limited to 90°, 180°, 270° or 360°. *Clarification 4:* Dilations must be centered at the origin.
MA.8.GR.2.4:	Solve mathematical and real-world problems involving proportional relationships between similar triangles.
MA.8.NSO.1.1:	Extend previous understanding of rational numbers to define irrational numbers within the real number system. Locate an approximate value of a numerical expression involving irrational numbers on a number line. **Clarifications:** *Clarification 1:* Instruction includes the use of number line and rational number approximations, and recognizing pi (π) as an irrational number. *Clarification 2:* Within this benchmark, the expectation is to approximate numerical expressions involving one arithmetic operation and estimating square roots or pi (π).
MA.8.NSO.1.2:	Plot, order and compare rational and irrational numbers, represented in various forms. **Clarifications:** *Clarification 1:* Within this benchmark, it is not the expectation to work with the number e. *Clarification 2:* Within this benchmark, the expectation is to plot, order and compare square roots and cube roots. *Clarification 3:* Within this benchmark, the expectation is to use symbols (<, > or =).
MA.8.NSO.1.3:	Extend previous understanding of the Laws of Exponents to include integer exponents. Apply the Laws of Exponents to evaluate numerical expressions and generate equivalent numerical expressions, limited to integer exponents and rational number bases, with procedural fluency. **Clarifications:** *Clarification 1:* Refer to the K-12 Formulas (Appendix E) for the Laws of Exponents.
MA.8.NSO.1.4:	Express numbers in scientific notation to represent and approximate very large or very small quantities. Determine how many times larger or smaller one number is compared to a second number.
MA.8.NSO.1.5:	Add, subtract, multiply and divide numbers expressed in scientific notation with procedural fluency. **Clarifications:** *Clarification 1:* Within this benchmark, for addition and subtraction with numbers expressed in scientific notation, exponents are limited to within 2 of each other.
MA.8.NSO.1.6:	Solve real-world problems involving operations with numbers expressed in scientific notation. **Clarifications:** *Clarification 1:* Instruction includes recognizing the importance of significant digits when physical measurements are involved. *Clarification 2:* Within this benchmark, for addition and subtraction with numbers expressed in scientific notation, exponents are limited to within 2 of each other.
MA.8.NSO.1.7:	Solve multi-step mathematical and real-world problems involving the order of operations with rational numbers including exponents and radicals. **Clarifications:** *Clarification 1:* Multi-step expressions are limited to 6 or fewer steps. *Clarification 2:* Within this benchmark, the expectation is to simplify radicals by factoring square roots of perfect squares up to 225 and cube roots of perfect cubes from -125 to 125.
MA.K12.MTR.1.1:	**Actively participate in effortful learning both individually and collectively.** Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task. • Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach.

	Clarifications: Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging. • Develop students' ability to analyze and problem solve. • Recognize students' effort when solving challenging problems.
MA.K12.MTR.2.1:	**Demonstrate understanding by representing problems in multiple ways.** Mathematicians who demonstrate understanding by representing problems in multiple ways: • Build understanding through modeling and using manipulatives. • Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. • Progress from modeling problems with objects and drawings to using algorithms and equations. • Express connections between concepts and representations. • Choose a representation based on the given context or purpose. **Clarifications:** Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: • Help students make connections between concepts and representations. • Provide opportunities for students to use manipulatives when investigating concepts. • Guide students from concrete to pictorial to abstract representations as understanding progresses. • Show students that various representations can have different purposes and can be useful in different situations.
MA.K12.MTR.3.1:	**Complete tasks with mathematical fluency.** Mathematicians who complete tasks with mathematical fluency: • Select efficient and appropriate methods for solving problems within the given context. • Maintain flexibility and accuracy while performing procedures and mental calculations. • Complete tasks accurately and with confidence. • Adapt procedures to apply them to a new context. • Use feedback to improve efficiency when performing calculations. **Clarifications:** Teachers who encourage students to complete tasks with mathematical fluency: • Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately. • Offer multiple opportunities for students to practice efficient and generalizable methods. • Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.
MA.K12.MTR.4.1:	**Engage in discussions that reflect on the mathematical thinking of self and others.** Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others: • Communicate mathematical ideas, vocabulary and methods effectively. • Analyze the mathematical thinking of others. • Compare the efficiency of a method to those expressed by others. • Recognize errors and suggest how to correctly solve the task. • Justify results by explaining methods and processes. • Construct possible arguments based on evidence. **Clarifications:** Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: • Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning. • Create opportunities for students to discuss their thinking with peers. • Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. • Develop students' ability to justify methods and compare their responses to the responses of their peers.
MA.K12.MTR.5.1:	**Use patterns and structure to help understand and connect mathematical concepts.** Mathematicians who use patterns and structure to help understand and connect mathematical concepts: • Focus on relevant details within a problem. • Create plans and procedures to logically order events, steps or ideas to solve problems. • Decompose a complex problem into manageable parts. • Relate previously learned concepts to new concepts. • Look for similarities among problems. • Connect solutions of problems to more complicated large-scale situations. **Clarifications:** Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts: • Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts. • Support students to develop generalizations based on the similarities found among problems. • Provide opportunities for students to create plans and procedures to solve problems. • Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.
MA.K12.MTR.6.1:	**Assess the reasonableness of solutions.** Mathematicians who assess the reasonableness of solutions: • Estimate to discover possible solutions. • Use benchmark quantities to determine if a solution makes sense. • Check calculations when solving problems. • Verify possible solutions by explaining the methods used. • Evaluate results based on the given context.

	Clarifications: Teachers who encourage students to assess the reasonableness of solutions: • Have students estimate or predict solutions prior to solving. • Prompt students to continually ask, “Does this solution make sense? How do you know?” • Reinforce that students check their work as they progress within and after a task. • Strengthen students’ ability to verify solutions through justifications.
MA.K12.MTR.7.1:	**Apply mathematics to real-world contexts.** Mathematicians who apply mathematics to real-world contexts: • Connect mathematical concepts to everyday experiences. • Use models and methods to understand, represent and solve problems. • Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency. **Clarifications:** Teachers who encourage students to apply mathematics to real-world contexts: • Provide opportunities for students to create models, both concrete and abstract, and perform investigations. • Challenge students to question the accuracy of their models and methods. • Support students as they validate conclusions by comparing them to the given situation. • Indicate how various concepts can be applied to other disciplines.
ELA.K12.EE.1.1:	Cite evidence to explain and justify reasoning. **Clarifications:** K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing. 2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations. 4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they’ve directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor. 6-8 Students continue with previous skills and use a style guide to create a proper citation. 9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.
ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.
ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like “Why is the girl smiling?” or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
ELA.K12.EE.4.1:	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully. In grades 1-2, students build upon these skills by justifying what they are thinking. For example: “I think _______ because ______.” The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
ELA.K12.EE.5.1:	Use the accepted rules governing a specific format to create quality work. **Clarifications:** Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.
ELA.K12.EE.6.1:	Use appropriate voice and tone when speaking or writing. **Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.
ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.
ELD.K12.ELL.SI.1:	English language learners communicate for social and instructional purposes within the school setting.

General Course Information and Notes

VERSION DESCRIPTION

The benchmarks in this course are mastery goals that students are expected to attain by the end of the year. To build mastery, students will continue to review and apply earlier grade-level benchmarks and expectations.

General Notes

In grade 8, instructional time will emphasize six areas: (1) representing numbers in scientific notation and extending the set of numbers to the system of real numbers, which includes irrational numbers; (2) generate equivalent numeric and algebraic expressions including using the Laws of Exponents; (3) creating and reasoning about linear relationships including modeling an association in bivariate data with a linear equation; (4) solving linear equations, inequalities and systems of linear equations; (5) developing an understanding of the concept of a function and (6) analyzing two-dimensional figures, particularly triangles, using distance, angle and applying the Pythagorean Theorem.

Curricular content for all subjects must integrate critical-thinking, problem-solving, and workforce-literacy skills; communication, reading, and writing skills; mathematics skills; collaboration skills; contextual and applied-learning skills; technology-literacy skills; information and media-literacy skills; and civic-engagement skills.

English Language Development ELD Standards Special Notes Section:
Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link:
https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf

General Information

Course Number: 1205070

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 6 to 8 Education Courses > **Subject:** Mathematics > **SubSubject:** General Mathematics >

Abbreviated Title: M/J GRADE 8 PRE-ALG

Course Length: Year (Y)

Course Type: Core Academic Course

Course Level: 2

Course Status: State Board Approved

Grade Level(s): 6,7,8

Educator Certifications

Mathematics (Grades 6-12)
Middle Grades Mathematics (Middle Grades 5-9)
Middle Grades Integrated Curriculum (Middle Grades 5-9)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

M/J International Baccalaureate MYP Mathematics 1 (#1205090) 2024 - And Beyond (current)

General Course Information and Notes

General Notes

The curriculum description for this IB course is provided at:
http://www.ibo.org/en/programmes/

General Information

Course Number: 1205090

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 6 to 8 Education Courses > **Subject:** Mathematics > **SubSubject:** General Mathematics >

Abbreviated Title: M/J IB MYP MATH 1

Course Length: Year (Y)

Course Attributes:

- International Baccalaureate (IB)

Course Type: Core Academic Course

Course Level: 3

Course Status: Course Approved

Grade Level(s): 6,7,8

Educator Certifications

Mathematics (Elementary Grades 1-6)
Middle Grades Mathematics (Middle Grades 5-9)
Middle Grades Integrated Curriculum (Middle Grades 5-9)
Mathematics (Grades 6-12)
Elementary Education (Grades K-6)
Elementary Education (Elementary Grades 1-6)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

M/J International Baccalaureate MYP Math 2 (#1205095) 2024 - And Beyond (current)

General Course Information and Notes

VERSION DESCRIPTION

The curriculum description for this IB course is provided at http://www.ibo.org/en/programmes/.

General Information

Course Number: 1205095

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 6 to 8 Education Courses > **Subject:** Mathematics > **SubSubject:** General Mathematics >

Abbreviated Title: M/J IB MYP MATH 2

Course Length: Year (Y)

Course Attributes:

- International Baccalaureate (IB)

Course Type: Core Academic Course

Course Level: 3

Course Status: Course Approved

Grade Level(s): 6,7,8

Educator Certifications

Mathematics (Elementary Grades 1-6)
Mathematics (Grades 6-12)
Middle Grades Integrated Curriculum (Middle Grades 5-9)
Middle Grades Mathematics (Middle Grades 5-9)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

M/J International Baccalaureate MYP Pre-Algebra (#1205100) 2024 - And Beyond (current)

General Course Information and Notes

General Notes

The curriculum description for this IB course is provided at:
http://www.ibo.org/en/programmes/

General Information

Course Number: 1205100

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 6 to 8 Education Courses > **Subject:** Mathematics > **SubSubject:** General Mathematics >

Abbreviated Title: M/J IB MYP PRE-ALGEB

Course Length: Year (Y)

Course Attributes:

- International Baccalaureate (IB)

Course Type: Core Academic Course

Course Level: 3

Course Status: Course Approved

Grade Level(s): 6,7,8

Educator Certifications

Middle Grades Mathematics (Middle Grades 5-9)
Mathematics (Grades 6-12)
Middle Grades Integrated Curriculum (Middle Grades 5-9)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Algebra 1 (#1200310) 2024 - And Beyond (current)

Course Standards

Name	Description
MA.912.AR.1.1:	Identify and interpret parts of an equation or expression that represent a quantity in terms of a mathematical or real-world context, including viewing one or more of its parts as a single entity. **Clarifications:** *Clarification 1:* Parts of an expression include factors, terms, constants, coefficients and variables. *Clarification 2:* Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.1.2:	Rearrange equations or formulas to isolate a quantity of interest. **Clarifications:** *Clarification 1*: Instruction includes using formulas for temperature, perimeter, area and volume; using equations for linear (standard, slope-intercept and point-slope forms) and quadratic (standard, factored and vertex forms) functions. *Clarification 2*: Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.1.3:	Add, subtract and multiply polynomial expressions with rational number coefficients. **Clarifications:** *Clarification 1: I*nstruction includes an understanding that when any of these operations are performed with polynomials the result is also a polynomial. *Clarification 2:* Within the Algebra 1 course, polynomial expressions are limited to 3 or fewer terms.
MA.912.AR.1.4:	Divide a polynomial expression by a monomial expression with rational number coefficients. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, polynomial expressions are limited to 3 or fewer terms.
MA.912.AR.1.7:	Rewrite a polynomial expression as a product of polynomials over the real number system. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, polynomial expressions are limited to 4 or fewer terms with integer coefficients.
MA.912.AR.2.1:	Given a real-world context, write and solve one-variable multi-step linear equations.
MA.912.AR.2.2:	Write a linear two-variable equation to represent the relationship between two quantities from a graph, a written description or a table of values within a mathematical or real-world context. **Clarifications:** *Clarification 1:* Instruction includes the use of standard form, slope-intercept form and point-slope form, and the conversion between these forms.
MA.912.AR.2.3:	Write a linear two-variable equation for a line that is parallel or perpendicular to a given line and goes through a given point. **Clarifications:** *Clarification 1:* Instruction focuses on recognizing that perpendicular lines have slopes that when multiplied result in -1 and that parallel lines have slopes that are the same. *Clarification 2:* Instruction includes representing a line with a pair of points on the coordinate plane or with an equation. *Clarification 3:* Problems include cases where one variable has a coefficient of zero.
MA.912.AR.2.4:	Given a table, equation or written description of a linear function, graph that function, and determine and interpret its key features. **Clarifications:** *Clarification 1*: Key features are limited to domain, range, intercepts and rate of change. *Clarification 2*: Instruction includes the use of standard form, slope-intercept form and point-slope form. *Clarification 3*: Instruction includes cases where one variable has a coefficient of zero. *Clarification 4*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 5*: Within the Algebra 1 course, notations for domain and range are limited to inequality and set-builder notations.
MA.912.AR.2.5:	Solve and graph mathematical and real-world problems that are modeled with linear functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain, range, intercepts and rate of change. *Clarification 2*: Instruction includes the use of standard form, slope-intercept form and point-slope form. *Clarification 3*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation. *Clarification 4*: Within the Algebra 1 course, notations for domain, range and constraints are limited to inequality and set-builder. *Clarification 5*: Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.2.6:	Given a mathematical or real-world context, write and solve one-variable linear inequalities, including compound inequalities. Represent solutions algebraically or graphically.

MA.912.AR.2.7:	Write two-variable linear inequalities to represent relationships between quantities from a graph or a written description within a mathematical or real-world context. **Clarifications:** *Clarification 1:* Instruction includes the use of standard form, slope-intercept form and point-slope form and any inequality symbol can be represented. *Clarification 2:* Instruction includes cases where one variable has a coefficient of zero.
MA.912.AR.2.8:	Given a mathematical or real-world context, graph the solution set to a two-variable linear inequality. **Clarifications:** *Clarification 1:* Instruction includes the use of standard form, slope-intercept form and point-slope form and any inequality symbol can be represented. *Clarification 2:* Instruction includes cases where one variable has a coefficient of zero.
MA.912.AR.3.1:	Given a mathematical or real-world context, write and solve one-variable quadratic equations over the real number system. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, instruction includes the concept of non-real answers, without determining non-real solutions. *Clarification 2:* Within this benchmark, the expectation is to solve by factoring techniques, taking square roots, the quadratic formula and completing the square.
MA.912.AR.3.4:	Write a quadratic function to represent the relationship between two quantities from a graph, a written description or a table of values within a mathematical or real-world context. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, a graph, written description or table of values must include the vertex and two points that are equidistant from the vertex. *Clarification 2*: Instruction includes the use of standard form, factored form and vertex form. *Clarification 3*: Within the Algebra 2 course, one of the given points must be the vertex or an *x*-intercept.
MA.912.AR.3.5:	Given the x-intercepts and another point on the graph of a quadratic function, write the equation for the function.
MA.912.AR.3.6:	Given an expression or equation representing a quadratic function, determine the vertex and zeros and interpret them in terms of a real-world context.
MA.912.AR.3.7:	Given a table, equation or written description of a quadratic function, graph that function, and determine and interpret its key features. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; vertex; and symmetry. *Clarification 2*: Instruction includes the use of standard form, factored form and vertex form, and sketching a graph using the zeros and vertex. *Clarification 3*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 4*: Within the Algebra 1 course, notations for domain and range are limited to inequality and set-builder.
MA.912.AR.3.8:	Solve and graph mathematical and real-world problems that are modeled with quadratic functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; vertex; and symmetry. *Clarification 2*: Instruction includes the use of standard form, factored form and vertex form. *Clarification 3*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation. *Clarification 4*: Within the Algebra 1 course, notations for domain, range and constraints are limited to inequality and set-builder.
MA.912.AR.4.1:	Given a mathematical or real-world context, write and solve one-variable absolute value equations.
MA.912.AR.4.3:	Given a table, equation or written description of an absolute value function, graph that function and determine its key features. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; vertex; end behavior and symmetry. *Clarification 2*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 3*: Within the Algebra 1 course, notations for domain and range are limited to inequality and set-builder.
MA.912.AR.5.3:	Given a mathematical or real-world context, classify an exponential function as representing growth or decay. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, exponential functions are limited to the forms $f(x) = ab^x$, where b is a whole number greater than 1 or a unit fraction, or $f(x) = a(1 \pm r)^x$, where $0 < r < 1$.
MA.912.AR.5.4:	Write an exponential function to represent a relationship between two quantities from a graph, a written description or a table of values within a mathematical or real-world context. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, exponential functions are limited to the forms $f(x) = ab^x$, where b is a whole number greater than 1 or a unit fraction, or $f(x) = a(1 \pm r)^x$, where $0 < r < 1$. *Clarification 2:* Within the Algebra 1 course, tables are limited to having successive nonnegative integer inputs so that the function may be determined by finding ratios between successive outputs.
	Given a table, equation or written description of an exponential function, graph that function and determine its key features.

MA.912.AR.5.6:	**Clarifications:** *Clarification 1:* Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; constant percent rate of change; end behavior and asymptotes. *Clarification 2:* Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 3:* Within the Algebra 1 course, notations for domain and range are limited to inequality and set-builder. *Clarification 4:* Within the Algebra 1 course, exponential functions are limited to the forms $f(x) = ab^x$, where b is a whole number greater than 1 or a unit fraction or $f(x) = a(1 \pm r)^x$, where $0 < r < 1$.
MA.912.AR.9.1:	Given a mathematical or real-world context, write and solve a system of two-variable linear equations algebraically or graphically. **Clarifications:** *Clarification 1*: Within this benchmark, the expectation is to solve systems using elimination, substitution and graphing. *Clarification 2*: Within the Algebra 1 course, the system is limited to two equations.
MA.912.AR.9.4:	Graph the solution set of a system of two-variable linear inequalities. **Clarifications:** *Clarification 1:* Instruction includes cases where one variable has a coefficient of zero. *Clarification 2:* Within the Algebra 1 course, the system is limited to two inequalities.
MA.912.AR.9.6:	Given a real-world context, represent constraints as systems of linear equations or inequalities. Interpret solutions to problems as viable or non-viable options. **Clarifications:** *Clarification 1*: Instruction focuses on analyzing a given function that models a real-world situation and writing constraints that are represented as linear equations or linear inequalities.
MA.912.DP.1.1:	Given a set of data, select an appropriate method to represent the data, depending on whether it is numerical or categorical data and on whether it is univariate or bivariate. **Clarifications:** *Clarification 1:* Instruction includes discussions regarding the strengths and weaknesses of each data display. *Clarification 2:* Numerical univariate includes histograms, stem-and-leaf plots, box plots and line plots; numerical bivariate includes scatter plots and line graphs; categorical univariate includes bar charts, circle graphs, line plots, frequency tables and relative frequency tables; and categorical bivariate includes segmented bar charts, joint frequency tables and joint relative frequency tables. *Clarification 3:* Instruction includes the use of appropriate units and labels and, where appropriate, using technology to create data displays.
MA.912.DP.1.2:	Interpret data distributions represented in various ways. State whether the data is numerical or categorical, whether it is univariate or bivariate and interpret the different components and quantities in the display. **Clarifications:** *Clarification 1*: Within the Probability and Statistics course, instruction includes the use of spreadsheets and technology.
MA.912.DP.1.3:	Explain the difference between correlation and causation in the contexts of both numerical and categorical data.
MA.912.DP.1.4:	Estimate a population total, mean or percentage using data from a sample survey; develop a margin of error through the use of simulation. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, the margin of error will be given.
MA.912.DP.2.4:	Fit a linear function to bivariate numerical data that suggests a linear association and interpret the slope and y-intercept of the model. Use the model to solve real-world problems in terms of the context of the data. **Clarifications:** *Clarification 1*: Instruction includes fitting a linear function both informally and formally with the use of technology. *Clarification 2*: Problems include making a prediction or extrapolation, inside and outside the range of the data, based on the equation of the line of fit.
MA.912.DP.2.6:	Given a scatter plot with a line of fit and residuals, determine the strength and direction of the correlation. Interpret strength and direction within a real-world context. **Clarifications:** *Clarification 1*: Instruction focuses on determining the direction by analyzing the slope and informally determining the strength by analyzing the residuals.
MA.912.DP.3.1:	Construct a two-way frequency table summarizing bivariate categorical data. Interpret joint and marginal frequencies and determine possible associations in terms of a real-world context.
MA.912.F.1.1:	Given an equation or graph that defines a function, determine the function type. Given an input-output table, determine a function type that could represent it. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, functions represented as tables are limited to linear, quadratic and exponential. *Clarification 2:* Within the Algebra 1 course, functions represented as equations or graphs are limited to vertical or horizontal translations or reflections over the x-axis of the following parent functions: $f(x) = x$, $f(x) = x^2$, $f(x) = x^3$, $f(x) = \sqrt{x}$, $f(x) = \sqrt[3]{x}$, $f(x) = \lvert x \rvert$, $f(x) = 2^x$ and $f(x) = \left(\frac{1}{2}\right)^x$.
MA.912.F.1.2:	Given a function represented in function notation, evaluate the function for an input in its domain. For a real-world context, interpret the output. **Clarifications:** *Clarification 1*: Problems include simple functions in two-variables, such as f(x,y)=3x-2y. *Clarification 2*: Within the Algebra 1 course, functions are limited to one-variable such as f(x)=3x.
	Calculate and interpret the average rate of change of a real-world situation represented graphically, algebraically or in a table over a specified

MA.912.F.1.3:	interval. **Clarifications:** *Clarification 1*: Instruction includes making the connection to determining the slope of a particular line segment.
MA.912.F.1.5:	Compare key features of linear functions each represented algebraically, graphically, in tables or written descriptions. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; slope and end behavior.
MA.912.F.1.6:	Compare key features of linear and nonlinear functions each represented algebraically, graphically, in tables or written descriptions. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior and asymptotes. *Clarification 2*: Within the Algebra 1 course, functions other than linear, quadratic or exponential must be represented graphically. *Clarification 3*: Within the Algebra 1 course, instruction includes verifying that a quantity increasing exponentially eventually exceeds a quantity increasing linearly or quadratically.
MA.912.F.1.8:	Determine whether a linear, quadratic or exponential function best models a given real-world situation. **Clarifications:** *Clarification 1*: Instruction includes recognizing that linear functions model situations in which a quantity changes by a constant amount per unit interval; that quadratic functions model situations in which a quantity increases to a maximum, then begins to decrease or a quantity decreases to a minimum, then begins to increase; and that exponential functions model situations in which a quantity grows or decays by a constant percent per unit interval. *Clarification 2*: Within this benchmark, the expectation is to identify the type of function from a written description or table.
MA.912.F.2.1:	Identify the effect on the graph or table of a given function after replacing $f(x)$ by $f(x)+k$,$kf(x)$, $f(kx)$ and $f(x+k)$ for specific values of k. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, functions are limited to linear, quadratic and absolute value. *Clarification 2*: Instruction focuses on including positive and negative values for k.
MA.912.FL.3.2:	Solve real-world problems involving simple, compound and continuously compounded interest. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, interest is limited to simple and compound.
MA.912.FL.3.4:	Explain the relationship between simple interest and linear growth. Explain the relationship between compound interest and exponential growth and the relationship between continuously compounded interest and exponential growth. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, exponential growth is limited to compound interest.
MA.912.NSO.1.1:	Extend previous understanding of the Laws of Exponents to include rational exponents. Apply the Laws of Exponents to evaluate numerical expressions and generate equivalent numerical expressions involving rational exponents. **Clarifications:** *Clarification 1:* Instruction includes the use of technology when appropriate. *Clarification 2:* Refer to the K-12 Formulas (Appendix E) for the Laws of Exponents. *Clarification 3:* Instruction includes converting between expressions involving rational exponents and expressions involving radicals. *Clarification 4:*Within the Mathematics for Data and Financial Literacy course, it is not the expectation to generate equivalent numerical expressions.
MA.912.NSO.1.2:	Generate equivalent algebraic expressions using the properties of exponents.
MA.912.NSO.1.4:	Apply previous understanding of operations with rational numbers to add, subtract, multiply and divide numerical radicals. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, expressions are limited to a single arithmetic operation involving two square roots or two cube roots.
MA.K12.MTR.1.1:	**Actively participate in effortful learning both individually and collectively.** Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task. • Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach. **Clarifications:** Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging. • Develop students’ ability to analyze and problem solve. • Recognize students’ effort when solving challenging problems.
	Demonstrate understanding by representing problems in multiple ways. Mathematicians who demonstrate understanding by representing problems in multiple ways: • Build understanding through modeling and using manipulatives. • Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. • Progress from modeling problems with objects and drawings to using algorithms and equations.

MA.K12.MTR.2.1:	• Express connections between concepts and representations. • Choose a representation based on the given context or purpose. **Clarifications:** Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: • Help students make connections between concepts and representations. • Provide opportunities for students to use manipulatives when investigating concepts. • Guide students from concrete to pictorial to abstract representations as understanding progresses. • Show students that various representations can have different purposes and can be useful in different situations.
MA.K12.MTR.3.1:	**Complete tasks with mathematical fluency.** Mathematicians who complete tasks with mathematical fluency: • Select efficient and appropriate methods for solving problems within the given context. • Maintain flexibility and accuracy while performing procedures and mental calculations. • Complete tasks accurately and with confidence. • Adapt procedures to apply them to a new context. • Use feedback to improve efficiency when performing calculations. **Clarifications:** Teachers who encourage students to complete tasks with mathematical fluency: • Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately. • Offer multiple opportunities for students to practice efficient and generalizable methods. • Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.
MA.K12.MTR.4.1:	**Engage in discussions that reflect on the mathematical thinking of self and others.** Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others: • Communicate mathematical ideas, vocabulary and methods effectively. • Analyze the mathematical thinking of others. • Compare the efficiency of a method to those expressed by others. • Recognize errors and suggest how to correctly solve the task. • Justify results by explaining methods and processes. • Construct possible arguments based on evidence. **Clarifications:** Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: • Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning. • Create opportunities for students to discuss their thinking with peers. • Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. • Develop students' ability to justify methods and compare their responses to the responses of their peers.
MA.K12.MTR.5.1:	**Use patterns and structure to help understand and connect mathematical concepts.** Mathematicians who use patterns and structure to help understand and connect mathematical concepts: • Focus on relevant details within a problem. • Create plans and procedures to logically order events, steps or ideas to solve problems. • Decompose a complex problem into manageable parts. • Relate previously learned concepts to new concepts. • Look for similarities among problems. • Connect solutions of problems to more complicated large-scale situations. **Clarifications:** Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts: • Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts. • Support students to develop generalizations based on the similarities found among problems. • Provide opportunities for students to create plans and procedures to solve problems. • Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.
MA.K12.MTR.6.1:	**Assess the reasonableness of solutions.** Mathematicians who assess the reasonableness of solutions: • Estimate to discover possible solutions. • Use benchmark quantities to determine if a solution makes sense. • Check calculations when solving problems. • Verify possible solutions by explaining the methods used. • Evaluate results based on the given context. **Clarifications:** Teachers who encourage students to assess the reasonableness of solutions: • Have students estimate or predict solutions prior to solving. • Prompt students to continually ask, "Does this solution make sense? How do you know?" • Reinforce that students check their work as they progress within and after a task. • Strengthen students' ability to verify solutions through justifications.
	Apply mathematics to real-world contexts. Mathematicians who apply mathematics to real-world contexts: • Connect mathematical concepts to everyday experiences. • Use models and methods to understand, represent and solve problems.

MA.K12.MTR.7.1:	• Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency. **Clarifications:** Teachers who encourage students to apply mathematics to real-world contexts: • Provide opportunities for students to create models, both concrete and abstract, and perform investigations. • Challenge students to question the accuracy of their models and methods. • Support students as they validate conclusions by comparing them to the given situation. • Indicate how various concepts can be applied to other disciplines.
ELA.K12.EE.1.1:	Cite evidence to explain and justify reasoning. **Clarifications:** K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing. 2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations. 4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they've directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor. 6-8 Students continue with previous skills and use a style guide to create a proper citation. 9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.
ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.
ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like "Why is the girl smiling?" or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
ELA.K12.EE.4.1:	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully. In grades 1-2, students build upon these skills by justifying what they are thinking. For example: "I think _______ because ______." The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
ELA.K12.EE.5.1:	Use the accepted rules governing a specific format to create quality work. **Clarifications:** Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.
ELA.K12.EE.6.1:	Use appropriate voice and tone when speaking or writing. **Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.
ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.

General Course Information and Notes

VERSION DESCRIPTION

In Algebra 1, instructional time will emphasize five areas: (1) performing operations with polynomials and radicals, and extending the Laws of Exponents to include rational exponents; (2) extending understanding of functions to linear, quadratic and exponential functions and using them to model and analyze real-world relationships; (3) solving quadratic equations in one variable and systems of linear equations and inequalities in two variables; (4) building functions, identifying their key features and representing them in various ways and (5) representing and interpreting categorical and numerical data with one and two variables.

All clarifications stated, whether general or specific to Algebra I, are expectations for instruction of that benchmark.

Curricular content for all subjects must integrate critical-thinking, problem-solving, and workforce-literacy skills; communication, reading, and writing skills; mathematics skills; collaboration skills; contextual and applied-learning skills; technology-literacy skills; information and media-literacy skills; and civic-engagement skills.

General Notes

Florida's Benchmarks for Excellent Student Thinking (B.E.S.T.) Standards

This course includes Florida's B.E.S.T. ELA Expectations (EE) and Mathematical Thinking and Reasoning Standards (MTRs) for students. Florida educators should intentionally embed these standards within the content and their instruction as applicable. For guidance on the implementation of the EEs and MTRs, please visit https://www.cpalms.org/Standards/BEST_Standards.aspx and select the appropriate B.E.S.T. Standards package.

English Language Development ELD Standards Special Notes Section:

Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link: https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf

General Information

Course Number: 1200310

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Algebra >

Abbreviated Title: ALG 1

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Attributes:

- Class Size Core Required

Course Type: Core Academic Course

Course Level: 2

Course Status: State Board Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Algebra 1

Educator Certifications

Middle Grades Mathematics (Middle Grades 5-9)
Mathematics (Grades 6-12)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Equivalent Courses

1200310-Algebra 1 Equivalency start year: 2018
1200320-Algebra 1 Honors Equivalency start year: 2014
1209810-Cambridge Pre-AICE Mathematics 1 IGCSE Level Equivalency start year: 2014
1200390-International Baccalaureate Mid Yrs Prog Algebra 1 Equivalency start year: 2014

Algebra 1 for Credit Recovery (#1200315) 2024 - And Beyond (current)

Course Standards

Name	Description
MA.912.AR.1.1:	Identify and interpret parts of an equation or expression that represent a quantity in terms of a mathematical or real-world context, including viewing one or more of its parts as a single entity. **Clarifications:** *Clarification 1:* Parts of an expression include factors, terms, constants, coefficients and variables. *Clarification 2:* Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.1.2:	Rearrange equations or formulas to isolate a quantity of interest. **Clarifications:** *Clarification 1*: Instruction includes using formulas for temperature, perimeter, area and volume; using equations for linear (standard, slope-intercept and point-slope forms) and quadratic (standard, factored and vertex forms) functions. *Clarification 2*: Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.1.3:	Add, subtract and multiply polynomial expressions with rational number coefficients. **Clarifications:** *Clarification 1: I*nstruction includes an understanding that when any of these operations are performed with polynomials the result is also a polynomial. *Clarification 2:* Within the Algebra 1 course, polynomial expressions are limited to 3 or fewer terms.
MA.912.AR.1.4:	Divide a polynomial expression by a monomial expression with rational number coefficients. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, polynomial expressions are limited to 3 or fewer terms.
MA.912.AR.1.7:	Rewrite a polynomial expression as a product of polynomials over the real number system. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, polynomial expressions are limited to 4 or fewer terms with integer coefficients.
MA.912.AR.2.1:	Given a real-world context, write and solve one-variable multi-step linear equations.
MA.912.AR.2.2:	Write a linear two-variable equation to represent the relationship between two quantities from a graph, a written description or a table of values within a mathematical or real-world context. **Clarifications:** *Clarification 1:* Instruction includes the use of standard form, slope-intercept form and point-slope form, and the conversion between these forms.
MA.912.AR.2.3:	Write a linear two-variable equation for a line that is parallel or perpendicular to a given line and goes through a given point. **Clarifications:** *Clarification 1:* Instruction focuses on recognizing that perpendicular lines have slopes that when multiplied result in -1 and that parallel lines have slopes that are the same. *Clarification 2:* Instruction includes representing a line with a pair of points on the coordinate plane or with an equation. *Clarification 3:* Problems include cases where one variable has a coefficient of zero.
MA.912.AR.2.4:	Given a table, equation or written description of a linear function, graph that function, and determine and interpret its key features. **Clarifications:** *Clarification 1*: Key features are limited to domain, range, intercepts and rate of change. *Clarification 2*: Instruction includes the use of standard form, slope-intercept form and point-slope form. *Clarification 3*: Instruction includes cases where one variable has a coefficient of zero. *Clarification 4*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 5*: Within the Algebra 1 course, notations for domain and range are limited to inequality and set-builder notations.
MA.912.AR.2.5:	Solve and graph mathematical and real-world problems that are modeled with linear functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain, range, intercepts and rate of change. *Clarification 2*: Instruction includes the use of standard form, slope-intercept form and point-slope form. *Clarification 3*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation. *Clarification 4*: Within the Algebra 1 course, notations for domain, range and constraints are limited to inequality and set-builder. *Clarification 5*: Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.2.6:	Given a mathematical or real-world context, write and solve one-variable linear inequalities, including compound inequalities. Represent solutions algebraically or graphically.

MA.912.AR.2.7:	Write two-variable linear inequalities to represent relationships between quantities from a graph or a written description within a mathematical or real-world context. **Clarifications:** *Clarification 1:* Instruction includes the use of standard form, slope-intercept form and point-slope form and any inequality symbol can be represented. *Clarification 2:* Instruction includes cases where one variable has a coefficient of zero.
MA.912.AR.2.8:	Given a mathematical or real-world context, graph the solution set to a two-variable linear inequality. **Clarifications:** *Clarification 1:* Instruction includes the use of standard form, slope-intercept form and point-slope form and any inequality symbol can be represented. *Clarification 2:* Instruction includes cases where one variable has a coefficient of zero.
MA.912.AR.3.1:	Given a mathematical or real-world context, write and solve one-variable quadratic equations over the real number system. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, instruction includes the concept of non-real answers, without determining non-real solutions. *Clarification 2:* Within this benchmark, the expectation is to solve by factoring techniques, taking square roots, the quadratic formula and completing the square.
MA.912.AR.3.4:	Write a quadratic function to represent the relationship between two quantities from a graph, a written description or a table of values within a mathematical or real-world context. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, a graph, written description or table of values must include the vertex and two points that are equidistant from the vertex. *Clarification 2*: Instruction includes the use of standard form, factored form and vertex form. *Clarification 3*: Within the Algebra 2 course, one of the given points must be the vertex or an *x*-intercept.
MA.912.AR.3.5:	Given the x-intercepts and another point on the graph of a quadratic function, write the equation for the function.
MA.912.AR.3.6:	Given an expression or equation representing a quadratic function, determine the vertex and zeros and interpret them in terms of a real-world context.
MA.912.AR.3.7:	Given a table, equation or written description of a quadratic function, graph that function, and determine and interpret its key features. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; vertex; and symmetry. *Clarification 2*: Instruction includes the use of standard form, factored form and vertex form, and sketching a graph using the zeros and vertex. *Clarification 3*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 4*: Within the Algebra 1 course, notations for domain and range are limited to inequality and set-builder.
MA.912.AR.3.8:	Solve and graph mathematical and real-world problems that are modeled with quadratic functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; vertex; and symmetry. *Clarification 2*: Instruction includes the use of standard form, factored form and vertex form. *Clarification 3*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation. *Clarification 4*: Within the Algebra 1 course, notations for domain, range and constraints are limited to inequality and set-builder.
MA.912.AR.4.1:	Given a mathematical or real-world context, write and solve one-variable absolute value equations.
MA.912.AR.4.3:	Given a table, equation or written description of an absolute value function, graph that function and determine its key features. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; vertex; end behavior and symmetry. *Clarification 2*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 3*: Within the Algebra 1 course, notations for domain and range are limited to inequality and set-builder.
MA.912.AR.5.3:	Given a mathematical or real-world context, classify an exponential function as representing growth or decay. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, exponential functions are limited to the forms $f(x) = ab^x$, where *b* is a whole number greater than 1 or a unit fraction, or $f(x) = a(1 \pm r)^x$, where $0 < r < 1$.
MA.912.AR.5.4:	Write an exponential function to represent a relationship between two quantities from a graph, a written description or a table of values within a mathematical or real-world context. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, exponential functions are limited to the forms $f(x) = ab^x$, where *b* is a whole number greater than 1 or a unit fraction, or $f(x) = a(1 \pm r)^x$, where $0 < r < 1$. *Clarification 2:* Within the Algebra 1 course, tables are limited to having successive nonnegative integer inputs so that the function may be determined by finding ratios between successive outputs.
	Given a table, equation or written description of an exponential function, graph that function and determine its key features.

MA.912.AR.5.6:	**Clarifications:** *Clarification 1:* Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; constant percent rate of change; end behavior and asymptotes. *Clarification 2:* Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 3:* Within the Algebra 1 course, notations for domain and range are limited to inequality and set-builder. *Clarification 4:* Within the Algebra 1 course, exponential functions are limited to the forms $f(x) = ab^x$, where b is a whole number greater than 1 or a unit fraction or $f(x) = a(1 \pm r)^x$, where $0 < r < 1$.
MA.912.AR.9.1:	Given a mathematical or real-world context, write and solve a system of two-variable linear equations algebraically or graphically. **Clarifications:** *Clarification 1*: Within this benchmark, the expectation is to solve systems using elimination, substitution and graphing. *Clarification 2*: Within the Algebra 1 course, the system is limited to two equations.
MA.912.AR.9.4:	Graph the solution set of a system of two-variable linear inequalities. **Clarifications:** *Clarification 1:* Instruction includes cases where one variable has a coefficient of zero. *Clarification 2:* Within the Algebra 1 course, the system is limited to two inequalities.
MA.912.AR.9.6:	Given a real-world context, represent constraints as systems of linear equations or inequalities. Interpret solutions to problems as viable or non-viable options. **Clarifications:** *Clarification 1*: Instruction focuses on analyzing a given function that models a real-world situation and writing constraints that are represented as linear equations or linear inequalities.
MA.912.DP.1.1:	Given a set of data, select an appropriate method to represent the data, depending on whether it is numerical or categorical data and on whether it is univariate or bivariate. **Clarifications:** *Clarification 1:* Instruction includes discussions regarding the strengths and weaknesses of each data display. *Clarification 2:* Numerical univariate includes histograms, stem-and-leaf plots, box plots and line plots; numerical bivariate includes scatter plots and line graphs; categorical univariate includes bar charts, circle graphs, line plots, frequency tables and relative frequency tables; and categorical bivariate includes segmented bar charts, joint frequency tables and joint relative frequency tables. *Clarification 3:* Instruction includes the use of appropriate units and labels and, where appropriate, using technology to create data displays.
MA.912.DP.1.2:	Interpret data distributions represented in various ways. State whether the data is numerical or categorical, whether it is univariate or bivariate and interpret the different components and quantities in the display. **Clarifications:** *Clarification 1*: Within the Probability and Statistics course, instruction includes the use of spreadsheets and technology.
MA.912.DP.1.3:	Explain the difference between correlation and causation in the contexts of both numerical and categorical data.
MA.912.DP.1.4:	Estimate a population total, mean or percentage using data from a sample survey; develop a margin of error through the use of simulation. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, the margin of error will be given.
MA.912.DP.2.4:	Fit a linear function to bivariate numerical data that suggests a linear association and interpret the slope and y-intercept of the model. Use the model to solve real-world problems in terms of the context of the data. **Clarifications:** *Clarification 1*: Instruction includes fitting a linear function both informally and formally with the use of technology. *Clarification 2*: Problems include making a prediction or extrapolation, inside and outside the range of the data, based on the equation of the line of fit.
MA.912.DP.2.6:	Given a scatter plot with a line of fit and residuals, determine the strength and direction of the correlation. Interpret strength and direction within a real-world context. **Clarifications:** *Clarification 1*: Instruction focuses on determining the direction by analyzing the slope and informally determining the strength by analyzing the residuals.
MA.912.DP.3.1:	Construct a two-way frequency table summarizing bivariate categorical data. Interpret joint and marginal frequencies and determine possible associations in terms of a real-world context.
MA.912.F.1.1:	Given an equation or graph that defines a function, determine the function type. Given an input-output table, determine a function type that could represent it. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, functions represented as tables are limited to linear, quadratic and exponential. *Clarification 2:* Within the Algebra 1 course, functions represented as equations or graphs are limited to vertical or horizontal translations or reflections over the x-axis of the following parent functions: $f(x) = x$, $f(x) = x^2$, $f(x) = x^3$, $f(x) = \sqrt{x}$, $f(x) = \sqrt[3]{x}$, $f(x) = \|x\|$, $f(x) = 2^x$ and $f(x) = \left(\frac{1}{2}\right)^x$.
MA.912.F.1.2:	Given a function represented in function notation, evaluate the function for an input in its domain. For a real-world context, interpret the output. **Clarifications:** *Clarification 1*: Problems include simple functions in two-variables, such as f(x,y)=3x-2y. *Clarification 2*: Within the Algebra 1 course, functions are limited to one-variable such as f(x)=3x.
	Calculate and interpret the average rate of change of a real-world situation represented graphically, algebraically or in a table over a specified

MA.912.F.1.3:	interval. **Clarifications:** *Clarification 1*: Instruction includes making the connection to determining the slope of a particular line segment.
MA.912.F.1.5:	Compare key features of linear functions each represented algebraically, graphically, in tables or written descriptions. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; slope and end behavior.
MA.912.F.1.6:	Compare key features of linear and nonlinear functions each represented algebraically, graphically, in tables or written descriptions. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior and asymptotes. *Clarification 2*: Within the Algebra 1 course, functions other than linear, quadratic or exponential must be represented graphically. *Clarification 3*: Within the Algebra 1 course, instruction includes verifying that a quantity increasing exponentially eventually exceeds a quantity increasing linearly or quadratically.
MA.912.F.1.8:	Determine whether a linear, quadratic or exponential function best models a given real-world situation. **Clarifications:** *Clarification 1*: Instruction includes recognizing that linear functions model situations in which a quantity changes by a constant amount per unit interval; that quadratic functions model situations in which a quantity increases to a maximum, then begins to decrease or a quantity decreases to a minimum, then begins to increase; and that exponential functions model situations in which a quantity grows or decays by a constant percent per unit interval. *Clarification 2*: Within this benchmark, the expectation is to identify the type of function from a written description or table.
MA.912.F.2.1:	Identify the effect on the graph or table of a given function after replacing $f(x)$ by $f(x)+k$, $kf(x)$, $f(kx)$ and $f(x+k)$ for specific values of k. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, functions are limited to linear, quadratic and absolute value. *Clarification 2*: Instruction focuses on including positive and negative values for k.
MA.912.FL.3.2:	Solve real-world problems involving simple, compound and continuously compounded interest. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, interest is limited to simple and compound.
MA.912.FL.3.4:	Explain the relationship between simple interest and linear growth. Explain the relationship between compound interest and exponential growth and the relationship between continuously compounded interest and exponential growth. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, exponential growth is limited to compound interest.
MA.912.NSO.1.1:	Extend previous understanding of the Laws of Exponents to include rational exponents. Apply the Laws of Exponents to evaluate numerical expressions and generate equivalent numerical expressions involving rational exponents. **Clarifications:** *Clarification 1:* Instruction includes the use of technology when appropriate. *Clarification 2:* Refer to the K-12 Formulas (Appendix E) for the Laws of Exponents. *Clarification 3:* Instruction includes converting between expressions involving rational exponents and expressions involving radicals. *Clarification 4:*Within the Mathematics for Data and Financial Literacy course, it is not the expectation to generate equivalent numerical expressions.
MA.912.NSO.1.2:	Generate equivalent algebraic expressions using the properties of exponents.
MA.912.NSO.1.4:	Apply previous understanding of operations with rational numbers to add, subtract, multiply and divide numerical radicals. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, expressions are limited to a single arithmetic operation involving two square roots or two cube roots.
MA.K12.MTR.1.1:	**Actively participate in effortful learning both individually and collectively.** Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task. • Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach. **Clarifications:** Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging. • Develop students' ability to analyze and problem solve. • Recognize students' effort when solving challenging problems.
	Demonstrate understanding by representing problems in multiple ways. Mathematicians who demonstrate understanding by representing problems in multiple ways: • Build understanding through modeling and using manipulatives. • Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. • Progress from modeling problems with objects and drawings to using algorithms and equations.

MA.K12.MTR.2.1:	• Express connections between concepts and representations. • Choose a representation based on the given context or purpose. **Clarifications:** Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: • Help students make connections between concepts and representations. • Provide opportunities for students to use manipulatives when investigating concepts. • Guide students from concrete to pictorial to abstract representations as understanding progresses. • Show students that various representations can have different purposes and can be useful in different situations.
MA.K12.MTR.3.1:	**Complete tasks with mathematical fluency.** Mathematicians who complete tasks with mathematical fluency: • Select efficient and appropriate methods for solving problems within the given context. • Maintain flexibility and accuracy while performing procedures and mental calculations. • Complete tasks accurately and with confidence. • Adapt procedures to apply them to a new context. • Use feedback to improve efficiency when performing calculations. **Clarifications:** Teachers who encourage students to complete tasks with mathematical fluency: • Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately. • Offer multiple opportunities for students to practice efficient and generalizable methods. • Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.
MA.K12.MTR.4.1:	**Engage in discussions that reflect on the mathematical thinking of self and others.** Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others: • Communicate mathematical ideas, vocabulary and methods effectively. • Analyze the mathematical thinking of others. • Compare the efficiency of a method to those expressed by others. • Recognize errors and suggest how to correctly solve the task. • Justify results by explaining methods and processes. • Construct possible arguments based on evidence. **Clarifications:** Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: • Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning. • Create opportunities for students to discuss their thinking with peers. • Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. • Develop students’ ability to justify methods and compare their responses to the responses of their peers.
MA.K12.MTR.5.1:	**Use patterns and structure to help understand and connect mathematical concepts.** Mathematicians who use patterns and structure to help understand and connect mathematical concepts: • Focus on relevant details within a problem. • Create plans and procedures to logically order events, steps or ideas to solve problems. • Decompose a complex problem into manageable parts. • Relate previously learned concepts to new concepts. • Look for similarities among problems. • Connect solutions of problems to more complicated large-scale situations. **Clarifications:** Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts: • Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts. • Support students to develop generalizations based on the similarities found among problems. • Provide opportunities for students to create plans and procedures to solve problems. • Develop students’ ability to construct relationships between their current understanding and more sophisticated ways of thinking.
MA.K12.MTR.6.1:	**Assess the reasonableness of solutions.** Mathematicians who assess the reasonableness of solutions: • Estimate to discover possible solutions. • Use benchmark quantities to determine if a solution makes sense. • Check calculations when solving problems. • Verify possible solutions by explaining the methods used. • Evaluate results based on the given context. **Clarifications:** Teachers who encourage students to assess the reasonableness of solutions: • Have students estimate or predict solutions prior to solving. • Prompt students to continually ask, “Does this solution make sense? How do you know?” • Reinforce that students check their work as they progress within and after a task. • Strengthen students’ ability to verify solutions through justifications.
	Apply mathematics to real-world contexts. Mathematicians who apply mathematics to real-world contexts: • Connect mathematical concepts to everyday experiences. • Use models and methods to understand, represent and solve problems.

MA.K12.MTR.7.1:	• Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency. **Clarifications:** Teachers who encourage students to apply mathematics to real-world contexts: • Provide opportunities for students to create models, both concrete and abstract, and perform investigations. • Challenge students to question the accuracy of their models and methods. • Support students as they validate conclusions by comparing them to the given situation. • Indicate how various concepts can be applied to other disciplines.
ELA.K12.EE.1.1:	Cite evidence to explain and justify reasoning. **Clarifications:** K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing. 2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations. 4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they've directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor. 6-8 Students continue with previous skills and use a style guide to create a proper citation. 9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.
ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.
ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like "Why is the girl smiling?" or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
ELA.K12.EE.4.1:	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully. In grades 1-2, students build upon these skills by justifying what they are thinking. For example: "I think _______ because ______." The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
ELA.K12.EE.5.1:	Use the accepted rules governing a specific format to create quality work. **Clarifications:** Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.
ELA.K12.EE.6.1:	Use appropriate voice and tone when speaking or writing. **Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.
ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.

General Course Information and Notes

VERSION DESCRIPTION

Credit Recovery courses are credit bearing courses with specific content requirements defined by state academic standards (SAS). Students enrolled in a Credit Recovery course must have previously attempted the corresponding course (and/or End-of-Course assessment) since the course requirements for the Credit Recovery course is exactly the same as the previously attempted corresponding course. For example, Geometry (1206310) and Geometry for Credit Recovery (1206315) have identical content requirements. It is important to note that Credit Recovery courses are not bound by Section 1003.436(1) (a), Florida Statutes, requiring a minimum of 135 hours of bona fide instruction (120 hours in a school/district implementing block scheduling) in a designed course of study that contains student performance standards, since the students have previously attempted successful completion of the corresponding course. Additionally, Credit Recovery courses should ONLY be used for credit recovery, grade forgiveness, or remediation for students needing to prepare for an End-of-Course assessment retake.

In Algebra 1, instructional time will emphasize five areas: (1) performing operations with polynomials and radicals, and extending the Laws of Exponents to include rational exponents; (2) extending understanding of functions to linear, quadratic and exponential functions and using them to model and analyze real-world relationships; (3) solving quadratic equations in one variable and systems of linear equations and inequalities in two variables; (4) building functions, identifying their key features and representing them in various ways and (5) representing and interpreting categorical and numerical data with one and two variables.

All clarifications stated, whether general or specific to Algebra I, are expectations for instruction of that benchmark.

Curricular content for all subjects must integrate critical-thinking, problem-solving, and workforce-literacy skills; communication, reading, and writing skills; mathematics skills; collaboration skills; contextual and applied-learning skills; technology-literacy skills; information and media-literacy skills; and civic-engagement skills.

General Notes

Florida's Benchmarks for Excellent Student Thinking (B.E.S.T.) Standards

This course includes Florida's B.E.S.T. ELA Expectations (EE) and Mathematical Thinking and Reasoning Standards (MTRs) for students. Florida educators should intentionally embed these standards within the content and their instruction as applicable. For guidance on the implementation of the EEs and MTRs, please visit https://www.cpalms.org/Standards/BEST_Standards.aspx and select the appropriate B.E.S.T. Standards package.

English Language Development ELD Standards Special Notes Section:

Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link: https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf

General Information

Course Number: 1200315

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Algebra >

Abbreviated Title: ALG 1 CR

Number of Credits: One (1) credit

Course Length: Credit Recovery (R)

Course Type: Elective Course

Course Level: 2

Course Status: State Board Approved

Grade Level(s): 9,10,11,12

Educator Certifications

Mathematics (Grades 6-12)
Middle Grades Mathematics (Middle Grades 5-9)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Algebra 1 Honors (#1200320) 2024 - And Beyond (current)

Course Standards

Name	Description
MA.912.AR.1.1:	Identify and interpret parts of an equation or expression that represent a quantity in terms of a mathematical or real-world context, including viewing one or more of its parts as a single entity. **Clarifications:** *Clarification 1:* Parts of an expression include factors, terms, constants, coefficients and variables. *Clarification 2:* Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.1.2:	Rearrange equations or formulas to isolate a quantity of interest. **Clarifications:** *Clarification 1*: Instruction includes using formulas for temperature, perimeter, area and volume; using equations for linear (standard, slope-intercept and point-slope forms) and quadratic (standard, factored and vertex forms) functions. *Clarification 2*: Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.1.3:	Add, subtract and multiply polynomial expressions with rational number coefficients. **Clarifications:** *Clarification 1: I*nstruction includes an understanding that when any of these operations are performed with polynomials the result is also a polynomial. *Clarification 2:* Within the Algebra 1 course, polynomial expressions are limited to 3 or fewer terms.
MA.912.AR.1.4:	Divide a polynomial expression by a monomial expression with rational number coefficients. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, polynomial expressions are limited to 3 or fewer terms.
MA.912.AR.1.7:	Rewrite a polynomial expression as a product of polynomials over the real number system. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, polynomial expressions are limited to 4 or fewer terms with integer coefficients.
MA.912.AR.2.1:	Given a real-world context, write and solve one-variable multi-step linear equations.
MA.912.AR.2.2:	Write a linear two-variable equation to represent the relationship between two quantities from a graph, a written description or a table of values within a mathematical or real-world context. **Clarifications:** *Clarification 1:* Instruction includes the use of standard form, slope-intercept form and point-slope form, and the conversion between these forms.
MA.912.AR.2.3:	Write a linear two-variable equation for a line that is parallel or perpendicular to a given line and goes through a given point. **Clarifications:** *Clarification 1:* Instruction focuses on recognizing that perpendicular lines have slopes that when multiplied result in -1 and that parallel lines have slopes that are the same. *Clarification 2:* Instruction includes representing a line with a pair of points on the coordinate plane or with an equation. *Clarification 3:* Problems include cases where one variable has a coefficient of zero.
MA.912.AR.2.4:	Given a table, equation or written description of a linear function, graph that function, and determine and interpret its key features. **Clarifications:** *Clarification 1*: Key features are limited to domain, range, intercepts and rate of change. *Clarification 2*: Instruction includes the use of standard form, slope-intercept form and point-slope form. *Clarification 3*: Instruction includes cases where one variable has a coefficient of zero. *Clarification 4*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 5*: Within the Algebra 1 course, notations for domain and range are limited to inequality and set-builder notations.
MA.912.AR.2.5:	Solve and graph mathematical and real-world problems that are modeled with linear functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain, range, intercepts and rate of change. *Clarification 2*: Instruction includes the use of standard form, slope-intercept form and point-slope form. *Clarification 3*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation. *Clarification 4*: Within the Algebra 1 course, notations for domain, range and constraints are limited to inequality and set-builder. *Clarification 5*: Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.2.6:	Given a mathematical or real-world context, write and solve one-variable linear inequalities, including compound inequalities. Represent solutions algebraically or graphically.

MA.912.AR.2.7:	Write two-variable linear inequalities to represent relationships between quantities from a graph or a written description within a mathematical or real-world context. **Clarifications:** *Clarification 1:* Instruction includes the use of standard form, slope-intercept form and point-slope form and any inequality symbol can be represented. *Clarification 2:* Instruction includes cases where one variable has a coefficient of zero.
MA.912.AR.2.8:	Given a mathematical or real-world context, graph the solution set to a two-variable linear inequality. **Clarifications:** *Clarification 1:* Instruction includes the use of standard form, slope-intercept form and point-slope form and any inequality symbol can be represented. *Clarification 2:* Instruction includes cases where one variable has a coefficient of zero.
MA.912.AR.3.1:	Given a mathematical or real-world context, write and solve one-variable quadratic equations over the real number system. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, instruction includes the concept of non-real answers, without determining non-real solutions. *Clarification 2:* Within this benchmark, the expectation is to solve by factoring techniques, taking square roots, the quadratic formula and completing the square.
MA.912.AR.3.4:	Write a quadratic function to represent the relationship between two quantities from a graph, a written description or a table of values within a mathematical or real-world context. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, a graph, written description or table of values must include the vertex and two points that are equidistant from the vertex. *Clarification 2*: Instruction includes the use of standard form, factored form and vertex form. *Clarification 3*: Within the Algebra 2 course, one of the given points must be the vertex or an x-intercept.
MA.912.AR.3.5:	Given the x-intercepts and another point on the graph of a quadratic function, write the equation for the function.
MA.912.AR.3.6:	Given an expression or equation representing a quadratic function, determine the vertex and zeros and interpret them in terms of a real-world context.
MA.912.AR.3.7:	Given a table, equation or written description of a quadratic function, graph that function, and determine and interpret its key features. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; vertex; and symmetry. *Clarification 2*: Instruction includes the use of standard form, factored form and vertex form, and sketching a graph using the zeros and vertex. *Clarification 3*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 4*: Within the Algebra 1 course, notations for domain and range are limited to inequality and set-builder.
MA.912.AR.3.8:	Solve and graph mathematical and real-world problems that are modeled with quadratic functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; vertex; and symmetry. *Clarification 2*: Instruction includes the use of standard form, factored form and vertex form. *Clarification 3*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation. *Clarification 4*: Within the Algebra 1 course, notations for domain, range and constraints are limited to inequality and set-builder.
MA.912.AR.4.1:	Given a mathematical or real-world context, write and solve one-variable absolute value equations.
MA.912.AR.4.2:	Given a mathematical or real-world context, write and solve one-variable absolute value inequalities. Represent solutions algebraically or graphically.
MA.912.AR.4.3:	Given a table, equation or written description of an absolute value function, graph that function and determine its key features. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; vertex; end behavior and symmetry. *Clarification 2*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 3*: Within the Algebra 1 course, notations for domain and range are limited to inequality and set-builder.
MA.912.AR.5.3:	Given a mathematical or real-world context, classify an exponential function as representing growth or decay. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, exponential functions are limited to the forms $f(x) = ab^x$, where b is a whole number greater than 1 or a unit fraction, or $f(x) = a(1 \pm r)^x$, where $0 < r < 1$.
MA.912.AR.5.4:	Write an exponential function to represent a relationship between two quantities from a graph, a written description or a table of values within a mathematical or real-world context. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, exponential functions are limited to the forms $f(x) = ab^x$, where b is a whole number greater than 1 or a unit fraction, or $f(x) = a(1 \pm r)^x$, where $0 < r < 1$. *Clarification 2:* Within the Algebra 1 course, tables are limited to having successive nonnegative integer inputs so that the function may be determined by finding ratios between successive outputs.

MA.912.AR.5.6:	Given a table, equation or written description of an exponential function, graph that function and determine its key features. **Clarifications:** *Clarification 1:* Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; constant percent rate of change; end behavior and asymptotes. *Clarification 2:* Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 3:* Within the Algebra 1 course, notations for domain and range are limited to inequality and set-builder. *Clarification 4:* Within the Algebra 1 course, exponential functions are limited to the forms $f(x) = ab^x$, where *b* is a whole number greater than 1 or a unit fraction or $f(x) = a(1 \pm r)^x$, where $0 < r < 1$.
MA.912.AR.9.1:	Given a mathematical or real-world context, write and solve a system of two-variable linear equations algebraically or graphically. **Clarifications:** *Clarification 1*: Within this benchmark, the expectation is to solve systems using elimination, substitution and graphing. *Clarification 2*: Within the Algebra 1 course, the system is limited to two equations.
MA.912.AR.9.4:	Graph the solution set of a system of two-variable linear inequalities. **Clarifications:** *Clarification 1:* Instruction includes cases where one variable has a coefficient of zero. *Clarification 2:* Within the Algebra 1 course, the system is limited to two inequalities.
MA.912.AR.9.6:	Given a real-world context, represent constraints as systems of linear equations or inequalities. Interpret solutions to problems as viable or non-viable options. **Clarifications:** *Clarification 1*: Instruction focuses on analyzing a given function that models a real-world situation and writing constraints that are represented as linear equations or linear inequalities.
MA.912.DP.1.1:	Given a set of data, select an appropriate method to represent the data, depending on whether it is numerical or categorical data and on whether it is univariate or bivariate. **Clarifications:** *Clarification 1:* Instruction includes discussions regarding the strengths and weaknesses of each data display. *Clarification 2:* Numerical univariate includes histograms, stem-and-leaf plots, box plots and line plots; numerical bivariate includes scatter plots and line graphs; categorical univariate includes bar charts, circle graphs, line plots, frequency tables and relative frequency tables; and categorical bivariate includes segmented bar charts, joint frequency tables and joint relative frequency tables. *Clarification 3:* Instruction includes the use of appropriate units and labels and, where appropriate, using technology to create data displays.
MA.912.DP.1.2:	Interpret data distributions represented in various ways. State whether the data is numerical or categorical, whether it is univariate or bivariate and interpret the different components and quantities in the display. **Clarifications:** *Clarification 1*: Within the Probability and Statistics course, instruction includes the use of spreadsheets and technology.
MA.912.DP.1.3:	Explain the difference between correlation and causation in the contexts of both numerical and categorical data.
MA.912.DP.1.4:	Estimate a population total, mean or percentage using data from a sample survey; develop a margin of error through the use of simulation. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, the margin of error will be given.
MA.912.DP.2.4:	Fit a linear function to bivariate numerical data that suggests a linear association and interpret the slope and y-intercept of the model. Use the model to solve real-world problems in terms of the context of the data. **Clarifications:** *Clarification 1*: Instruction includes fitting a linear function both informally and formally with the use of technology. *Clarification 2*: Problems include making a prediction or extrapolation, inside and outside the range of the data, based on the equation of the line of fit.
MA.912.DP.2.5:	Given a scatter plot that represents bivariate numerical data, assess the fit of a given linear function by plotting and analyzing residuals. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, instruction includes determining the number of positive and negative residuals; the largest and smallest residuals; and the connection between outliers in the data set and the corresponding residuals.
MA.912.DP.2.6:	Given a scatter plot with a line of fit and residuals, determine the strength and direction of the correlation. Interpret strength and direction within a real-world context. **Clarifications:** *Clarification 1*: Instruction focuses on determining the direction by analyzing the slope and informally determining the strength by analyzing the residuals.
MA.912.DP.3.1:	Construct a two-way frequency table summarizing bivariate categorical data. Interpret joint and marginal frequencies and determine possible associations in terms of a real-world context.
MA.912.DP.3.2:	Given marginal and conditional relative frequencies, construct a two-way relative frequency table summarizing categorical bivariate data. **Clarifications:** *Clarification 1:* Construction includes cases where not all frequencies are given but enough are provided to be able to construct a two-way relative frequency table. *Clarification 2:* Instruction includes the use of a tree diagram when calculating relative frequencies to construct tables.
MA.912.DP.3.3:	Given a two-way relative frequency table or segmented bar graph summarizing categorical bivariate data, interpret joint, marginal and conditional relative frequencies in terms of a real-world context. **Clarifications:** *Clarification 1:* Instruction includes problems involving false positive and false negatives.

MA.912.F.1.1:	Given an equation or graph that defines a function, determine the function type. Given an input-output table, determine a function type that could represent it. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, functions represented as tables are limited to linear, quadratic and exponential. *Clarification 2:* Within the Algebra 1 course, functions represented as equations or graphs are limited to vertical or horizontal translations or reflections over the x-axis of the following parent functions: $f(x) = x$, $f(x) = x^2$, $f(x) = x^3$, $f(x) = \sqrt{x}$, $f(x) = \sqrt[3]{x}$, $f(x) = \lvert x \rvert$, $f(x) = 2^x$ and $f(x) = \left(\frac{1}{2}\right)^x$.
MA.912.F.1.2:	Given a function represented in function notation, evaluate the function for an input in its domain. For a real-world context, interpret the output. **Clarifications:** *Clarification 1*: Problems include simple functions in two-variables, such as f(x,y)=3x-2y. *Clarification 2*: Within the Algebra 1 course, functions are limited to one-variable such as f(x)=3x.
MA.912.F.1.3:	Calculate and interpret the average rate of change of a real-world situation represented graphically, algebraically or in a table over a specified interval. **Clarifications:** *Clarification 1*: Instruction includes making the connection to determining the slope of a particular line segment.
MA.912.F.1.5:	Compare key features of linear functions each represented algebraically, graphically, in tables or written descriptions. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; slope and end behavior.
MA.912.F.1.6:	Compare key features of linear and nonlinear functions each represented algebraically, graphically, in tables or written descriptions. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior and asymptotes. *Clarification 2*: Within the Algebra 1 course, functions other than linear, quadratic or exponential must be represented graphically. *Clarification 3*: Within the Algebra 1 course, instruction includes verifying that a quantity increasing exponentially eventually exceeds a quantity increasing linearly or quadratically.
MA.912.F.1.8:	Determine whether a linear, quadratic or exponential function best models a given real-world situation. **Clarifications:** *Clarification 1*: Instruction includes recognizing that linear functions model situations in which a quantity changes by a constant amount per unit interval; that quadratic functions model situations in which a quantity increases to a maximum, then begins to decrease or a quantity decreases to a minimum, then begins to increase; and that exponential functions model situations in which a quantity grows or decays by a constant percent per unit interval. *Clarification 2*: Within this benchmark, the expectation is to identify the type of function from a written description or table.
MA.912.F.2.1:	Identify the effect on the graph or table of a given function after replacing *f(x)* by *f(x)+k*,*kf(x)*, *f(kx)* and *f(x+k)* for specific values of *k*. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, functions are limited to linear, quadratic and absolute value. *Clarification 2*: Instruction focuses on including positive and negative values for *k*.
MA.912.F.2.3:	Given the graph or table of f(x) and the graph or table of f(x)+k,kf(x), f(kx) and f(x+k), state the type of transformation and find the value of the real number k. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, functions are limited to linear, quadratic and absolute value.
MA.912.F.3.1:	Given a mathematical or real-world context, combine two functions, limited to linear and quadratic, using arithmetic operations. When appropriate, include domain restrictions for the new function. **Clarifications:** *Clarification 1*: Instruction includes representing domain restrictions with inequality notation, interval notation or set-builder notation. *Clarification 2*: Within the Algebra 1 Honors course, notations for domain and range are limited to inequality and set-builder.
MA.912.FL.3.2:	Solve real-world problems involving simple, compound and continuously compounded interest. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, interest is limited to simple and compound.
MA.912.FL.3.4:	Explain the relationship between simple interest and linear growth. Explain the relationship between compound interest and exponential growth and the relationship between continuously compounded interest and exponential growth. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, exponential growth is limited to compound interest.
MA.912.NSO.1.1:	Extend previous understanding of the Laws of Exponents to include rational exponents. Apply the Laws of Exponents to evaluate numerical expressions and generate equivalent numerical expressions involving rational exponents. **Clarifications:** *Clarification 1:* Instruction includes the use of technology when appropriate. *Clarification 2:* Refer to the K-12 Formulas (Appendix E) for the Laws of Exponents. *Clarification 3:* Instruction includes converting between expressions involving rational exponents and expressions involving radicals. *Clarification 4:*Within the Mathematics for Data and Financial Literacy course, it is not the expectation to generate equivalent numerical expressions.
MA.912.NSO.1.2:	Generate equivalent algebraic expressions using the properties of exponents.

MA.912.NSO.1.4:	Apply previous understanding of operations with rational numbers to add, subtract, multiply and divide numerical radicals. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, expressions are limited to a single arithmetic operation involving two square roots or two cube roots.
MA.K12.MTR.1.1:	**Actively participate in effortful learning both individually and collectively.** Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task. • Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach. **Clarifications:** Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging. • Develop students’ ability to analyze and problem solve. • Recognize students’ effort when solving challenging problems.
MA.K12.MTR.2.1:	**Demonstrate understanding by representing problems in multiple ways.** Mathematicians who demonstrate understanding by representing problems in multiple ways: • Build understanding through modeling and using manipulatives. • Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. • Progress from modeling problems with objects and drawings to using algorithms and equations. • Express connections between concepts and representations. • Choose a representation based on the given context or purpose. **Clarifications:** Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: • Help students make connections between concepts and representations. • Provide opportunities for students to use manipulatives when investigating concepts. • Guide students from concrete to pictorial to abstract representations as understanding progresses. • Show students that various representations can have different purposes and can be useful in different situations.
MA.K12.MTR.3.1:	**Complete tasks with mathematical fluency.** Mathematicians who complete tasks with mathematical fluency: • Select efficient and appropriate methods for solving problems within the given context. • Maintain flexibility and accuracy while performing procedures and mental calculations. • Complete tasks accurately and with confidence. • Adapt procedures to apply them to a new context. • Use feedback to improve efficiency when performing calculations. **Clarifications:** Teachers who encourage students to complete tasks with mathematical fluency: • Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately. • Offer multiple opportunities for students to practice efficient and generalizable methods. • Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.
MA.K12.MTR.4.1:	**Engage in discussions that reflect on the mathematical thinking of self and others.** Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others: • Communicate mathematical ideas, vocabulary and methods effectively. • Analyze the mathematical thinking of others. • Compare the efficiency of a method to those expressed by others. • Recognize errors and suggest how to correctly solve the task. • Justify results by explaining methods and processes. • Construct possible arguments based on evidence. **Clarifications:** Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: • Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning. • Create opportunities for students to discuss their thinking with peers. • Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. • Develop students’ ability to justify methods and compare their responses to the responses of their peers.
MA.K12.MTR.5.1:	**Use patterns and structure to help understand and connect mathematical concepts.** Mathematicians who use patterns and structure to help understand and connect mathematical concepts: • Focus on relevant details within a problem. • Create plans and procedures to logically order events, steps or ideas to solve problems. • Decompose a complex problem into manageable parts. • Relate previously learned concepts to new concepts. • Look for similarities among problems. • Connect solutions of problems to more complicated large-scale situations.

	Clarifications: Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts: • Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts. • Support students to develop generalizations based on the similarities found among problems. • Provide opportunities for students to create plans and procedures to solve problems. • Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.
MA.K12.MTR.6.1:	**Assess the reasonableness of solutions.** Mathematicians who assess the reasonableness of solutions: • Estimate to discover possible solutions. • Use benchmark quantities to determine if a solution makes sense. • Check calculations when solving problems. • Verify possible solutions by explaining the methods used. • Evaluate results based on the given context. **Clarifications:** Teachers who encourage students to assess the reasonableness of solutions: • Have students estimate or predict solutions prior to solving. • Prompt students to continually ask, "Does this solution make sense? How do you know?" • Reinforce that students check their work as they progress within and after a task. • Strengthen students' ability to verify solutions through justifications.
MA.K12.MTR.7.1:	**Apply mathematics to real-world contexts.** Mathematicians who apply mathematics to real-world contexts: • Connect mathematical concepts to everyday experiences. • Use models and methods to understand, represent and solve problems. • Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency. **Clarifications:** Teachers who encourage students to apply mathematics to real-world contexts: • Provide opportunities for students to create models, both concrete and abstract, and perform investigations. • Challenge students to question the accuracy of their models and methods. • Support students as they validate conclusions by comparing them to the given situation. • Indicate how various concepts can be applied to other disciplines.
ELA.K12.EE.1.1:	Cite evidence to explain and justify reasoning. **Clarifications:** K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing. 2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations. 4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they've directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor. 6-8 Students continue with previous skills and use a style guide to create a proper citation. 9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.
ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.
ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like "Why is the girl smiling?" or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
ELA.K12.EE.4.1:	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully. In grades 1-2, students build upon these skills by justifying what they are thinking. For example: "I think _______ because ______." The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
ELA.K12.EE.5.1:	Use the accepted rules governing a specific format to create quality work. **Clarifications:** Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.
	Use appropriate voice and tone when speaking or writing.

ELA.K12.EE.6.1:	**Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.
ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.

General Course Information and Notes

VERSION DESCRIPTION

In Algebra 1 Honors, instructional time will emphasize five areas: (1) performing operations with polynomials and radicals, and extending the Laws of Exponents to include rational exponents; (2) extending understanding of functions to linear, quadratic and exponential functions and using them to model and analyze real-world relationships; (3) solving quadratic equations in one variable and systems of linear equations and inequalities in two variables; (4) building functions, identifying their key features and representing them in various ways and (5) representing and interpreting categorical and numerical data with one and two variables.

All clarifications stated, whether general or specific to Algebra I Honors, are expectations for instruction of that benchmark.

Curricular content for all subjects must integrate critical-thinking, problem-solving, and workforce-literacy skills; communication, reading, and writing skills; mathematics skills; collaboration skills; contextual and applied-learning skills; technology-literacy skills; information and media-literacy skills; and civic-engagement skills.

General Notes

Honors and Accelerated Level Course Note: Accelerated courses require a greater demand on students through increased academic rigor. Academic rigor is obtained through the application, analysis, evaluation, and creation of complex ideas that are often abstract and multi-faceted. Students are challenged to think and collaborate critically on the content they are learning. Honors level rigor will be achieved by increasing text complexity through text selection, focus on high-level qualitative measures, and complexity of task. Instruction will be structured to give students a deeper understanding of conceptual themes and organization within and across disciplines. Academic rigor is more than simply assigning to students a greater quantity of work.

Florida's Benchmarks for Excellent Student Thinking (B.E.S.T.) Standards
This course includes Florida's B.E.S.T. ELA Expectations (EE) and Mathematical Thinking and Reasoning Standards (MTRs) for students. Florida educators should intentionally embed these standards within the content and their instruction as applicable. For guidance on the implementation of the EEs and MTRs, please visit https://www.cpalms.org/Standards/BEST_Standards.aspx and select the appropriate B.E.S.T. Standards package.

English Language Development ELD Standards Special Notes Section:

Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link: https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf

General Information

Course Number: 1200320

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Algebra >

Abbreviated Title: ALG 1 HONORS

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Attributes:

- Honors
- Class Size Core Required

Course Type: Core Academic Course

Course Level: 3

Course Status: State Board Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Algebra 1

Educator Certifications

Mathematics (Grades 6-12)
Middle Grades Mathematics (Middle Grades 5-9)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Equivalent Courses

1200310-Algebra 1 Equivalency start year: 2014
1200386-Pre-Advanced Placement Algebra 1 Equivalency start year: 2018

Algebra 2 (#1200330) 2024 - And Beyond (current)

Course Standards

Name	Description
MA.912.AR.1.1:	Identify and interpret parts of an equation or expression that represent a quantity in terms of a mathematical or real-world context, including viewing one or more of its parts as a single entity. **Clarifications:** *Clarification 1:* Parts of an expression include factors, terms, constants, coefficients and variables. *Clarification 2:* Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.1.3:	Add, subtract and multiply polynomial expressions with rational number coefficients. **Clarifications:** *Clarification 1: I*nstruction includes an understanding that when any of these operations are performed with polynomials the result is also a polynomial. *Clarification 2:* Within the Algebra 1 course, polynomial expressions are limited to 3 or fewer terms.
MA.912.AR.1.5:	Divide polynomial expressions using long division, synthetic division or algebraic manipulation.
MA.912.AR.1.6:	Solve mathematical and real-world problems involving addition, subtraction, multiplication or division of polynomials.
MA.912.AR.1.8:	Rewrite a polynomial expression as a product of polynomials over the real or complex number system. **Clarifications:** *Clarification 1:* Instruction includes factoring a sum or difference of squares and a sum or difference of cubes.
MA.912.AR.1.9:	Apply previous understanding of rational number operations to add, subtract, multiply and divide rational algebraic expressions. **Clarifications:** *Clarification 1*: Instruction includes the connection to fractions and common denominators.
MA.912.AR.3.2:	Given a mathematical or real-world context, write and solve one-variable quadratic equations over the real and complex number systems. **Clarifications:** *Clarification 1*: Within this benchmark, the expectation is to solve by factoring techniques, taking square roots, the quadratic formula and completing the square.
MA.912.AR.3.3:	Given a mathematical or real-world context, write and solve one-variable quadratic inequalities over the real number system. Represent solutions algebraically or graphically.
MA.912.AR.3.4:	Write a quadratic function to represent the relationship between two quantities from a graph, a written description or a table of values within a mathematical or real-world context. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, a graph, written description or table of values must include the vertex and two points that are equidistant from the vertex. *Clarification 2*: Instruction includes the use of standard form, factored form and vertex form. *Clarification 3*: Within the Algebra 2 course, one of the given points must be the vertex or an *x*-intercept.
MA.912.AR.3.8:	Solve and graph mathematical and real-world problems that are modeled with quadratic functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; vertex; and symmetry. *Clarification 2*: Instruction includes the use of standard form, factored form and vertex form. *Clarification 3*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation. *Clarification 4*: Within the Algebra 1 course, notations for domain, range and constraints are limited to inequality and set-builder.
MA.912.AR.3.9:	Given a mathematical or real-world context, write two-variable quadratic inequalities to represent relationships between quantities from a graph or a written description. **Clarifications:** *Clarification 1:* Instruction includes the use of standard form, factored form and vertex form where any inequality symbol can be represented.
MA.912.AR.3.10:	Given a mathematical or real-world context, graph the solution set to a two-variable quadratic inequality. **Clarifications:** *Clarification 1*: Instruction includes the use of standard form, factored form and vertex form where any inequality symbol can be represented.
MA.912.AR.4.2:	Given a mathematical or real-world context, write and solve one-variable absolute value inequalities. Represent solutions algebraically or graphically.
MA.912.AR.4.4:	Solve and graph mathematical and real-world problems that are modeled with absolute value functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; vertex; end behavior and symmetry. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder

	notation.
MA.912.AR.5.2:	Solve one-variable equations involving logarithms or exponential expressions. Interpret solutions as viable in terms of the context and identify any extraneous solutions.
MA.912.AR.5.4:	Write an exponential function to represent a relationship between two quantities from a graph, a written description or a table of values within a mathematical or real-world context. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, exponential functions are limited to the forms $f(x) = ab^x$, where b is a whole number greater than 1 or a unit fraction, or $f(x) = a(1 \pm r)^x$, where $0 < r < 1$. *Clarification 2:* Within the Algebra 1 course, tables are limited to having successive nonnegative integer inputs so that the function may be determined by finding ratios between successive outputs.
MA.912.AR.5.5:	Given an expression or equation representing an exponential function, reveal the constant percent rate of change per unit interval using the properties of exponents. Interpret the constant percent rate of change in terms of a real-world context.
MA.912.AR.5.7:	Solve and graph mathematical and real-world problems that are modeled with exponential functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; constant percent rate of change; end behavior and asymptotes. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation. *Clarification 3*: Instruction includes understanding that when the logarithm of the dependent variable is taken and graphed, the exponential function will be transformed into a linear function. *Clarification 4*: Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.5.8:	Given a table, equation or written description of a logarithmic function, graph that function and determine its key features. **Clarifications:** *Clarification 1:* Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; and asymptotes. *Clarification 2:* Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation.
MA.912.AR.5.9:	Solve and graph mathematical and real-world problems that are modeled with logarithmic functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; and asymptotes. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation.
MA.912.AR.6.1:	Given a mathematical or real-world context, when suitable factorization is possible, solve one-variable polynomial equations of degree 3 or higher over the real and complex number systems.
MA.912.AR.6.5:	Sketch a rough graph of a polynomial function of degree 3 or higher using zeros, multiplicity and knowledge of end behavior.
MA.912.AR.7.1:	Solve one-variable radical equations. Interpret solutions as viable in terms of context and identify any extraneous solutions.
MA.912.AR.7.2:	Given a table, equation or written description of a square root or cube root function, graph that function and determine its key features. **Clarifications:** *Clarification 1:* Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; and relative maximums and minimums. *Clarification 2:* Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation.
MA.912.AR.7.3:	Solve and graph mathematical and real-world problems that are modeled with square root or cube root functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; and relative maximums and minimums. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation.
MA.912.AR.8.1:	Write and solve one-variable rational equations. Interpret solutions as viable in terms of the context and identify any extraneous solutions. **Clarifications:** *Clarification 1*: Within the Algebra 2 course, numerators and denominators are limited to linear and quadratic expressions.
MA.912.AR.8.2:	Given a table, equation or written description of a rational function, graph that function and determine its key features. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; and asymptotes. *Clarification 2*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 3*: Within the Algebra 2 course, numerators and denominators are limited to linear and quadratic expressions.
	Solve and graph mathematical and real-world problems that are modeled with rational functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative;

MA.912.AR.8.3:	end behavior; and asymptotes. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation. *Clarification 3*: Instruction includes using rational functions to represent inverse proportional relationships. *Clarification 4*: Within the Algebra 2 course, numerators and denominators are limited to linear and quadratic expressions.
MA.912.AR.9.2:	Given a mathematical or real-world context, solve a system consisting of a two-variable linear equation and a non-linear equation algebraically or graphically.
MA.912.AR.9.3:	Given a mathematical or real-world context, solve a system consisting of two-variable linear or non-linear equations algebraically or graphically. **Clarifications:** *Clarification 1*: Within the Algebra 2 course, non-linear equations are limited to quadratic equations.
MA.912.AR.9.5:	Graph the solution set of a system of two-variable inequalities. **Clarifications:** *Clarification 1:* Within the Algebra 2 course, two-variable inequalities are limited to linear and quadratic.
MA.912.AR.9.7:	Given a real-world context, represent constraints as systems of linear and non-linear equations or inequalities. Interpret solutions to problems as viable or non-viable options. **Clarifications:** *Clarification 1*: Instruction focuses on analyzing a given function that models a real-world situation and writing constraints that are represented as non-linear equations or non-linear inequalities. *Clarification 2*: Within the Algebra 2 course, non-linear equations and inequalities are limited to quadratic.
MA.912.DP.2.8:	Fit a quadratic function to bivariate numerical data that suggests a quadratic association and interpret any intercepts or the vertex of the model. Use the model to solve real-world problems in terms of the context of the data. **Clarifications:** *Clarification 1*: Problems include making a prediction or extrapolation, inside and outside the range of the data, based on the equation of the line of fit.
MA.912.DP.2.9:	Fit an exponential function to bivariate numerical data that suggests an exponential association. Use the model to solve real-world problems in terms of the context of the data. **Clarifications:** *Clarification 1*: Instruction focuses on determining whether an exponential model is appropriate by taking the logarithm of the dependent variable using spreadsheets and other technology. *Clarification 2*: Instruction includes determining whether the transformed scatterplot has an appropriate line of best fit, and interpreting the y-intercept and slope of the line of best fit. *Clarification 3*: Problems include making a prediction or extrapolation, inside and outside the range of the data, based on the equation of the line of fit.
MA.912.F.1.1:	Given an equation or graph that defines a function, determine the function type. Given an input-output table, determine a function type that could represent it. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, functions represented as tables are limited to linear, quadratic and exponential. *Clarification 2:* Within the Algebra 1 course, functions represented as equations or graphs are limited to vertical or horizontal translations or reflections over the x-axis of the following parent functions: $f(x)=x$, $f(x)=x^2$, $f(x)=x^3$, $f(x)=\sqrt{x}$, $f(x)=\sqrt[3]{x}$, $f(x)=\lvert x \rvert$, $f(x)=2^x$ and $f(x)=\left(\frac{1}{2}\right)^x$.
MA.912.F.1.7:	Compare key features of two functions each represented algebraically, graphically, in tables or written descriptions. **Clarifications:** *Clarification 1*: Key features include domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior and asymptotes.
MA.912.F.1.9:	Determine whether a function is even, odd or neither when represented algebraically, graphically or in a table.
MA.912.F.2.2:	Identify the effect on the graph of a given function of two or more transformations defined by adding a real number to the x- or y- values or multiplying the x- or y- values by a real number.
MA.912.F.2.3:	Given the graph or table of f(x) and the graph or table of f(x)+k,kf(x), f(kx) and f(x+k), state the type of transformation and find the value of the real number k. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, functions are limited to linear, quadratic and absolute value.
MA.912.F.2.5:	Given a table, equation or graph that represents a function, create a corresponding table, equation or graph of the transformed function defined by adding a real number to the *x*- or *y*-values or multiplying the *x*- or *y*-values by a real number.
MA.912.F.3.2:	Given a mathematical or real-world context, combine two or more functions, limited to linear, quadratic, exponential and polynomial, using arithmetic operations. When appropriate, include domain restrictions for the new function. **Clarifications:** *Clarification 1*: Instruction includes representing domain restrictions with inequality notation, interval notation or set-builder notation. *Clarification 2*: Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.F.3.4:	Represent the composition of two functions algebraically or in a table. Determine the domain and range of the composite function.
MA.912.F.3.6:	Determine whether an inverse function exists by analyzing tables, graphs and equations.
	Represent the inverse of a function algebraically, graphically or in a table. Use composition of functions to verify that one function is the inverse of the

MA.912.F.3.7:	other. **Clarifications:** *Clarification 1*: Instruction includes the understanding that a logarithmic function is the inverse of an exponential function.
MA.912.FL.3.1:	Compare simple, compound and continuously compounded interest over time. **Clarifications:** *Clarification 1*: Instruction includes taking into consideration the annual percentage rate (APR) when comparing simple and compound interest.
MA.912.FL.3.2:	Solve real-world problems involving simple, compound and continuously compounded interest. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, interest is limited to simple and compound.
MA.912.FL.3.4:	Explain the relationship between simple interest and linear growth. Explain the relationship between compound interest and exponential growth and the relationship between continuously compounded interest and exponential growth. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, exponential growth is limited to compound interest.
MA.912.NSO.1.3:	Generate equivalent algebraic expressions involving radicals or rational exponents using the properties of exponents. **Clarifications:** *Clarification 1*: Within the Algebra 2 course, radicands are limited to monomial algebraic expressions.
MA.912.NSO.1.5:	Add, subtract, multiply and divide algebraic expressions involving radicals. **Clarifications:** *Clarification 1*: Within the Algebra 2 course, radicands are limited to monomial algebraic expressions.
MA.912.NSO.1.6:	Given a numerical logarithmic expression, evaluate and generate equivalent numerical expressions using the properties of logarithms or exponents. **Clarifications:** *Clarification 1*: Within the Mathematics for Data and Financial Literacy Honors course, problem types focus on money and business.
MA.912.NSO.1.7:	Given an algebraic logarithmic expression, generate an equivalent algebraic expression using the properties of logarithms or exponents. **Clarifications:** *Clarification 1*: Within the Mathematics for Data and Financial Literacy Honors course, problem types focus on money and business.
MA.912.NSO.2.1:	Extend previous understanding of the real number system to include the complex number system. Add, subtract, multiply and divide complex numbers.
MA.K12.MTR.1.1:	**Actively participate in effortful learning both individually and collectively.** Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task. • Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach. **Clarifications:** Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging. • Develop students’ ability to analyze and problem solve. • Recognize students’ effort when solving challenging problems.
MA.K12.MTR.2.1:	**Demonstrate understanding by representing problems in multiple ways.** Mathematicians who demonstrate understanding by representing problems in multiple ways: • Build understanding through modeling and using manipulatives. • Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. • Progress from modeling problems with objects and drawings to using algorithms and equations. • Express connections between concepts and representations. • Choose a representation based on the given context or purpose. **Clarifications:** Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: • Help students make connections between concepts and representations. • Provide opportunities for students to use manipulatives when investigating concepts. • Guide students from concrete to pictorial to abstract representations as understanding progresses. • Show students that various representations can have different purposes and can be useful in different situations.
MA.K12.MTR.3.1:	**Complete tasks with mathematical fluency.** Mathematicians who complete tasks with mathematical fluency: • Select efficient and appropriate methods for solving problems within the given context. • Maintain flexibility and accuracy while performing procedures and mental calculations. • Complete tasks accurately and with confidence. • Adapt procedures to apply them to a new context. • Use feedback to improve efficiency when performing calculations. **Clarifications:** Teachers who encourage students to complete tasks with mathematical fluency:

	- Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately. - Offer multiple opportunities for students to practice efficient and generalizable methods. - Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.
MA.K12.MTR.4.1:	**Engage in discussions that reflect on the mathematical thinking of self and others.** Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others: - Communicate mathematical ideas, vocabulary and methods effectively. - Analyze the mathematical thinking of others. - Compare the efficiency of a method to those expressed by others. - Recognize errors and suggest how to correctly solve the task. - Justify results by explaining methods and processes. - Construct possible arguments based on evidence. **Clarifications:** Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: - Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning. - Create opportunities for students to discuss their thinking with peers. - Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. - Develop students' ability to justify methods and compare their responses to the responses of their peers.
MA.K12.MTR.5.1:	**Use patterns and structure to help understand and connect mathematical concepts.** Mathematicians who use patterns and structure to help understand and connect mathematical concepts: - Focus on relevant details within a problem. - Create plans and procedures to logically order events, steps or ideas to solve problems. - Decompose a complex problem into manageable parts. - Relate previously learned concepts to new concepts. - Look for similarities among problems. - Connect solutions of problems to more complicated large-scale situations. **Clarifications:** Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts: - Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts. - Support students to develop generalizations based on the similarities found among problems. - Provide opportunities for students to create plans and procedures to solve problems. - Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.
MA.K12.MTR.6.1:	**Assess the reasonableness of solutions.** Mathematicians who assess the reasonableness of solutions: - Estimate to discover possible solutions. - Use benchmark quantities to determine if a solution makes sense. - Check calculations when solving problems. - Verify possible solutions by explaining the methods used. - Evaluate results based on the given context. **Clarifications:** Teachers who encourage students to assess the reasonableness of solutions: - Have students estimate or predict solutions prior to solving. - Prompt students to continually ask, "Does this solution make sense? How do you know?" - Reinforce that students check their work as they progress within and after a task. - Strengthen students' ability to verify solutions through justifications.
MA.K12.MTR.7.1:	**Apply mathematics to real-world contexts.** Mathematicians who apply mathematics to real-world contexts: - Connect mathematical concepts to everyday experiences. - Use models and methods to understand, represent and solve problems. - Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency. **Clarifications:** Teachers who encourage students to apply mathematics to real-world contexts: - Provide opportunities for students to create models, both concrete and abstract, and perform investigations. - Challenge students to question the accuracy of their models and methods. - Support students as they validate conclusions by comparing them to the given situation. - Indicate how various concepts can be applied to other disciplines.
ELA.K12.EE.1.1:	Cite evidence to explain and justify reasoning. **Clarifications:** K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing. 2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations. 4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they've directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor.

	6-8 Students continue with previous skills and use a style guide to create a proper citation. 9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.
ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.
ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like “Why is the girl smiling?” or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
ELA.K12.EE.4.1:	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully. In grades 1-2, students build upon these skills by justifying what they are thinking. For example: “I think ________ because _______.” The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
ELA.K12.EE.5.1:	Use the accepted rules governing a specific format to create quality work. **Clarifications:** Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.
ELA.K12.EE.6.1:	Use appropriate voice and tone when speaking or writing. **Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.
ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.

General Course Information and Notes

VERSION DESCRIPTION

In Algebra 2, instructional time will emphasize five areas: (1) extending arithmetic operations with algebraic expressions to include radical and rational expressions and polynomial division; (2) graphing and analyzing functions including polynomials, absolute value, radical, rational, exponential and logarithmic; (3) building functions using compositions, inverses and transformations; (4) extending systems of equations and inequalities to include non-linear expressions and (5) developing understanding of the complex number system, including complex numbers as roots of polynomial equations.

All clarifications stated, whether general or specific to Algebra 2, are expectations for instruction of that benchmark

Curricular content for all subjects must integrate critical-thinking, problem-solving, and workforce-literacy skills; communication, reading, and writing skills; mathematics skills; collaboration skills; contextual and applied-learning skills; technology-literacy skills; information and media-literacy skills; and civic-engagement skills.

General Notes

Florida’s Benchmarks for Excellent Student Thinking (B.E.S.T.) Standards
This course includes Florida’s B.E.S.T. ELA Expectations (EE) and Mathematical Thinking and Reasoning Standards (MTRs) for students. Florida educators should intentionally embed these standards within the content and their instruction as applicable. For guidance on the implementation of the EEs and MTRs, please visit https://www.cpalms.org/Standards/BEST_Standards.aspx and select the appropriate B.E.S.T. Standards package.

English Language Development ELD Standards Special Notes Section:

Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL’s need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link: https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf

General Information

Course Number: 1200330

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Algebra >
Abbreviated Title: ALG 2

Number of Credits: One (1) credit
Course Length: Year (Y)
Course Type: Core Academic Course
Course Level: 2
Course Status: State Board Approved
Grade Level(s): 9,10,11,12
Graduation Requirement: Mathematics

Educator Certifications

Mathematics (Grades 6-12)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Algebra 2 Honors (#1200340) 2024 - And Beyond (current)

Course Standards

Name	Description
MA.912.AR.1.1:	Identify and interpret parts of an equation or expression that represent a quantity in terms of a mathematical or real-world context, including viewing one or more of its parts as a single entity. **Clarifications:** *Clarification 1:* Parts of an expression include factors, terms, constants, coefficients and variables. *Clarification 2:* Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.1.3:	Add, subtract and multiply polynomial expressions with rational number coefficients. **Clarifications:** *Clarification 1: I*nstruction includes an understanding that when any of these operations are performed with polynomials the result is also a polynomial. *Clarification 2:* Within the Algebra 1 course, polynomial expressions are limited to 3 or fewer terms.
MA.912.AR.1.5:	Divide polynomial expressions using long division, synthetic division or algebraic manipulation.
MA.912.AR.1.6:	Solve mathematical and real-world problems involving addition, subtraction, multiplication or division of polynomials.
MA.912.AR.1.8:	Rewrite a polynomial expression as a product of polynomials over the real or complex number system. **Clarifications:** *Clarification 1:* Instruction includes factoring a sum or difference of squares and a sum or difference of cubes.
MA.912.AR.1.9:	Apply previous understanding of rational number operations to add, subtract, multiply and divide rational algebraic expressions. **Clarifications:** *Clarification 1*: Instruction includes the connection to fractions and common denominators.
MA.912.AR.1.11:	Apply the Binomial Theorem to create equivalent polynomial expressions. **Clarifications:** *Clarification 1*: Instruction includes the connection to Pascal's Triangle and to combinations.
MA.912.AR.3.2:	Given a mathematical or real-world context, write and solve one-variable quadratic equations over the real and complex number systems. **Clarifications:** *Clarification 1*: Within this benchmark, the expectation is to solve by factoring techniques, taking square roots, the quadratic formula and completing the square.
MA.912.AR.3.3:	Given a mathematical or real-world context, write and solve one-variable quadratic inequalities over the real number system. Represent solutions algebraically or graphically.
MA.912.AR.3.4:	Write a quadratic function to represent the relationship between two quantities from a graph, a written description or a table of values within a mathematical or real-world context. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, a graph, written description or table of values must include the vertex and two points that are equidistant from the vertex. *Clarification 2*: Instruction includes the use of standard form, factored form and vertex form. *Clarification 3*: Within the Algebra 2 course, one of the given points must be the vertex or an *x*-intercept.
MA.912.AR.3.8:	Solve and graph mathematical and real-world problems that are modeled with quadratic functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; vertex; and symmetry. *Clarification 2*: Instruction includes the use of standard form, factored form and vertex form. *Clarification 3*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation. *Clarification 4*: Within the Algebra 1 course, notations for domain, range and constraints are limited to inequality and set-builder.
MA.912.AR.3.9:	Given a mathematical or real-world context, write two-variable quadratic inequalities to represent relationships between quantities from a graph or a written description. **Clarifications:** *Clarification 1:* Instruction includes the use of standard form, factored form and vertex form where any inequality symbol can be represented.
MA.912.AR.3.10:	Given a mathematical or real-world context, graph the solution set to a two-variable quadratic inequality. **Clarifications:** *Clarification 1*: Instruction includes the use of standard form, factored form and vertex form where any inequality symbol can be represented.
MA.912.AR.4.2:	Given a mathematical or real-world context, write and solve one-variable absolute value inequalities. Represent solutions algebraically or graphically.
	Solve and graph mathematical and real-world problems that are modeled with absolute value functions. Interpret key features and determine constraints in terms of the context.

MA.912.AR.4.4:	**Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; vertex; end behavior and symmetry. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation.
MA.912.AR.5.2:	Solve one-variable equations involving logarithms or exponential expressions. Interpret solutions as viable in terms of the context and identify any extraneous solutions.
MA.912.AR.5.4:	Write an exponential function to represent a relationship between two quantities from a graph, a written description or a table of values within a mathematical or real-world context. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, exponential functions are limited to the forms $f(x) = ab^x$, where b is a whole number greater than 1 or a unit fraction, or $f(x) = a(1 \pm r)^x$, where $0 < r < 1$. *Clarification 2:* Within the Algebra 1 course, tables are limited to having successive nonnegative integer inputs so that the function may be determined by finding ratios between successive outputs.
MA.912.AR.5.5:	Given an expression or equation representing an exponential function, reveal the constant percent rate of change per unit interval using the properties of exponents. Interpret the constant percent rate of change in terms of a real-world context.
MA.912.AR.5.7:	Solve and graph mathematical and real-world problems that are modeled with exponential functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; constant percent rate of change; end behavior and asymptotes. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation. *Clarification 3*: Instruction includes understanding that when the logarithm of the dependent variable is taken and graphed, the exponential function will be transformed into a linear function. *Clarification 4*: Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.5.8:	Given a table, equation or written description of a logarithmic function, graph that function and determine its key features. **Clarifications:** *Clarification 1:* Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; and asymptotes. *Clarification 2:* Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation.
MA.912.AR.5.9:	Solve and graph mathematical and real-world problems that are modeled with logarithmic functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; and asymptotes. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation.
MA.912.AR.6.1:	Given a mathematical or real-world context, when suitable factorization is possible, solve one-variable polynomial equations of degree 3 or higher over the real and complex number systems.
MA.912.AR.6.2:	Explain and apply the Remainder Theorem to solve mathematical and real-world problems.
MA.912.AR.6.5:	Sketch a rough graph of a polynomial function of degree 3 or higher using zeros, multiplicity and knowledge of end behavior.
MA.912.AR.7.1:	Solve one-variable radical equations. Interpret solutions as viable in terms of context and identify any extraneous solutions.
MA.912.AR.7.2:	Given a table, equation or written description of a square root or cube root function, graph that function and determine its key features. **Clarifications:** *Clarification 1:* Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; and relative maximums and minimums. *Clarification 2:* Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation.
MA.912.AR.7.3:	Solve and graph mathematical and real-world problems that are modeled with square root or cube root functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; and relative maximums and minimums. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation.
MA.912.AR.8.1:	Write and solve one-variable rational equations. Interpret solutions as viable in terms of the context and identify any extraneous solutions. **Clarifications:** *Clarification 1*: Within the Algebra 2 course, numerators and denominators are limited to linear and quadratic expressions.
MA.912.AR.8.2:	Given a table, equation or written description of a rational function, graph that function and determine its key features. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; and asymptotes. *Clarification 2*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 3*: Within the Algebra 2 course, numerators and denominators are limited to linear and quadratic expressions.

MA.912.AR.8.3:	Solve and graph mathematical and real-world problems that are modeled with rational functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; and asymptotes. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation. *Clarification 3*: Instruction includes using rational functions to represent inverse proportional relationships. *Clarification 4*: Within the Algebra 2 course, numerators and denominators are limited to linear and quadratic expressions.
MA.912.AR.9.2:	Given a mathematical or real-world context, solve a system consisting of a two-variable linear equation and a non-linear equation algebraically or graphically.
MA.912.AR.9.3:	Given a mathematical or real-world context, solve a system consisting of two-variable linear or non-linear equations algebraically or graphically. **Clarifications:** *Clarification 1*: Within the Algebra 2 course, non-linear equations are limited to quadratic equations.
MA.912.AR.9.5:	Graph the solution set of a system of two-variable inequalities. **Clarifications:** *Clarification 1:* Within the Algebra 2 course, two-variable inequalities are limited to linear and quadratic.
MA.912.AR.9.7:	Given a real-world context, represent constraints as systems of linear and non-linear equations or inequalities. Interpret solutions to problems as viable or non-viable options. **Clarifications:** *Clarification 1*: Instruction focuses on analyzing a given function that models a real-world situation and writing constraints that are represented as non-linear equations or non-linear inequalities. *Clarification 2*: Within the Algebra 2 course, non-linear equations and inequalities are limited to quadratic.
MA.912.AR.9.10:	Solve and graph mathematical and real-world problems that are modeled with piecewise functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain, range, intercepts, asymptotes and end behavior. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation.
MA.912.AR.10.1:	Given a mathematical or real-world context, write and solve problems involving arithmetic sequences.
MA.912.AR.10.2:	Given a mathematical or real-world context, write and solve problems involving geometric sequences.
MA.912.DP.2.8:	Fit a quadratic function to bivariate numerical data that suggests a quadratic association and interpret any intercepts or the vertex of the model. Use the model to solve real-world problems in terms of the context of the data. **Clarifications:** *Clarification 1*: Problems include making a prediction or extrapolation, inside and outside the range of the data, based on the equation of the line of fit.
MA.912.DP.2.9:	Fit an exponential function to bivariate numerical data that suggests an exponential association. Use the model to solve real-world problems in terms of the context of the data. **Clarifications:** *Clarification 1*: Instruction focuses on determining whether an exponential model is appropriate by taking the logarithm of the dependent variable using spreadsheets and other technology. *Clarification 2*: Instruction includes determining whether the transformed scatterplot has an appropriate line of best fit, and interpreting the y-intercept and slope of the line of best fit. *Clarification 3*: Problems include making a prediction or extrapolation, inside and outside the range of the data, based on the equation of the line of fit.
MA.912.DP.4.1:	Describe events as subsets of a sample space using characteristics, or categories, of the outcomes, or as unions, intersections or complements of other events.
MA.912.DP.4.2:	Determine if events A and B are independent by calculating the product of their probabilities.
MA.912.DP.4.3:	Calculate the conditional probability of two events and interpret the result in terms of its context.
MA.912.DP.4.4:	Interpret the independence of two events using conditional probability.
MA.912.DP.4.9:	Apply the addition and multiplication rules for counting to solve mathematical and real-world problems, including problems involving probability.
MA.912.DP.4.10:	Given a mathematical or real-world situation, calculate the appropriate permutation or combination.
MA.912.F.1.1:	Given an equation or graph that defines a function, determine the function type. Given an input-output table, determine a function type that could represent it. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, functions represented as tables are limited to linear, quadratic and exponential. *Clarification 2:* Within the Algebra 1 course, functions represented as equations or graphs are limited to vertical or horizontal translations or reflections over the x-axis of the following parent functions: $f(x) = x$, $f(x) = x^2$, $f(x) = x^3$, $f(x) = \sqrt{x}$, $f(x) = \sqrt[3]{x}$, $f(x) = \lvert x \rvert$, $f(x) = 2^x$ and $f(x) = \left(\frac{1}{2}\right)^x$.
MA.912.F.1.7:	Compare key features of two functions each represented algebraically, graphically, in tables or written descriptions. **Clarifications:** *Clarification 1*: Key features include domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end

	behavior and asymptotes.
MA.912.F.1.9:	Determine whether a function is even, odd or neither when represented algebraically, graphically or in a table.
MA.912.F.2.2:	Identify the effect on the graph of a given function of two or more transformations defined by adding a real number to the x- or y- values or multiplying the x- or y- values by a real number.
MA.912.F.2.3:	Given the graph or table of f(x) and the graph or table of f(x)+k,kf(x), f(kx) and f(x+k), state the type of transformation and find the value of the real number k. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, functions are limited to linear, quadratic and absolute value.
MA.912.F.2.5:	Given a table, equation or graph that represents a function, create a corresponding table, equation or graph of the transformed function defined by adding a real number to the *x*- or *y*-values or multiplying the *x*- or *y*-values by a real number.
MA.912.F.3.2:	Given a mathematical or real-world context, combine two or more functions, limited to linear, quadratic, exponential and polynomial, using arithmetic operations. When appropriate, include domain restrictions for the new function. **Clarifications:** *Clarification 1*: Instruction includes representing domain restrictions with inequality notation, interval notation or set-builder notation. *Clarification 2*: Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.F.3.4:	Represent the composition of two functions algebraically or in a table. Determine the domain and range of the composite function.
MA.912.F.3.6:	Determine whether an inverse function exists by analyzing tables, graphs and equations.
MA.912.F.3.7:	Represent the inverse of a function algebraically, graphically or in a table. Use composition of functions to verify that one function is the inverse of the other. **Clarifications:** *Clarification 1*: Instruction includes the understanding that a logarithmic function is the inverse of an exponential function.
MA.912.FL.3.1:	Compare simple, compound and continuously compounded interest over time. **Clarifications:** *Clarification 1*: Instruction includes taking into consideration the annual percentage rate (APR) when comparing simple and compound interest.
MA.912.FL.3.2:	Solve real-world problems involving simple, compound and continuously compounded interest. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, interest is limited to simple and compound.
MA.912.FL.3.4:	Explain the relationship between simple interest and linear growth. Explain the relationship between compound interest and exponential growth and the relationship between continuously compounded interest and exponential growth. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, exponential growth is limited to compound interest.
MA.912.NSO.1.3:	Generate equivalent algebraic expressions involving radicals or rational exponents using the properties of exponents. **Clarifications:** *Clarification 1*: Within the Algebra 2 course, radicands are limited to monomial algebraic expressions.
MA.912.NSO.1.5:	Add, subtract, multiply and divide algebraic expressions involving radicals. **Clarifications:** *Clarification 1*: Within the Algebra 2 course, radicands are limited to monomial algebraic expressions.
MA.912.NSO.1.6:	Given a numerical logarithmic expression, evaluate and generate equivalent numerical expressions using the properties of logarithms or exponents. **Clarifications:** *Clarification 1*: Within the Mathematics for Data and Financial Literacy Honors course, problem types focus on money and business.
MA.912.NSO.1.7:	Given an algebraic logarithmic expression, generate an equivalent algebraic expression using the properties of logarithms or exponents. **Clarifications:** *Clarification 1*: Within the Mathematics for Data and Financial Literacy Honors course, problem types focus on money and business.
MA.912.NSO.2.1:	Extend previous understanding of the real number system to include the complex number system. Add, subtract, multiply and divide complex numbers.
MA.912.NSO.4.1:	Given a mathematical or real-world context, represent and manipulate data using matrices.
MA.912.NSO.4.2:	Given a mathematical or real-world context, represent and solve a system of two- or three-variable linear equations using matrices.
MA.912.NSO.4.3:	Solve mathematical and real-world problems involving addition, subtraction and multiplication of matrices. **Clarifications:** *Clarification 1:* Instruction includes identifying and using the additive and multiplicative identities for matrices.
MA.912.NSO.4.4:	Solve mathematical and real-world problems using the inverse and determinant of matrices.
MA.K12.MTR.1.1:	**Actively participate in effortful learning both individually and collectively.** Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task. • Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach. **Clarifications:** Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging.

	• Develop students' ability to analyze and problem solve. • Recognize students' effort when solving challenging problems.
MA.K12.MTR.2.1:	**Demonstrate understanding by representing problems in multiple ways.** Mathematicians who demonstrate understanding by representing problems in multiple ways: • Build understanding through modeling and using manipulatives. • Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. • Progress from modeling problems with objects and drawings to using algorithms and equations. • Express connections between concepts and representations. • Choose a representation based on the given context or purpose. **Clarifications:** Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: • Help students make connections between concepts and representations. • Provide opportunities for students to use manipulatives when investigating concepts. • Guide students from concrete to pictorial to abstract representations as understanding progresses. • Show students that various representations can have different purposes and can be useful in different situations.
MA.K12.MTR.3.1:	**Complete tasks with mathematical fluency.** Mathematicians who complete tasks with mathematical fluency: • Select efficient and appropriate methods for solving problems within the given context. • Maintain flexibility and accuracy while performing procedures and mental calculations. • Complete tasks accurately and with confidence. • Adapt procedures to apply them to a new context. • Use feedback to improve efficiency when performing calculations. **Clarifications:** Teachers who encourage students to complete tasks with mathematical fluency: • Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately. • Offer multiple opportunities for students to practice efficient and generalizable methods. • Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.
MA.K12.MTR.4.1:	**Engage in discussions that reflect on the mathematical thinking of self and others.** Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others: • Communicate mathematical ideas, vocabulary and methods effectively. • Analyze the mathematical thinking of others. • Compare the efficiency of a method to those expressed by others. • Recognize errors and suggest how to correctly solve the task. • Justify results by explaining methods and processes. • Construct possible arguments based on evidence. **Clarifications:** Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: • Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning. • Create opportunities for students to discuss their thinking with peers. • Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. • Develop students' ability to justify methods and compare their responses to the responses of their peers.
MA.K12.MTR.5.1:	**Use patterns and structure to help understand and connect mathematical concepts.** Mathematicians who use patterns and structure to help understand and connect mathematical concepts: • Focus on relevant details within a problem. • Create plans and procedures to logically order events, steps or ideas to solve problems. • Decompose a complex problem into manageable parts. • Relate previously learned concepts to new concepts. • Look for similarities among problems. • Connect solutions of problems to more complicated large-scale situations. **Clarifications:** Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts: • Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts. • Support students to develop generalizations based on the similarities found among problems. • Provide opportunities for students to create plans and procedures to solve problems. • Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.
MA.K12.MTR.6.1:	**Assess the reasonableness of solutions.** Mathematicians who assess the reasonableness of solutions: • Estimate to discover possible solutions. • Use benchmark quantities to determine if a solution makes sense. • Check calculations when solving problems. • Verify possible solutions by explaining the methods used. • Evaluate results based on the given context. **Clarifications:** Teachers who encourage students to assess the reasonableness of solutions: • Have students estimate or predict solutions prior to solving.

	• Prompt students to continually ask, "Does this solution make sense? How do you know?" • Reinforce that students check their work as they progress within and after a task. • Strengthen students' ability to verify solutions through justifications.
MA.K12.MTR.7.1:	**Apply mathematics to real-world contexts.** Mathematicians who apply mathematics to real-world contexts: • Connect mathematical concepts to everyday experiences. • Use models and methods to understand, represent and solve problems. • Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency. **Clarifications:** Teachers who encourage students to apply mathematics to real-world contexts: • Provide opportunities for students to create models, both concrete and abstract, and perform investigations. • Challenge students to question the accuracy of their models and methods. • Support students as they validate conclusions by comparing them to the given situation. • Indicate how various concepts can be applied to other disciplines.
ELA.K12.EE.1.1:	Cite evidence to explain and justify reasoning. **Clarifications:** K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing. 2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations. 4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they've directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor. 6-8 Students continue with previous skills and use a style guide to create a proper citation. 9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.
ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.
ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like "Why is the girl smiling?" or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
ELA.K12.EE.4.1:	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully. In grades 1-2, students build upon these skills by justifying what they are thinking. For example: "I think _______ because ______." The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
ELA.K12.EE.5.1:	Use the accepted rules governing a specific format to create quality work. **Clarifications:** Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.
ELA.K12.EE.6.1:	Use appropriate voice and tone when speaking or writing. **Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.
ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.

General Course Information and Notes

VERSION DESCRIPTION

In Algebra 2 Honors, instructional time will emphasize six areas: (1) developing understanding of the complex number system, including complex numbers as roots of polynomial equations; (2) extending arithmetic operations with algebraic expressions to include polynomial division, radical and rational expressions; (3) graphing and analyzing functions including polynomials, absolute value, radical, rational, exponential and logarithmic; (4) extending systems of equations and inequalities to include non-linear expressions; (5)building functions using compositions, inverses and transformations and (6) developing understanding of probability concepts.

All clarifications stated, whether general or specific to Algebra 2 Honors, are expectations for instruction of that benchmark.

Curricular content for all subjects must integrate critical-thinking, problem-solving, and workforce-literacy skills; communication, reading, and writing skills; mathematics skills; collaboration skills; contextual and applied-learning skills; technology-literacy skills; information and media-literacy skills; and civic-engagement skills.

General Notes

Honors and Accelerated Level Course Note: Accelerated courses require a greater demand on students through increased academic rigor. Academic rigor is obtained through the application, analysis, evaluation, and creation of complex ideas that are often abstract and multi-faceted. Students are challenged to think and collaborate critically on the content they are learning. Honors level rigor will be achieved by increasing text complexity through text selection, focus on high-level qualitative measures, and complexity of task. Instruction will be structured to give students a deeper understanding of conceptual themes and organization within and across disciplines. Academic rigor is more than simply assigning to students a greater quantity of work.

Florida's Benchmarks for Excellent Student Thinking (B.E.S.T.) Standards
This course includes Florida's B.E.S.T. ELA Expectations (EE) and Mathematical Thinking and Reasoning Standards (MTRs) for students. Florida educators should intentionally embed these standards within the content and their instruction as applicable. For guidance on the implementation of the EEs and MTRs, please visit https://www.cpalms.org/Standards/BEST_Standards.aspx and select the appropriate B.E.S.T. Standards package.

English Language Development ELD Standards Special Notes Section:

Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link: https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf

General Information

Course Number: 1200340

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Algebra >

Abbreviated Title: ALG 2 H

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Attributes:

- Honors

Course Type: Core Academic Course

Course Level: 3

Course Status: State Board Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Mathematics

Educator Certifications

Mathematics (Grades 6-12)

Classical Education - Restricted (Elementary and Secondary Grades K-12)
Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Algebra 1-A (#1200370) 2024 - And Beyond (current)

Course Standards

Name	Description
MA.912.AR.1.1:	Identify and interpret parts of an equation or expression that represent a quantity in terms of a mathematical or real-world context, including viewing one or more of its parts as a single entity. **Clarifications:** *Clarification 1:* Parts of an expression include factors, terms, constants, coefficients and variables. *Clarification 2:* Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.1.2:	Rearrange equations or formulas to isolate a quantity of interest. **Clarifications:** *Clarification 1*: Instruction includes using formulas for temperature, perimeter, area and volume; using equations for linear (standard, slope-intercept and point-slope forms) and quadratic (standard, factored and vertex forms) functions. *Clarification 2*: Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.2.1:	Given a real-world context, write and solve one-variable multi-step linear equations.
MA.912.AR.2.2:	Write a linear two-variable equation to represent the relationship between two quantities from a graph, a written description or a table of values within a mathematical or real-world context. **Clarifications:** *Clarification 1:* Instruction includes the use of standard form, slope-intercept form and point-slope form, and the conversion between these forms.
MA.912.AR.2.3:	Write a linear two-variable equation for a line that is parallel or perpendicular to a given line and goes through a given point. **Clarifications:** *Clarification 1:* Instruction focuses on recognizing that perpendicular lines have slopes that when multiplied result in -1 and that parallel lines have slopes that are the same. *Clarification 2:* Instruction includes representing a line with a pair of points on the coordinate plane or with an equation. *Clarification 3:* Problems include cases where one variable has a coefficient of zero.
MA.912.AR.2.4:	Given a table, equation or written description of a linear function, graph that function, and determine and interpret its key features. **Clarifications:** *Clarification 1*: Key features are limited to domain, range, intercepts and rate of change. *Clarification 2*: Instruction includes the use of standard form, slope-intercept form and point-slope form. *Clarification 3*: Instruction includes cases where one variable has a coefficient of zero. *Clarification 4*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 5*: Within the Algebra 1 course, notations for domain and range are limited to inequality and set-builder notations.
MA.912.AR.2.5:	Solve and graph mathematical and real-world problems that are modeled with linear functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain, range, intercepts and rate of change. *Clarification 2*: Instruction includes the use of standard form, slope-intercept form and point-slope form. *Clarification 3*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation. *Clarification 4*: Within the Algebra 1 course, notations for domain, range and constraints are limited to inequality and set-builder. *Clarification 5*: Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.2.6:	Given a mathematical or real-world context, write and solve one-variable linear inequalities, including compound inequalities. Represent solutions algebraically or graphically.
MA.912.AR.2.7:	Write two-variable linear inequalities to represent relationships between quantities from a graph or a written description within a mathematical or real-world context. **Clarifications:** *Clarification 1:* Instruction includes the use of standard form, slope-intercept form and point-slope form and any inequality symbol can be represented. *Clarification 2:* Instruction includes cases where one variable has a coefficient of zero.
MA.912.AR.2.8:	Given a mathematical or real-world context, graph the solution set to a two-variable linear inequality. **Clarifications:** *Clarification 1:* Instruction includes the use of standard form, slope-intercept form and point-slope form and any inequality symbol can be represented. *Clarification 2:* Instruction includes cases where one variable has a coefficient of zero.

MA.912.AR.4.1:	Given a mathematical or real-world context, write and solve one-variable absolute value equations.
MA.912.AR.4.3:	Given a table, equation or written description of an absolute value function, graph that function and determine its key features. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; vertex; end behavior and symmetry. *Clarification 2*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 3*: Within the Algebra 1 course, notations for domain and range are limited to inequality and set-builder.
MA.912.AR.9.1:	Given a mathematical or real-world context, write and solve a system of two-variable linear equations algebraically or graphically. **Clarifications:** *Clarification 1*: Within this benchmark, the expectation is to solve systems using elimination, substitution and graphing. *Clarification 2*: Within the Algebra 1 course, the system is limited to two equations.
MA.912.AR.9.4:	Graph the solution set of a system of two-variable linear inequalities. **Clarifications:** *Clarification 1:* Instruction includes cases where one variable has a coefficient of zero. *Clarification 2:* Within the Algebra 1 course, the system is limited to two inequalities.
MA.912.AR.9.6:	Given a real-world context, represent constraints as systems of linear equations or inequalities. Interpret solutions to problems as viable or non-viable options. **Clarifications:** *Clarification 1*: Instruction focuses on analyzing a given function that models a real-world situation and writing constraints that are represented as linear equations or linear inequalities.
MA.912.DP.1.3:	Explain the difference between correlation and causation in the contexts of both numerical and categorical data.
MA.912.DP.2.4:	Fit a linear function to bivariate numerical data that suggests a linear association and interpret the slope and y-intercept of the model. Use the model to solve real-world problems in terms of the context of the data. **Clarifications:** *Clarification 1*: Instruction includes fitting a linear function both informally and formally with the use of technology. *Clarification 2*: Problems include making a prediction or extrapolation, inside and outside the range of the data, based on the equation of the line of fit.
MA.912.DP.2.6:	Given a scatter plot with a line of fit and residuals, determine the strength and direction of the correlation. Interpret strength and direction within a real-world context. **Clarifications:** *Clarification 1*: Instruction focuses on determining the direction by analyzing the slope and informally determining the strength by analyzing the residuals.
MA.912.F.1.1:	Given an equation or graph that defines a function, determine the function type. Given an input-output table, determine a function type that could represent it. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, functions represented as tables are limited to linear, quadratic and exponential. *Clarification 2:* Within the Algebra 1 course, functions represented as equations or graphs are limited to vertical or horizontal translations or reflections over the x-axis of the following parent functions: $f(x)=x$, $f(x)=x^2$, $f(x)=x^3$, $f(x)=\sqrt{x}$, $f(x)=\sqrt[3]{x}$, $f(x)=\lvert x\rvert$, $f(x)=2^x$ and $f(x)=\left(\frac{1}{2}\right)^x$.
MA.912.F.1.2:	Given a function represented in function notation, evaluate the function for an input in its domain. For a real-world context, interpret the output. **Clarifications:** *Clarification 1*: Problems include simple functions in two-variables, such as f(x,y)=3x-2y. *Clarification 2*: Within the Algebra 1 course, functions are limited to one-variable such as f(x)=3x.
MA.912.F.1.3:	Calculate and interpret the average rate of change of a real-world situation represented graphically, algebraically or in a table over a specified interval. **Clarifications:** *Clarification 1*: Instruction includes making the connection to determining the slope of a particular line segment.
MA.912.F.1.5:	Compare key features of linear functions each represented algebraically, graphically, in tables or written descriptions. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; slope and end behavior.
MA.912.F.1.8:	Determine whether a linear, quadratic or exponential function best models a given real-world situation. **Clarifications:** *Clarification 1*: Instruction includes recognizing that linear functions model situations in which a quantity changes by a constant amount per unit interval; that quadratic functions model situations in which a quantity increases to a maximum, then begins to decrease or a quantity decreases to a minimum, then begins to increase; and that exponential functions model situations in which a quantity grows or decays by a constant percent per unit interval. *Clarification 2*: Within this benchmark, the expectation is to identify the type of function from a written description or table.
MA.912.F.2.1:	Identify the effect on the graph or table of a given function after replacing *f(x)* by *f(x)+k,kf(x)*, *f(kx)* and *f(x+k)* for specific values of *k.* **Clarifications:** *Clarification 1*: Within the Algebra 1 course, functions are limited to linear, quadratic and absolute value. *Clarification 2*: Instruction focuses on including positive and negative values for *k.*

MA.912.FL.3.2:	Solve real-world problems involving simple, compound and continuously compounded interest. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, interest is limited to simple and compound.
MA.912.FL.3.4:	Explain the relationship between simple interest and linear growth. Explain the relationship between compound interest and exponential growth and the relationship between continuously compounded interest and exponential growth. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, exponential growth is limited to compound interest.
MA.K12.MTR.1.1:	**Actively participate in effortful learning both individually and collectively.** Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task. • Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach. **Clarifications:** Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging. • Develop students' ability to analyze and problem solve. • Recognize students' effort when solving challenging problems.
MA.K12.MTR.2.1:	**Demonstrate understanding by representing problems in multiple ways.** Mathematicians who demonstrate understanding by representing problems in multiple ways: • Build understanding through modeling and using manipulatives. • Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. • Progress from modeling problems with objects and drawings to using algorithms and equations. • Express connections between concepts and representations. • Choose a representation based on the given context or purpose. **Clarifications:** Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: • Help students make connections between concepts and representations. • Provide opportunities for students to use manipulatives when investigating concepts. • Guide students from concrete to pictorial to abstract representations as understanding progresses. • Show students that various representations can have different purposes and can be useful in different situations.
MA.K12.MTR.3.1:	**Complete tasks with mathematical fluency.** Mathematicians who complete tasks with mathematical fluency: • Select efficient and appropriate methods for solving problems within the given context. • Maintain flexibility and accuracy while performing procedures and mental calculations. • Complete tasks accurately and with confidence. • Adapt procedures to apply them to a new context. • Use feedback to improve efficiency when performing calculations. **Clarifications:** Teachers who encourage students to complete tasks with mathematical fluency: • Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately. • Offer multiple opportunities for students to practice efficient and generalizable methods. • Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.
MA.K12.MTR.4.1:	**Engage in discussions that reflect on the mathematical thinking of self and others.** Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others: • Communicate mathematical ideas, vocabulary and methods effectively. • Analyze the mathematical thinking of others. • Compare the efficiency of a method to those expressed by others. • Recognize errors and suggest how to correctly solve the task. • Justify results by explaining methods and processes. • Construct possible arguments based on evidence. **Clarifications:** Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: • Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning. • Create opportunities for students to discuss their thinking with peers. • Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. • Develop students' ability to justify methods and compare their responses to the responses of their peers.
	Use patterns and structure to help understand and connect mathematical concepts. Mathematicians who use patterns and structure to help understand and connect mathematical concepts: • Focus on relevant details within a problem. • Create plans and procedures to logically order events, steps or ideas to solve problems.

MA.K12.MTR.5.1:	• Decompose a complex problem into manageable parts. • Relate previously learned concepts to new concepts. • Look for similarities among problems. • Connect solutions of problems to more complicated large-scale situations. **Clarifications:** Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts: • Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts. • Support students to develop generalizations based on the similarities found among problems. • Provide opportunities for students to create plans and procedures to solve problems. • Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.
MA.K12.MTR.6.1:	**Assess the reasonableness of solutions.** Mathematicians who assess the reasonableness of solutions: • Estimate to discover possible solutions. • Use benchmark quantities to determine if a solution makes sense. • Check calculations when solving problems. • Verify possible solutions by explaining the methods used. • Evaluate results based on the given context. **Clarifications:** Teachers who encourage students to assess the reasonableness of solutions: • Have students estimate or predict solutions prior to solving. • Prompt students to continually ask, "Does this solution make sense? How do you know?" • Reinforce that students check their work as they progress within and after a task. • Strengthen students' ability to verify solutions through justifications.
MA.K12.MTR.7.1:	**Apply mathematics to real-world contexts.** Mathematicians who apply mathematics to real-world contexts: • Connect mathematical concepts to everyday experiences. • Use models and methods to understand, represent and solve problems. • Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency. **Clarifications:** Teachers who encourage students to apply mathematics to real-world contexts: • Provide opportunities for students to create models, both concrete and abstract, and perform investigations. • Challenge students to question the accuracy of their models and methods. • Support students as they validate conclusions by comparing them to the given situation. • Indicate how various concepts can be applied to other disciplines.
ELA.K12.EE.1.1:	Cite evidence to explain and justify reasoning. **Clarifications:** K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing. 2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations. 4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they've directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor. 6-8 Students continue with previous skills and use a style guide to create a proper citation. 9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.
ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.
ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like "Why is the girl smiling?" or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
ELA.K12.EE.4.1:	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully. In grades 1-2, students build upon these skills by justifying what they are thinking. For example: "I think _______ because ______." The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
ELA.K12.EE.5.1:	Use the accepted rules governing a specific format to create quality work. **Clarifications:** Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they

	must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.
ELA.K12.EE.6.1:	Use appropriate voice and tone when speaking or writing. **Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.
ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.

General Course Information and Notes

VERSION DESCRIPTION

In Algebra 1-A, instructional time will emphasize four areas: (1) extending understanding of functions to linear functions and using them to model and analyze real-world relationships; (2) solving linear equations and inequalities in one variable and systems of linear equations and inequalities in two variables; (3) building linear functions, identifying their key features and representing them in various ways and (4) representing and interpreting categorical and numerical data with one and two variables.

All clarifications stated, whether general or specific to Algebra I-A, are expectations for instruction of that benchmark. Please note that all clarifications that address Algebra 1 also should be addressed within Algebra 1-A.

Curricular content for all subjects must integrate critical-thinking, problem-solving, and workforce-literacy skills; communication, reading, and writing skills; mathematics skills; collaboration skills; contextual and applied-learning skills; technology-literacy skills; information and media-literacy skills; and civic-engagement skills.

General Notes

Florida's Benchmarks for Excellent Student Thinking (B.E.S.T.) Standards
This course includes Florida's B.E.S.T. ELA Expectations (EE) and Mathematical Thinking and Reasoning Standards (MTRs) for students. Florida educators should intentionally embed these standards within the content and their instruction as applicable. For guidance on the implementation of the EEs and MTRs, please visit https://www.cpalms.org/Standards/BEST_Standards.aspx and select the appropriate B.E.S.T. Standards package.

English Language Development ELD Standards Special Notes Section:

Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link: https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf

General Information

Course Number: 1200370

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Algebra >

Abbreviated Title: ALG 1-A

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Attributes:

- Class Size Core Required

Course Type: Core Academic Course

Course Level: 2

Course Status: State Board Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Mathematics

Educator Certifications

Mathematics (Grades 6-12)
Middle Grades Mathematics (Middle Grades 5-9)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Algebra 1-A for Credit Recovery (#1200375) 2024 - And Beyond (current)

Course Standards

Name	Description
MA.912.AR.1.1:	Identify and interpret parts of an equation or expression that represent a quantity in terms of a mathematical or real-world context, including viewing one or more of its parts as a single entity. **Clarifications:** *Clarification 1:* Parts of an expression include factors, terms, constants, coefficients and variables. *Clarification 2:* Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.1.2:	Rearrange equations or formulas to isolate a quantity of interest. **Clarifications:** *Clarification 1*: Instruction includes using formulas for temperature, perimeter, area and volume; using equations for linear (standard, slope-intercept and point-slope forms) and quadratic (standard, factored and vertex forms) functions. *Clarification 2*: Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.2.1:	Given a real-world context, write and solve one-variable multi-step linear equations.
MA.912.AR.2.2:	Write a linear two-variable equation to represent the relationship between two quantities from a graph, a written description or a table of values within a mathematical or real-world context. **Clarifications:** *Clarification 1:* Instruction includes the use of standard form, slope-intercept form and point-slope form, and the conversion between these forms.
MA.912.AR.2.3:	Write a linear two-variable equation for a line that is parallel or perpendicular to a given line and goes through a given point. **Clarifications:** *Clarification 1:* Instruction focuses on recognizing that perpendicular lines have slopes that when multiplied result in -1 and that parallel lines have slopes that are the same. *Clarification 2:* Instruction includes representing a line with a pair of points on the coordinate plane or with an equation. *Clarification 3:* Problems include cases where one variable has a coefficient of zero.
MA.912.AR.2.4:	Given a table, equation or written description of a linear function, graph that function, and determine and interpret its key features. **Clarifications:** *Clarification 1*: Key features are limited to domain, range, intercepts and rate of change. *Clarification 2*: Instruction includes the use of standard form, slope-intercept form and point-slope form. *Clarification 3*: Instruction includes cases where one variable has a coefficient of zero. *Clarification 4*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 5*: Within the Algebra 1 course, notations for domain and range are limited to inequality and set-builder notations.
MA.912.AR.2.5:	Solve and graph mathematical and real-world problems that are modeled with linear functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain, range, intercepts and rate of change. *Clarification 2*: Instruction includes the use of standard form, slope-intercept form and point-slope form. *Clarification 3*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation. *Clarification 4*: Within the Algebra 1 course, notations for domain, range and constraints are limited to inequality and set-builder. *Clarification 5*: Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.2.6:	Given a mathematical or real-world context, write and solve one-variable linear inequalities, including compound inequalities. Represent solutions algebraically or graphically.
MA.912.AR.2.7:	Write two-variable linear inequalities to represent relationships between quantities from a graph or a written description within a mathematical or real-world context. **Clarifications:** *Clarification 1:* Instruction includes the use of standard form, slope-intercept form and point-slope form and any inequality symbol can be represented. *Clarification 2:* Instruction includes cases where one variable has a coefficient of zero.
MA.912.AR.2.8:	Given a mathematical or real-world context, graph the solution set to a two-variable linear inequality. **Clarifications:** *Clarification 1:* Instruction includes the use of standard form, slope-intercept form and point-slope form and any inequality symbol can be represented. *Clarification 2:* Instruction includes cases where one variable has a coefficient of zero.

MA.912.AR.4.1:	Given a mathematical or real-world context, write and solve one-variable absolute value equations.
MA.912.AR.4.3:	Given a table, equation or written description of an absolute value function, graph that function and determine its key features. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; vertex; end behavior and symmetry. *Clarification 2*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 3*: Within the Algebra 1 course, notations for domain and range are limited to inequality and set-builder.
MA.912.AR.9.1:	Given a mathematical or real-world context, write and solve a system of two-variable linear equations algebraically or graphically. **Clarifications:** *Clarification 1*: Within this benchmark, the expectation is to solve systems using elimination, substitution and graphing. *Clarification 2*: Within the Algebra 1 course, the system is limited to two equations.
MA.912.AR.9.4:	Graph the solution set of a system of two-variable linear inequalities. **Clarifications:** *Clarification 1:* Instruction includes cases where one variable has a coefficient of zero. *Clarification 2:* Within the Algebra 1 course, the system is limited to two inequalities.
MA.912.AR.9.6:	Given a real-world context, represent constraints as systems of linear equations or inequalities. Interpret solutions to problems as viable or non-viable options. **Clarifications:** *Clarification 1*: Instruction focuses on analyzing a given function that models a real-world situation and writing constraints that are represented as linear equations or linear inequalities.
MA.912.DP.1.3:	Explain the difference between correlation and causation in the contexts of both numerical and categorical data.
MA.912.DP.2.4:	Fit a linear function to bivariate numerical data that suggests a linear association and interpret the slope and y-intercept of the model. Use the model to solve real-world problems in terms of the context of the data. **Clarifications:** *Clarification 1*: Instruction includes fitting a linear function both informally and formally with the use of technology. *Clarification 2*: Problems include making a prediction or extrapolation, inside and outside the range of the data, based on the equation of the line of fit.
MA.912.DP.2.6:	Given a scatter plot with a line of fit and residuals, determine the strength and direction of the correlation. Interpret strength and direction within a real-world context. **Clarifications:** *Clarification 1*: Instruction focuses on determining the direction by analyzing the slope and informally determining the strength by analyzing the residuals.
MA.912.F.1.1:	Given an equation or graph that defines a function, determine the function type. Given an input-output table, determine a function type that could represent it. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, functions represented as tables are limited to linear, quadratic and exponential. *Clarification 2:* Within the Algebra 1 course, functions represented as equations or graphs are limited to vertical or horizontal translations or reflections over the x-axis of the following parent functions: $f(x)=x$, $f(x)=x^2$, $f(x)=x^3$, $f(x)=\sqrt{x}$, $f(x)=\sqrt[3]{x}$, $f(x)=\lvert x\rvert$, $f(x)=2^x$ and $f(x)=\left(\frac{1}{2}\right)^x$.
MA.912.F.1.2:	Given a function represented in function notation, evaluate the function for an input in its domain. For a real-world context, interpret the output. **Clarifications:** *Clarification 1*: Problems include simple functions in two-variables, such as f(x,y)=3x-2y. *Clarification 2*: Within the Algebra 1 course, functions are limited to one-variable such as f(x)=3x.
MA.912.F.1.3:	Calculate and interpret the average rate of change of a real-world situation represented graphically, algebraically or in a table over a specified interval. **Clarifications:** *Clarification 1*: Instruction includes making the connection to determining the slope of a particular line segment.
MA.912.F.1.5:	Compare key features of linear functions each represented algebraically, graphically, in tables or written descriptions. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; slope and end behavior.
MA.912.F.1.8:	Determine whether a linear, quadratic or exponential function best models a given real-world situation. **Clarifications:** *Clarification 1*: Instruction includes recognizing that linear functions model situations in which a quantity changes by a constant amount per unit interval; that quadratic functions model situations in which a quantity increases to a maximum, then begins to decrease or a quantity decreases to a minimum, then begins to increase; and that exponential functions model situations in which a quantity grows or decays by a constant percent per unit interval. *Clarification 2*: Within this benchmark, the expectation is to identify the type of function from a written description or table.
MA.912.F.2.1:	Identify the effect on the graph or table of a given function after replacing *f(x)* by *f(x)+k,kf(x)*, *f(kx)* and *f(x+k)* for specific values of *k.* **Clarifications:** *Clarification 1*: Within the Algebra 1 course, functions are limited to linear, quadratic and absolute value. *Clarification 2*: Instruction focuses on including positive and negative values for *k.*

MA.912.FL.3.2:	Solve real-world problems involving simple, compound and continuously compounded interest. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, interest is limited to simple and compound.
MA.912.FL.3.4:	Explain the relationship between simple interest and linear growth. Explain the relationship between compound interest and exponential growth and the relationship between continuously compounded interest and exponential growth. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, exponential growth is limited to compound interest.
MA.K12.MTR.1.1:	**Actively participate in effortful learning both individually and collectively.** Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task. • Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach. **Clarifications:** Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging. • Develop students' ability to analyze and problem solve. • Recognize students' effort when solving challenging problems.
MA.K12.MTR.2.1:	**Demonstrate understanding by representing problems in multiple ways.** Mathematicians who demonstrate understanding by representing problems in multiple ways: • Build understanding through modeling and using manipulatives. • Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. • Progress from modeling problems with objects and drawings to using algorithms and equations. • Express connections between concepts and representations. • Choose a representation based on the given context or purpose. **Clarifications:** Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: • Help students make connections between concepts and representations. • Provide opportunities for students to use manipulatives when investigating concepts. • Guide students from concrete to pictorial to abstract representations as understanding progresses. • Show students that various representations can have different purposes and can be useful in different situations.
MA.K12.MTR.3.1:	**Complete tasks with mathematical fluency.** Mathematicians who complete tasks with mathematical fluency: • Select efficient and appropriate methods for solving problems within the given context. • Maintain flexibility and accuracy while performing procedures and mental calculations. • Complete tasks accurately and with confidence. • Adapt procedures to apply them to a new context. • Use feedback to improve efficiency when performing calculations. **Clarifications:** Teachers who encourage students to complete tasks with mathematical fluency: • Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately. • Offer multiple opportunities for students to practice efficient and generalizable methods. • Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.
MA.K12.MTR.4.1:	**Engage in discussions that reflect on the mathematical thinking of self and others.** Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others: • Communicate mathematical ideas, vocabulary and methods effectively. • Analyze the mathematical thinking of others. • Compare the efficiency of a method to those expressed by others. • Recognize errors and suggest how to correctly solve the task. • Justify results by explaining methods and processes. • Construct possible arguments based on evidence. **Clarifications:** Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: • Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning. • Create opportunities for students to discuss their thinking with peers. • Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. • Develop students' ability to justify methods and compare their responses to the responses of their peers.
	Use patterns and structure to help understand and connect mathematical concepts. Mathematicians who use patterns and structure to help understand and connect mathematical concepts: • Focus on relevant details within a problem. • Create plans and procedures to logically order events, steps or ideas to solve problems.

MA.K12.MTR.5.1:	• Decompose a complex problem into manageable parts. • Relate previously learned concepts to new concepts. • Look for similarities among problems. • Connect solutions of problems to more complicated large-scale situations. **Clarifications:** Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts: • Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts. • Support students to develop generalizations based on the similarities found among problems. • Provide opportunities for students to create plans and procedures to solve problems. • Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.
MA.K12.MTR.6.1:	**Assess the reasonableness of solutions.** Mathematicians who assess the reasonableness of solutions: • Estimate to discover possible solutions. • Use benchmark quantities to determine if a solution makes sense. • Check calculations when solving problems. • Verify possible solutions by explaining the methods used. • Evaluate results based on the given context. **Clarifications:** Teachers who encourage students to assess the reasonableness of solutions: • Have students estimate or predict solutions prior to solving. • Prompt students to continually ask, "Does this solution make sense? How do you know?" • Reinforce that students check their work as they progress within and after a task. • Strengthen students' ability to verify solutions through justifications.
MA.K12.MTR.7.1:	**Apply mathematics to real-world contexts.** Mathematicians who apply mathematics to real-world contexts: • Connect mathematical concepts to everyday experiences. • Use models and methods to understand, represent and solve problems. • Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency. **Clarifications:** Teachers who encourage students to apply mathematics to real-world contexts: • Provide opportunities for students to create models, both concrete and abstract, and perform investigations. • Challenge students to question the accuracy of their models and methods. • Support students as they validate conclusions by comparing them to the given situation. • Indicate how various concepts can be applied to other disciplines.
ELA.K12.EE.1.1:	Cite evidence to explain and justify reasoning. **Clarifications:** K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing. 2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations. 4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they've directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor. 6-8 Students continue with previous skills and use a style guide to create a proper citation. 9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.
ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.
ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like "Why is the girl smiling?" or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
ELA.K12.EE.4.1:	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully. In grades 1-2, students build upon these skills by justifying what they are thinking. For example: "I think _______ because ______." The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
ELA.K12.EE.5.1:	Use the accepted rules governing a specific format to create quality work. **Clarifications:** Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they

	must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.
ELA.K12.EE.6.1:	Use appropriate voice and tone when speaking or writing. **Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.
ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.

General Course Information and Notes

VERSION DESCRIPTION

In Algebra 1-A, instructional time will emphasize four areas: (1) extending understanding of functions to linear functions and using them to model and analyze real-world relationships; (2) solving linear equations and inequalities in one variable and systems of linear equations and inequalities in two variables; (3) building linear functions, identifying their key features and representing them in various ways and (4) representing and interpreting categorical and numerical data with one and two variables.

All clarifications stated, whether general or specific to Algebra I-A, are expectations for instruction of that benchmark. Please note that all clarifications that address Algebra 1 also should be addressed within Algebra 1-A.

Curricular content for all subjects must integrate critical-thinking, problem-solving, and workforce-literacy skills; communication, reading, and writing skills; mathematics skills; collaboration skills; contextual and applied-learning skills; technology-literacy skills; information and media-literacy skills; and civic-engagement skills.

Special notes: Credit Recovery courses are credit bearing courses with specific content requirements defined by state academic standards (SAS). Students enrolled in a Credit Recovery course must have previously attempted the corresponding course (and/or End-of-Course assessment) since the course requirements for the Credit Recovery course are exactly the same as the previously attempted corresponding course. For example, Geometry (1206310) and Geometry for Credit Recovery (1206315) have identical content requirements. It is important to note that Credit Recovery courses are not bound by Section 1003.436(1)(a), Florida Statutes, requiring a minimum of 135 hours of bona fide instruction (120 hours in a school/district implementing block scheduling) in a designed course of study that contains student performance standards, since the students have previously attempted successful completion of the corresponding course. Additionally, Credit Recovery courses should ONLY be used for credit recovery, grade forgiveness, or remediation for students needing to prepare for an End-of-Course assessment retake.

General Notes

Florida's Benchmarks for Excellent Student Thinking (B.E.S.T.) Standards
This course includes Florida's B.E.S.T. ELA Expectations (EE) and Mathematical Thinking and Reasoning Standards (MTRs) for students. Florida educators should intentionally embed these standards within the content and their instruction as applicable. For guidance on the implementation of the EEs and MTRs, please visit https://www.cpalms.org/Standards/BEST_Standards.aspx and select the appropriate B.E.S.T. Standards package.

English Language Development ELD Standards Special Notes Section:
Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link:
https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf

General Information

Course Number: 1200375

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Algebra >

Abbreviated Title: ALG 1-A CR

Number of Credits: One (1) credit

Course Length: Credit Recovery (R)

Course Type: Elective Course

Course Level: 2

Course Status: Course Approved

Grade Level(s): 9,10,11,12

Educator Certifications

Mathematics (Grades 6-12)
Middle Grades Mathematics (Middle Grades 5-9)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Algebra 1-B (#1200380) 2024 - And Beyond (current)

Course Standards

Name	Description
MA.912.AR.1.1:	Identify and interpret parts of an equation or expression that represent a quantity in terms of a mathematical or real-world context, including viewing one or more of its parts as a single entity. **Clarifications:** *Clarification 1:* Parts of an expression include factors, terms, constants, coefficients and variables. *Clarification 2:* Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.1.2:	Rearrange equations or formulas to isolate a quantity of interest. **Clarifications:** *Clarification 1*: Instruction includes using formulas for temperature, perimeter, area and volume; using equations for linear (standard, slope-intercept and point-slope forms) and quadratic (standard, factored and vertex forms) functions. *Clarification 2*: Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.1.3:	Add, subtract and multiply polynomial expressions with rational number coefficients. **Clarifications:** *Clarification 1: I*nstruction includes an understanding that when any of these operations are performed with polynomials the result is also a polynomial. *Clarification 2:* Within the Algebra 1 course, polynomial expressions are limited to 3 or fewer terms.
MA.912.AR.1.4:	Divide a polynomial expression by a monomial expression with rational number coefficients. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, polynomial expressions are limited to 3 or fewer terms.
MA.912.AR.1.7:	Rewrite a polynomial expression as a product of polynomials over the real number system. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, polynomial expressions are limited to 4 or fewer terms with integer coefficients.
MA.912.AR.3.1:	Given a mathematical or real-world context, write and solve one-variable quadratic equations over the real number system. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, instruction includes the concept of non-real answers, without determining non-real solutions. *Clarification 2:* Within this benchmark, the expectation is to solve by factoring techniques, taking square roots, the quadratic formula and completing the square.
MA.912.AR.3.4:	Write a quadratic function to represent the relationship between two quantities from a graph, a written description or a table of values within a mathematical or real-world context. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, a graph, written description or table of values must include the vertex and two points that are equidistant from the vertex. *Clarification 2*: Instruction includes the use of standard form, factored form and vertex form. *Clarification 3*: Within the Algebra 2 course, one of the given points must be the vertex or an *x*-intercept.
MA.912.AR.3.5:	Given the x-intercepts and another point on the graph of a quadratic function, write the equation for the function.
MA.912.AR.3.6:	Given an expression or equation representing a quadratic function, determine the vertex and zeros and interpret them in terms of a real-world context.
MA.912.AR.3.7:	Given a table, equation or written description of a quadratic function, graph that function, and determine and interpret its key features. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; vertex; and symmetry. *Clarification 2*: Instruction includes the use of standard form, factored form and vertex form, and sketching a graph using the zeros and vertex. *Clarification 3*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 4*: Within the Algebra 1 course, notations for domain and range are limited to inequality and set-builder.
MA.912.AR.3.8:	Solve and graph mathematical and real-world problems that are modeled with quadratic functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; vertex; and symmetry. *Clarification 2*: Instruction includes the use of standard form, factored form and vertex form. *Clarification 3*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation. *Clarification 4*: Within the Algebra 1 course, notations for domain, range and constraints are limited to inequality and set-builder.

MA.912.AR.5.3:	Given a mathematical or real-world context, classify an exponential function as representing growth or decay. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, exponential functions are limited to the forms $f(x) = ab^x$, where b is a whole number greater than 1 or a unit fraction, or $f(x) = a(1 \pm r)^x$, where $0 < r < 1$.
MA.912.AR.5.4:	Write an exponential function to represent a relationship between two quantities from a graph, a written description or a table of values within a mathematical or real-world context. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, exponential functions are limited to the forms $f(x) = ab^x$, where b is a whole number greater than 1 or a unit fraction, or $f(x) = a(1 \pm r)^x$, where $0 < r < 1$. *Clarification 2:* Within the Algebra 1 course, tables are limited to having successive nonnegative integer inputs so that the function may be determined by finding ratios between successive outputs.
MA.912.AR.5.6:	Given a table, equation or written description of an exponential function, graph that function and determine its key features. **Clarifications:** *Clarification 1:* Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; constant percent rate of change; end behavior and asymptotes. *Clarification 2:* Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 3:* Within the Algebra 1 course, notations for domain and range are limited to inequality and set-builder. *Clarification 4:* Within the Algebra 1 course, exponential functions are limited to the forms $f(x) = ab^x$, where b is a whole number greater than 1 or a unit fraction or $f(x) = a(1 \pm r)^x$, where $0 < r < 1$.
MA.912.AR.9.6:	Given a real-world context, represent constraints as systems of linear equations or inequalities. Interpret solutions to problems as viable or non-viable options. **Clarifications:** *Clarification 1*: Instruction focuses on analyzing a given function that models a real-world situation and writing constraints that are represented as linear equations or linear inequalities.
MA.912.DP.1.1:	Given a set of data, select an appropriate method to represent the data, depending on whether it is numerical or categorical data and on whether it is univariate or bivariate. **Clarifications:** *Clarification 1:* Instruction includes discussions regarding the strengths and weaknesses of each data display. *Clarification 2:* Numerical univariate includes histograms, stem-and-leaf plots, box plots and line plots; numerical bivariate includes scatter plots and line graphs; categorical univariate includes bar charts, circle graphs, line plots, frequency tables and relative frequency tables; and categorical bivariate includes segmented bar charts, joint frequency tables and joint relative frequency tables. *Clarification 3:* Instruction includes the use of appropriate units and labels and, where appropriate, using technology to create data displays.
MA.912.DP.1.2:	Interpret data distributions represented in various ways. State whether the data is numerical or categorical, whether it is univariate or bivariate and interpret the different components and quantities in the display. **Clarifications:** *Clarification 1*: Within the Probability and Statistics course, instruction includes the use of spreadsheets and technology.
MA.912.DP.1.4:	Estimate a population total, mean or percentage using data from a sample survey; develop a margin of error through the use of simulation. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, the margin of error will be given.
MA.912.DP.3.1:	Construct a two-way frequency table summarizing bivariate categorical data. Interpret joint and marginal frequencies and determine possible associations in terms of a real-world context.
MA.912.F.1.1:	Given an equation or graph that defines a function, determine the function type. Given an input-output table, determine a function type that could represent it. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, functions represented as tables are limited to linear, quadratic and exponential. *Clarification 2:* Within the Algebra 1 course, functions represented as equations or graphs are limited to vertical or horizontal translations or reflections over the x-axis of the following parent functions: $f(x) = x$, $f(x) = x^2$, $f(x) = x^3$, $f(x) = \sqrt{x}$, $f(x) = \sqrt[3]{x}$, $f(x) = \|x\|$, $f(x) = 2^x$ and $f(x) = \left(\frac{1}{2}\right)^x$.
MA.912.F.1.2:	Given a function represented in function notation, evaluate the function for an input in its domain. For a real-world context, interpret the output. **Clarifications:** *Clarification 1*: Problems include simple functions in two-variables, such as f(x,y)=3x-2y. *Clarification 2*: Within the Algebra 1 course, functions are limited to one-variable such as f(x)=3x.
MA.912.F.1.3:	Calculate and interpret the average rate of change of a real-world situation represented graphically, algebraically or in a table over a specified interval. **Clarifications:** *Clarification 1*: Instruction includes making the connection to determining the slope of a particular line segment.
MA.912.F.1.6:	Compare key features of linear and nonlinear functions each represented algebraically, graphically, in tables or written descriptions. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior and asymptotes. *Clarification 2*: Within the Algebra 1 course, functions other than linear, quadratic or exponential must be represented graphically.

	Clarification 3: Within the Algebra 1 course, instruction includes verifying that a quantity increasing exponentially eventually exceeds a quantity increasing linearly or quadratically.
MA.912.F.1.8:	Determine whether a linear, quadratic or exponential function best models a given real-world situation. **Clarifications:** *Clarification 1*: Instruction includes recognizing that linear functions model situations in which a quantity changes by a constant amount per unit interval; that quadratic functions model situations in which a quantity increases to a maximum, then begins to decrease or a quantity decreases to a minimum, then begins to increase; and that exponential functions model situations in which a quantity grows or decays by a constant percent per unit interval. *Clarification 2*: Within this benchmark, the expectation is to identify the type of function from a written description or table.
MA.912.F.2.1:	Identify the effect on the graph or table of a given function after replacing $f(x)$ by $f(x)+k$, $kf(x)$, $f(kx)$ and $f(x+k)$ for specific values of k. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, functions are limited to linear, quadratic and absolute value. *Clarification 2*: Instruction focuses on including positive and negative values for k.
MA.912.FL.3.2:	Solve real-world problems involving simple, compound and continuously compounded interest. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, interest is limited to simple and compound.
MA.912.FL.3.4:	Explain the relationship between simple interest and linear growth. Explain the relationship between compound interest and exponential growth and the relationship between continuously compounded interest and exponential growth. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, exponential growth is limited to compound interest.
MA.912.NSO.1.1:	Extend previous understanding of the Laws of Exponents to include rational exponents. Apply the Laws of Exponents to evaluate numerical expressions and generate equivalent numerical expressions involving rational exponents. **Clarifications:** *Clarification 1:* Instruction includes the use of technology when appropriate. *Clarification 2:* Refer to the K-12 Formulas (Appendix E) for the Laws of Exponents. *Clarification 3:* Instruction includes converting between expressions involving rational exponents and expressions involving radicals. *Clarification 4:*Within the Mathematics for Data and Financial Literacy course, it is not the expectation to generate equivalent numerical expressions.
MA.912.NSO.1.2:	Generate equivalent algebraic expressions using the properties of exponents.
MA.912.NSO.1.4:	Apply previous understanding of operations with rational numbers to add, subtract, multiply and divide numerical radicals. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, expressions are limited to a single arithmetic operation involving two square roots or two cube roots.
MA.K12.MTR.1.1:	**Actively participate in effortful learning both individually and collectively.** Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task. • Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach. **Clarifications:** Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging. • Develop students’ ability to analyze and problem solve. • Recognize students’ effort when solving challenging problems.
MA.K12.MTR.2.1:	**Demonstrate understanding by representing problems in multiple ways.** Mathematicians who demonstrate understanding by representing problems in multiple ways: • Build understanding through modeling and using manipulatives. • Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. • Progress from modeling problems with objects and drawings to using algorithms and equations. • Express connections between concepts and representations. • Choose a representation based on the given context or purpose. **Clarifications:** Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: • Help students make connections between concepts and representations. • Provide opportunities for students to use manipulatives when investigating concepts. • Guide students from concrete to pictorial to abstract representations as understanding progresses. • Show students that various representations can have different purposes and can be useful in different situations.
	Complete tasks with mathematical fluency. Mathematicians who complete tasks with mathematical fluency: • Select efficient and appropriate methods for solving problems within the given context.

<table>
<tr><td>MA.K12.MTR.3.1:</td><td>

- Maintain flexibility and accuracy while performing procedures and mental calculations.
- Complete tasks accurately and with confidence.
- Adapt procedures to apply them to a new context.
- Use feedback to improve efficiency when performing calculations.

Clarifications:
Teachers who encourage students to complete tasks with mathematical fluency:

- Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately.
- Offer multiple opportunities for students to practice efficient and generalizable methods.
- Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.

</td></tr>
<tr><td>MA.K12.MTR.4.1:</td><td>

Engage in discussions that reflect on the mathematical thinking of self and others.
Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others:

- Communicate mathematical ideas, vocabulary and methods effectively.
- Analyze the mathematical thinking of others.
- Compare the efficiency of a method to those expressed by others.
- Recognize errors and suggest how to correctly solve the task.
- Justify results by explaining methods and processes.
- Construct possible arguments based on evidence.

Clarifications:
Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others:

- Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning.
- Create opportunities for students to discuss their thinking with peers.
- Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods.
- Develop students' ability to justify methods and compare their responses to the responses of their peers.

</td></tr>
<tr><td>MA.K12.MTR.5.1:</td><td>

Use patterns and structure to help understand and connect mathematical concepts.
Mathematicians who use patterns and structure to help understand and connect mathematical concepts:

- Focus on relevant details within a problem.
- Create plans and procedures to logically order events, steps or ideas to solve problems.
- Decompose a complex problem into manageable parts.
- Relate previously learned concepts to new concepts.
- Look for similarities among problems.
- Connect solutions of problems to more complicated large-scale situations.

Clarifications:
Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts:

- Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts.
- Support students to develop generalizations based on the similarities found among problems.
- Provide opportunities for students to create plans and procedures to solve problems.
- Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.

</td></tr>
<tr><td>MA.K12.MTR.6.1:</td><td>

Assess the reasonableness of solutions.
Mathematicians who assess the reasonableness of solutions:

- Estimate to discover possible solutions.
- Use benchmark quantities to determine if a solution makes sense.
- Check calculations when solving problems.
- Verify possible solutions by explaining the methods used.
- Evaluate results based on the given context.

Clarifications:
Teachers who encourage students to assess the reasonableness of solutions:

- Have students estimate or predict solutions prior to solving.
- Prompt students to continually ask, "Does this solution make sense? How do you know?"
- Reinforce that students check their work as they progress within and after a task.
- Strengthen students' ability to verify solutions through justifications.

</td></tr>
<tr><td>MA.K12.MTR.7.1:</td><td>

Apply mathematics to real-world contexts.
Mathematicians who apply mathematics to real-world contexts:

- Connect mathematical concepts to everyday experiences.
- Use models and methods to understand, represent and solve problems.
- Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency.

Clarifications:
Teachers who encourage students to apply mathematics to real-world contexts:

- Provide opportunities for students to create models, both concrete and abstract, and perform investigations.
- Challenge students to question the accuracy of their models and methods.
- Support students as they validate conclusions by comparing them to the given situation.
- Indicate how various concepts can be applied to other disciplines.

</td></tr>
<tr><td></td><td>

Cite evidence to explain and justify reasoning.

Clarifications:
K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing.

</td></tr>
</table>

ELA.K12.EE.1.1:	2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations. 4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they've directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor. 6-8 Students continue with previous skills and use a style guide to create a proper citation. 9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.
ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.
ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like "Why is the girl smiling?" or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
ELA.K12.EE.4.1:	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully. In grades 1-2, students build upon these skills by justifying what they are thinking. For example: "I think ________ because _______." The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
ELA.K12.EE.5.1:	Use the accepted rules governing a specific format to create quality work. **Clarifications:** Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.
ELA.K12.EE.6.1:	Use appropriate voice and tone when speaking or writing. **Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.
ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.

General Course Information and Notes

VERSION DESCRIPTION

In Algebra 1-B, instructional time will emphasize four areas: (1) performing operations with polynomials and radicals, and extending the Laws of Exponents to include rational exponents; (2) extending understanding of functions to quadratic and exponential functions and using them to model and analyze real-world relationships; (3) solving quadratic equations in one variables and (4) building functions, identifying their key features and representing them in various ways.

All clarifications stated, whether general or specific to Algebra I-B, are expectations for instruction of that benchmark. Please note that all clarifications that address Algebra 1 also should be addressed within Algebra 1-B.

Curricular content for all subjects must integrate critical-thinking, problem-solving, and workforce-literacy skills; communication, reading, and writing skills; mathematics skills; collaboration skills; contextual and applied-learning skills; technology-literacy skills; information and media-literacy skills; and civic-engagement skills.

General Notes

Florida's Benchmarks for Excellent Student Thinking (B.E.S.T.) Standards
This course includes Florida's B.E.S.T. ELA Expectations (EE) and Mathematical Thinking and Reasoning Standards (MTRs) for students. Florida educators should intentionally embed these standards within the content and their instruction as applicable. For guidance on the implementation of the EEs and MTRs, please visit https://www.cpalms.org/Standards/BEST_Standards.aspx and select the appropriate B.E.S.T. Standards package.

English Language Development ELD Standards Special Notes Section:

Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link: https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf

General Information

Course Number: 1200380

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Algebra >

Abbreviated Title: ALG 1-B

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Attributes:

- Class Size Core Required

Course Type: Core Academic Course

Course Level: 2

Course Status: State Board Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Algebra 1

Educator Certifications

Mathematics (Grades 6-12)

Middle Grades Mathematics (Middle Grades 5-9)

Classical Education - Restricted (Elementary and Secondary Grades K-12)
Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Equivalent Courses

1200386-Pre-Advanced Placement Algebra 1
Equivalency start year: 2018

Mathematics for Data and Financial Literacy (#1200384) 2024 - And Beyond (current)

Course Standards

Name	Description
MA.912.AR.1.1:	Identify and interpret parts of an equation or expression that represent a quantity in terms of a mathematical or real-world context, including viewing one or more of its parts as a single entity. **Clarifications:** *Clarification 1:* Parts of an expression include factors, terms, constants, coefficients and variables. *Clarification 2:* Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.1.2:	Rearrange equations or formulas to isolate a quantity of interest. **Clarifications:** *Clarification 1*: Instruction includes using formulas for temperature, perimeter, area and volume; using equations for linear (standard, slope-intercept and point-slope forms) and quadratic (standard, factored and vertex forms) functions. *Clarification 2*: Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.2.5:	Solve and graph mathematical and real-world problems that are modeled with linear functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain, range, intercepts and rate of change. *Clarification 2*: Instruction includes the use of standard form, slope-intercept form and point-slope form. *Clarification 3*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation. *Clarification 4*: Within the Algebra 1 course, notations for domain, range and constraints are limited to inequality and set-builder. *Clarification 5*: Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.5.7:	Solve and graph mathematical and real-world problems that are modeled with exponential functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; constant percent rate of change; end behavior and asymptotes. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation. *Clarification 3*: Instruction includes understanding that when the logarithm of the dependent variable is taken and graphed, the exponential function will be transformed into a linear function. *Clarification 4*: Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.9.10:	Solve and graph mathematical and real-world problems that are modeled with piecewise functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain, range, intercepts, asymptotes and end behavior. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation.
MA.912.AR.10.1:	Given a mathematical or real-world context, write and solve problems involving arithmetic sequences.
MA.912.AR.10.2:	Given a mathematical or real-world context, write and solve problems involving geometric sequences.
MA.912.DP.1.2:	Interpret data distributions represented in various ways. State whether the data is numerical or categorical, whether it is univariate or bivariate and interpret the different components and quantities in the display. **Clarifications:** *Clarification 1*: Within the Probability and Statistics course, instruction includes the use of spreadsheets and technology.
MA.912.DP.2.4:	Fit a linear function to bivariate numerical data that suggests a linear association and interpret the slope and y-intercept of the model. Use the model to solve real-world problems in terms of the context of the data. **Clarifications:** *Clarification 1*: Instruction includes fitting a linear function both informally and formally with the use of technology. *Clarification 2*: Problems include making a prediction or extrapolation, inside and outside the range of the data, based on the equation of the line of fit.
MA.912.DP.3.1:	Construct a two-way frequency table summarizing bivariate categorical data. Interpret joint and marginal frequencies and determine possible associations in terms of a real-world context.
	Given marginal and conditional relative frequencies, construct a two-way relative frequency table summarizing categorical bivariate data. **Clarifications:**

MA.912.DP.3.2:	*Clarification 1:* Construction includes cases where not all frequencies are given but enough are provided to be able to construct a two-way relative frequency table. *Clarification 2:* Instruction includes the use of a tree diagram when calculating relative frequencies to construct tables.
MA.912.DP.3.3:	Given a two-way relative frequency table or segmented bar graph summarizing categorical bivariate data, interpret joint, marginal and conditional relative frequencies in terms of a real-world context. **Clarifications:** *Clarification 1:* Instruction includes problems involving false positive and false negatives.
MA.912.DP.5.11:	Evaluate reports based on data from diverse media, print and digital resources by interpreting graphs and tables; evaluating data-based arguments; determining whether a valid sampling method was used; or interpreting provided statistics. **Clarifications:** *Clarification 1*: Instruction includes determining whether or not data displays could be misleading.
MA.912.F.1.2:	Given a function represented in function notation, evaluate the function for an input in its domain. For a real-world context, interpret the output. **Clarifications:** *Clarification 1*: Problems include simple functions in two-variables, such as $f(x,y)=3x-2y$. *Clarification 2*: Within the Algebra 1 course, functions are limited to one-variable such as $f(x)=3x$.
MA.912.F.3.2:	Given a mathematical or real-world context, combine two or more functions, limited to linear, quadratic, exponential and polynomial, using arithmetic operations. When appropriate, include domain restrictions for the new function. **Clarifications:** *Clarification 1*: Instruction includes representing domain restrictions with inequality notation, interval notation or set-builder notation. *Clarification 2*: Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.FL.1.1:	Extend previous knowledge of operations of fractions, percentages and decimals to solve real-world problems involving money and business. **Clarifications:** *Clarification 1*: Problems include discounts, markups, simple interest, tax, tips, fees, percent increase, percent decrease and percent error.
MA.912.FL.1.2:	Extend previous knowledge of ratios and proportional relationships to solve real-world problems involving money and business.
MA.912.FL.1.3:	Solve real-world problems involving weighted averages using spreadsheets and other technology.
MA.912.FL.2.1:	Given assets and liabilities, calculate net worth using spreadsheets and other technology. **Clarifications:** *Clarification 1*: Instruction includes net worth for a business and for an individual. *Clarification 2*: Instruction includes understanding the difference between a capital asset and a liquid asset. *Clarification 3*: Instruction includes displaying net worth over time in a table or graph.
MA.912.FL.2.2:	Solve real-world problems involving profits, costs and revenues using spreadsheets and other technology. **Clarifications:** *Clarification 1*: Instruction includes the connection to data. *Clarification 2*: Instruction includes displaying profits and costs over time in a table or graph and using the graph to predict profits. *Clarification 3*: Problems include maximizing profits, maximizing revenues and minimizing costs.
MA.912.FL.2.4:	Given current exchange rates, convert between currencies. Solve real-world problems involving exchange rates. **Clarifications:** *Clarification 1*: Instruction includes taking into account various fees, such as conversion fee, foreign transaction fee and dynamic concurrency conversion fee.
MA.912.FL.2.5:	Develop budgets that fit within various incomes using spreadsheets and other technology. **Clarifications:** *Clarification 1*: Instruction includes budgets for a business and for an individual. *Clarification 2*: Instruction includes taking into account various cash management strategies, such as checking and savings accounts, and how inflation may affect these strategies.
MA.912.FL.2.6:	Given a real-world scenario, complete and calculate federal income tax using spreadsheets and other technology. **Clarifications:** *Clarification 1*: Instruction includes understanding the difference between standardized deductions and itemized deductions. *Clarification 2*: Instruction includes the connection to piecewise linear functions with slopes relating to the marginal tax rates.
MA.912.FL.3.1:	Compare simple, compound and continuously compounded interest over time. **Clarifications:** *Clarification 1*: Instruction includes taking into consideration the annual percentage rate (APR) when comparing simple and compound interest.
MA.912.FL.3.2:	Solve real-world problems involving simple, compound and continuously compounded interest. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, interest is limited to simple and compound.
MA.912.FL.3.5:	Compare the advantages and disadvantages of using cash versus personal financing options. **Clarifications:** *Clarification 1*: Instruction includes advantages and disadvantages for a business and for an individual. *Clarification 2*: Personal financing options include debit cards, credit cards, installment plans and loans.
	Calculate the finance charges and total amount due on a bill using various forms of credit using estimation, spreadsheets and other technology.

MA.912.FL.3.6:	**Clarifications:** *Clarification 1*: Instruction includes how annual percentage rate (APR) and periodic rate are calculated per month and the connection between the two percentages.
MA.912.FL.3.7:	Compare the advantages and disadvantages of different types of student loans by manipulating a variety of variables and calculating the total cost using spreadsheets and other technology. **Clarifications:** *Clarification 1*: Instruction includes students researching the latest information on different student loan options. *Clarification 2*: Instruction includes comparing subsidized (Stafford), unsubsidized, direct unsubsidized and PLUS loans. *Clarification 3*: Instruction includes considering different repayment plans, including deferred payments and forbearance. *Clarification 4*: Instruction includes how interest on student loans may affect one's income taxes.
MA.912.FL.3.8:	Calculate using spreadsheets and other technology the total cost of purchasing consumer durables over time given different monthly payments, down payments, financing options and fees.
MA.912.FL.3.9:	Compare the advantages and disadvantages of different types of mortgage loans by manipulating a variety of variables and calculating fees and total cost using spreadsheets and other technology. **Clarifications:** *Clarification 1*: Instruction includes understanding various considerations that qualify a buyer for a loan, such as Debt-to-Income ratio. *Clarification 2*: Fees include discount prices, origination fee, maximum brokerage fee on a net or gross loan, documentary stamps and prorated expenses. *Clarification 3*: Instruction includes a cost comparison between a higher interest rate and fewer mortgage points versus a lower interest rate and more mortgage points. *Clarification 4*: Instruction includes a cost comparison between the length of the mortgage loan, such as 30-year versus 15-year. Clarification 5: Instruction includes adjustable rate loans, tax implications and equity for mortgages.
MA.912.FL.3.10:	Analyze credit scores qualitatively. Explain how short-term and long-term purchases, including deferred payments, may increase or decrease credit scores. Explain how credit scores influence buying power. **Clarifications:** *Clarification 1*: Instruction includes how each of the following categories affects a credit score: past payment history, amount of debt, public records information, length of credit history and the number of recent credit inquiries. *Clarification 2*: Instruction includes how a credit score affects qualification and interest rate for a home mortgage.
MA.912.FL.3.11:	Given a real-world scenario, establish a plan to pay off debt. **Clarifications:** *Clarification 1*: Instruction includes the comparison of different plans to pay off the debt. *Clarification 2*: Instruction includes pay off plans for a business and for an individual.
MA.912.FL.4.1:	Calculate and compare various options, deductibles and fees for various types of insurance policies using spreadsheets and other technology. **Clarifications:** *Clarification 1*: Insurances include medical, car, homeowners, life and rental car. *Clarification 2*: Instruction includes types of insurance for a business and for an individual.
MA.912.FL.4.3:	Compare the advantages and disadvantages of various retirement savings plans using spreadsheets and other technology. **Clarifications:** *Clarification 1*: Instruction includes weighing options based on salary and retirement plans from different potential employers. *Clarification 2*: Instruction includes understanding the need to build one's own retirement plan when starting a business.
MA.912.FL.4.4:	Collect, organize and interpret data to determine an effective retirement savings plan to meet personal financial goals using spreadsheets and other technology. **Clarifications:** *Clarification 1*: Instruction includes students researching the latest information on different retirement options. *Clarification 2*: Instruction includes the understanding of the relationship between salaries and retirement plans. *Clarification 3*: Instruction includes retirement plans from the perspective of a business and of an individual. *Clarification 4*: Instruction includes the comparison of different types of retirement plans, including IRAs, pensions and annuities.
MA.912.FL.4.5:	Compare different ways that portfolios can be diversified in investments. **Clarifications:** *Clarification 1*: Instruction includes diversifying a portfolio with different types of stock and diversifying a portfolio by including both stocks and bonds.
MA.912.FL.4.6:	Simulate the purchase of a stock portfolio with a set amount of money, and evaluate its worth over time considering gains, losses and selling, taking into account any associated fees.
MA.912.NSO.1.1:	Extend previous understanding of the Laws of Exponents to include rational exponents. Apply the Laws of Exponents to evaluate numerical expressions and generate equivalent numerical expressions involving rational exponents. **Clarifications:** *Clarification 1:* Instruction includes the use of technology when appropriate. *Clarification 2:* Refer to the K-12 Formulas (Appendix E) for the Laws of Exponents. *Clarification 3:* Instruction includes converting between expressions involving rational exponents and expressions involving radicals. *Clarification 4:*Within the Mathematics for Data and Financial Literacy course, it is not the expectation to generate equivalent numerical expressions.

MA.912.NSO.1.2:	Generate equivalent algebraic expressions using the properties of exponents.
MA.K12.MTR.1.1:	**Actively participate in effortful learning both individually and collectively.** Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task. • Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach. **Clarifications:** Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging. • Develop students' ability to analyze and problem solve. • Recognize students' effort when solving challenging problems.
MA.K12.MTR.2.1:	**Demonstrate understanding by representing problems in multiple ways.** Mathematicians who demonstrate understanding by representing problems in multiple ways: • Build understanding through modeling and using manipulatives. • Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. • Progress from modeling problems with objects and drawings to using algorithms and equations. • Express connections between concepts and representations. • Choose a representation based on the given context or purpose. **Clarifications:** Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: • Help students make connections between concepts and representations. • Provide opportunities for students to use manipulatives when investigating concepts. • Guide students from concrete to pictorial to abstract representations as understanding progresses. • Show students that various representations can have different purposes and can be useful in different situations.
MA.K12.MTR.3.1:	**Complete tasks with mathematical fluency.** Mathematicians who complete tasks with mathematical fluency: • Select efficient and appropriate methods for solving problems within the given context. • Maintain flexibility and accuracy while performing procedures and mental calculations. • Complete tasks accurately and with confidence. • Adapt procedures to apply them to a new context. • Use feedback to improve efficiency when performing calculations. **Clarifications:** Teachers who encourage students to complete tasks with mathematical fluency: • Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately. • Offer multiple opportunities for students to practice efficient and generalizable methods. • Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.
MA.K12.MTR.4.1:	**Engage in discussions that reflect on the mathematical thinking of self and others.** Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others: • Communicate mathematical ideas, vocabulary and methods effectively. • Analyze the mathematical thinking of others. • Compare the efficiency of a method to those expressed by others. • Recognize errors and suggest how to correctly solve the task. • Justify results by explaining methods and processes. • Construct possible arguments based on evidence. **Clarifications:** Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: • Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning. • Create opportunities for students to discuss their thinking with peers. • Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. • Develop students' ability to justify methods and compare their responses to the responses of their peers.
MA.K12.MTR.5.1:	**Use patterns and structure to help understand and connect mathematical concepts.** Mathematicians who use patterns and structure to help understand and connect mathematical concepts: • Focus on relevant details within a problem. • Create plans and procedures to logically order events, steps or ideas to solve problems. • Decompose a complex problem into manageable parts. • Relate previously learned concepts to new concepts. • Look for similarities among problems. • Connect solutions of problems to more complicated large-scale situations. **Clarifications:** Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts:

	• Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts. • Support students to develop generalizations based on the similarities found among problems. • Provide opportunities for students to create plans and procedures to solve problems. • Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.
MA.K12.MTR.6.1:	**Assess the reasonableness of solutions.** Mathematicians who assess the reasonableness of solutions: • Estimate to discover possible solutions. • Use benchmark quantities to determine if a solution makes sense. • Check calculations when solving problems. • Verify possible solutions by explaining the methods used. • Evaluate results based on the given context. **Clarifications:** Teachers who encourage students to assess the reasonableness of solutions: • Have students estimate or predict solutions prior to solving. • Prompt students to continually ask, "Does this solution make sense? How do you know?" • Reinforce that students check their work as they progress within and after a task. • Strengthen students' ability to verify solutions through justifications.
MA.K12.MTR.7.1:	**Apply mathematics to real-world contexts.** Mathematicians who apply mathematics to real-world contexts: • Connect mathematical concepts to everyday experiences. • Use models and methods to understand, represent and solve problems. • Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency. **Clarifications:** Teachers who encourage students to apply mathematics to real-world contexts: • Provide opportunities for students to create models, both concrete and abstract, and perform investigations. • Challenge students to question the accuracy of their models and methods. • Support students as they validate conclusions by comparing them to the given situation. • Indicate how various concepts can be applied to other disciplines.
ELA.K12.EE.1.1:	Cite evidence to explain and justify reasoning. **Clarifications:** K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing. 2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations. 4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they've directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor. 6-8 Students continue with previous skills and use a style guide to create a proper citation. 9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.
ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.
ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like "Why is the girl smiling?" or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
ELA.K12.EE.4.1:	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully. In grades 1-2, students build upon these skills by justifying what they are thinking. For example: "I think _______ because ______." The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
ELA.K12.EE.5.1:	Use the accepted rules governing a specific format to create quality work. **Clarifications:** Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.
ELA.K12.EE.6.1:	Use appropriate voice and tone when speaking or writing. **Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.

ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.

General Course Information and Notes

VERSION DESCRIPTION

In Mathematics for Data and Financial Literacy, instructional time will emphasize five areas: (1) extending knowledge of ratios, proportions and functions to data and financial contexts; (2) developing understanding of basic economic and accounting principles; (3) determining advantages and disadvantages of credit accounts and short- and long-term loans; (4) developing understanding of planning for the future through investments, insurance and retirement plans and (5) extending knowledge of data analysis to create and evaluate reports and to make predictions.

All clarifications stated, whether general or specific to Mathematics for Data and Financial Literacy, are expectations for instruction of that benchmark.

Curricular content for all subjects must integrate critical-thinking, problem-solving, and workforce-literacy skills; communication, reading, and writing skills; mathematics skills; collaboration skills; contextual and applied-learning skills; technology-literacy skills; information and media-literacy skills; and civic-engagement skills.

General Notes

Florida's Benchmarks for Excellent Student Thinking (B.E.S.T.) Standards:

This course includes Florida's B.E.S.T. ELA Expectations (EE) and Mathematical Thinking and Reasoning Standards (MTRs) for students. Florida educators should intentionally embed these standards within the content and their instruction as applicable. For guidance on the implementation of the EEs and MTRs, please visit https://www.cpalms.org/Standards/BEST_Standards.aspx and select the appropriate B.E.S.T. Standards package.

English Language Development ELD Standards Special Notes Section:

Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link: https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf

General Information

Course Number: 1200384

Course Path: **Section:** Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Mathematical Studies/Applications >

Abbreviated Title: MATH DATA & FIN LIT

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Type: Core Academic Course

Course Level: 2

Course Status: Course Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Mathematics

Educator Certifications

Mathematics (Grades 6-12)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Algebra 1-B for Credit Recovery (#1200385) 2024 - And Beyond (current)

Course Standards

Name	Description
MA.912.AR.1.1:	Identify and interpret parts of an equation or expression that represent a quantity in terms of a mathematical or real-world context, including viewing one or more of its parts as a single entity. **Clarifications:** *Clarification 1:* Parts of an expression include factors, terms, constants, coefficients and variables. *Clarification 2:* Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.1.2:	Rearrange equations or formulas to isolate a quantity of interest. **Clarifications:** *Clarification 1*: Instruction includes using formulas for temperature, perimeter, area and volume; using equations for linear (standard, slope-intercept and point-slope forms) and quadratic (standard, factored and vertex forms) functions. *Clarification 2*: Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.1.3:	Add, subtract and multiply polynomial expressions with rational number coefficients. **Clarifications:** *Clarification 1: I*nstruction includes an understanding that when any of these operations are performed with polynomials the result is also a polynomial. *Clarification 2:* Within the Algebra 1 course, polynomial expressions are limited to 3 or fewer terms.
MA.912.AR.1.4:	Divide a polynomial expression by a monomial expression with rational number coefficients. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, polynomial expressions are limited to 3 or fewer terms.
MA.912.AR.1.7:	Rewrite a polynomial expression as a product of polynomials over the real number system. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, polynomial expressions are limited to 4 or fewer terms with integer coefficients.
MA.912.AR.3.1:	Given a mathematical or real-world context, write and solve one-variable quadratic equations over the real number system. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, instruction includes the concept of non-real answers, without determining non-real solutions. *Clarification 2:* Within this benchmark, the expectation is to solve by factoring techniques, taking square roots, the quadratic formula and completing the square.
MA.912.AR.3.4:	Write a quadratic function to represent the relationship between two quantities from a graph, a written description or a table of values within a mathematical or real-world context. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, a graph, written description or table of values must include the vertex and two points that are equidistant from the vertex. *Clarification 2*: Instruction includes the use of standard form, factored form and vertex form. *Clarification 3*: Within the Algebra 2 course, one of the given points must be the vertex or an *x*-intercept.
MA.912.AR.3.5:	Given the x-intercepts and another point on the graph of a quadratic function, write the equation for the function.
MA.912.AR.3.6:	Given an expression or equation representing a quadratic function, determine the vertex and zeros and interpret them in terms of a real-world context.
MA.912.AR.3.7:	Given a table, equation or written description of a quadratic function, graph that function, and determine and interpret its key features. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; vertex; and symmetry. *Clarification 2*: Instruction includes the use of standard form, factored form and vertex form, and sketching a graph using the zeros and vertex. *Clarification 3*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 4*: Within the Algebra 1 course, notations for domain and range are limited to inequality and set-builder.
MA.912.AR.3.8:	Solve and graph mathematical and real-world problems that are modeled with quadratic functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; vertex; and symmetry. *Clarification 2*: Instruction includes the use of standard form, factored form and vertex form. *Clarification 3*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation. *Clarification 4*: Within the Algebra 1 course, notations for domain, range and constraints are limited to inequality and set-builder.

MA.912.AR.5.3:	Given a mathematical or real-world context, classify an exponential function as representing growth or decay. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, exponential functions are limited to the forms $f(x) = ab^x$, where b is a whole number greater than 1 or a unit fraction, or $f(x) = a(1 \pm r)^x$, where $0 < r < 1$.
MA.912.AR.5.4:	Write an exponential function to represent a relationship between two quantities from a graph, a written description or a table of values within a mathematical or real-world context. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, exponential functions are limited to the forms $f(x) = ab^x$, where b is a whole number greater than 1 or a unit fraction, or $f(x) = a(1 \pm r)^x$, where $0 < r < 1$. *Clarification 2:* Within the Algebra 1 course, tables are limited to having successive nonnegative integer inputs so that the function may be determined by finding ratios between successive outputs.
MA.912.AR.5.6:	Given a table, equation or written description of an exponential function, graph that function and determine its key features. **Clarifications:** *Clarification 1:* Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; constant percent rate of change; end behavior and asymptotes. *Clarification 2:* Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 3:* Within the Algebra 1 course, notations for domain and range are limited to inequality and set-builder. *Clarification 4:* Within the Algebra 1 course, exponential functions are limited to the forms $f(x) = ab^x$, where b is a whole number greater than 1 or a unit fraction or $f(x) = a(1 \pm r)^x$, where $0 < r < 1$.
MA.912.AR.9.6:	Given a real-world context, represent constraints as systems of linear equations or inequalities. Interpret solutions to problems as viable or non-viable options. **Clarifications:** *Clarification 1*: Instruction focuses on analyzing a given function that models a real-world situation and writing constraints that are represented as linear equations or linear inequalities.
MA.912.DP.1.1:	Given a set of data, select an appropriate method to represent the data, depending on whether it is numerical or categorical data and on whether it is univariate or bivariate. **Clarifications:** *Clarification 1:* Instruction includes discussions regarding the strengths and weaknesses of each data display. *Clarification 2:* Numerical univariate includes histograms, stem-and-leaf plots, box plots and line plots; numerical bivariate includes scatter plots and line graphs; categorical univariate includes bar charts, circle graphs, line plots, frequency tables and relative frequency tables; and categorical bivariate includes segmented bar charts, joint frequency tables and joint relative frequency tables. *Clarification 3:* Instruction includes the use of appropriate units and labels and, where appropriate, using technology to create data displays.
MA.912.DP.1.2:	Interpret data distributions represented in various ways. State whether the data is numerical or categorical, whether it is univariate or bivariate and interpret the different components and quantities in the display. **Clarifications:** *Clarification 1*: Within the Probability and Statistics course, instruction includes the use of spreadsheets and technology.
MA.912.DP.1.4:	Estimate a population total, mean or percentage using data from a sample survey; develop a margin of error through the use of simulation. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, the margin of error will be given.
MA.912.DP.3.1:	Construct a two-way frequency table summarizing bivariate categorical data. Interpret joint and marginal frequencies and determine possible associations in terms of a real-world context.
MA.912.F.1.1:	Given an equation or graph that defines a function, determine the function type. Given an input-output table, determine a function type that could represent it. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, functions represented as tables are limited to linear, quadratic and exponential. *Clarification 2:* Within the Algebra 1 course, functions represented as equations or graphs are limited to vertical or horizontal translations or reflections over the x-axis of the following parent functions: $f(x) = x$, $f(x) = x^2$, $f(x) = x^3$, $f(x) = \sqrt{x}$, $f(x) = \sqrt[3]{x}$, $f(x) = \lvert x \rvert$, $f(x) = 2^x$ and $f(x) = \left(\frac{1}{2}\right)^x$.
MA.912.F.1.2:	Given a function represented in function notation, evaluate the function for an input in its domain. For a real-world context, interpret the output. **Clarifications:** *Clarification 1*: Problems include simple functions in two-variables, such as f(x,y)=3x-2y. *Clarification 2*: Within the Algebra 1 course, functions are limited to one-variable such as f(x)=3x.
MA.912.F.1.3:	Calculate and interpret the average rate of change of a real-world situation represented graphically, algebraically or in a table over a specified interval. **Clarifications:** *Clarification 1*: Instruction includes making the connection to determining the slope of a particular line segment.
MA.912.F.1.6:	Compare key features of linear and nonlinear functions each represented algebraically, graphically, in tables or written descriptions. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior and asymptotes. *Clarification 2*: Within the Algebra 1 course, functions other than linear, quadratic or exponential must be represented graphically.

Clarification 3: Within the Algebra 1 course, instruction includes verifying that a quantity increasing exponentially eventually exceeds a quantity increasing linearly or quadratically.

MA.912.F.1.8:

Determine whether a linear, quadratic or exponential function best models a given real-world situation.

Clarifications:
Clarification 1: Instruction includes recognizing that linear functions model situations in which a quantity changes by a constant amount per unit interval; that quadratic functions model situations in which a quantity increases to a maximum, then begins to decrease or a quantity decreases to a minimum, then begins to increase; and that exponential functions model situations in which a quantity grows or decays by a constant percent per unit interval.
Clarification 2: Within this benchmark, the expectation is to identify the type of function from a written description or table.

MA.912.F.2.1:

Identify the effect on the graph or table of a given function after replacing $f(x)$ by $f(x)+k$, $kf(x)$, $f(kx)$ and $f(x+k)$ for specific values of k.

Clarifications:
Clarification 1: Within the Algebra 1 course, functions are limited to linear, quadratic and absolute value.
Clarification 2: Instruction focuses on including positive and negative values for k.

MA.912.FL.3.2:

Solve real-world problems involving simple, compound and continuously compounded interest.

Clarifications:
Clarification 1: Within the Algebra 1 course, interest is limited to simple and compound.

MA.912.FL.3.4:

Explain the relationship between simple interest and linear growth. Explain the relationship between compound interest and exponential growth and the relationship between continuously compounded interest and exponential growth.

Clarifications:
Clarification 1: Within the Algebra 1 course, exponential growth is limited to compound interest.

MA.912.NSO.1.1:

Extend previous understanding of the Laws of Exponents to include rational exponents. Apply the Laws of Exponents to evaluate numerical expressions and generate equivalent numerical expressions involving rational exponents.

Clarifications:
Clarification 1: Instruction includes the use of technology when appropriate.
Clarification 2: Refer to the K-12 Formulas (Appendix E) for the Laws of Exponents.

Clarification 3: Instruction includes converting between expressions involving rational exponents and expressions involving radicals.
*Clarification 4:*Within the Mathematics for Data and Financial Literacy course, it is not the expectation to generate equivalent numerical expressions.

MA.912.NSO.1.2:

Generate equivalent algebraic expressions using the properties of exponents.

MA.912.NSO.1.4:

Apply previous understanding of operations with rational numbers to add, subtract, multiply and divide numerical radicals.

Clarifications:
Clarification 1: Within the Algebra 1 course, expressions are limited to a single arithmetic operation involving two square roots or two cube roots.

MA.K12.MTR.1.1:

Actively participate in effortful learning both individually and collectively.
Mathematicians who participate in effortful learning both individually and with others:

- Analyze the problem in a way that makes sense given the task.
- Ask questions that will help with solving the task.
- Build perseverance by modifying methods as needed while solving a challenging task.
- Stay engaged and maintain a positive mindset when working to solve tasks.
- Help and support each other when attempting a new method or approach.

Clarifications:
Teachers who encourage students to participate actively in effortful learning both individually and with others:
- Cultivate a community of growth mindset learners.
- Foster perseverance in students by choosing tasks that are challenging.
- Develop students' ability to analyze and problem solve.
- Recognize students' effort when solving challenging problems.

MA.K12.MTR.2.1:

Demonstrate understanding by representing problems in multiple ways.
Mathematicians who demonstrate understanding by representing problems in multiple ways:

- Build understanding through modeling and using manipulatives.
- Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations.
- Progress from modeling problems with objects and drawings to using algorithms and equations.
- Express connections between concepts and representations.
- Choose a representation based on the given context or purpose.

Clarifications:
Teachers who encourage students to demonstrate understanding by representing problems in multiple ways:
- Help students make connections between concepts and representations.
- Provide opportunities for students to use manipulatives when investigating concepts.
- Guide students from concrete to pictorial to abstract representations as understanding progresses.
- Show students that various representations can have different purposes and can be useful in different situations.

Complete tasks with mathematical fluency.
Mathematicians who complete tasks with mathematical fluency:

- Select efficient and appropriate methods for solving problems within the given context.

MA.K12.MTR.3.1:	• Maintain flexibility and accuracy while performing procedures and mental calculations. • Complete tasks accurately and with confidence. • Adapt procedures to apply them to a new context. • Use feedback to improve efficiency when performing calculations. **Clarifications:** Teachers who encourage students to complete tasks with mathematical fluency: • Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately. • Offer multiple opportunities for students to practice efficient and generalizable methods. • Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.
MA.K12.MTR.4.1:	**Engage in discussions that reflect on the mathematical thinking of self and others.** Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others: • Communicate mathematical ideas, vocabulary and methods effectively. • Analyze the mathematical thinking of others. • Compare the efficiency of a method to those expressed by others. • Recognize errors and suggest how to correctly solve the task. • Justify results by explaining methods and processes. • Construct possible arguments based on evidence. **Clarifications:** Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: • Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning. • Create opportunities for students to discuss their thinking with peers. • Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. • Develop students' ability to justify methods and compare their responses to the responses of their peers.
MA.K12.MTR.5.1:	**Use patterns and structure to help understand and connect mathematical concepts.** Mathematicians who use patterns and structure to help understand and connect mathematical concepts: • Focus on relevant details within a problem. • Create plans and procedures to logically order events, steps or ideas to solve problems. • Decompose a complex problem into manageable parts. • Relate previously learned concepts to new concepts. • Look for similarities among problems. • Connect solutions of problems to more complicated large-scale situations. **Clarifications:** Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts: • Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts. • Support students to develop generalizations based on the similarities found among problems. • Provide opportunities for students to create plans and procedures to solve problems. • Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.
MA.K12.MTR.6.1:	**Assess the reasonableness of solutions.** Mathematicians who assess the reasonableness of solutions: • Estimate to discover possible solutions. • Use benchmark quantities to determine if a solution makes sense. • Check calculations when solving problems. • Verify possible solutions by explaining the methods used. • Evaluate results based on the given context. **Clarifications:** Teachers who encourage students to assess the reasonableness of solutions: • Have students estimate or predict solutions prior to solving. • Prompt students to continually ask, "Does this solution make sense? How do you know?" • Reinforce that students check their work as they progress within and after a task. • Strengthen students' ability to verify solutions through justifications.
MA.K12.MTR.7.1:	**Apply mathematics to real-world contexts.** Mathematicians who apply mathematics to real-world contexts: • Connect mathematical concepts to everyday experiences. • Use models and methods to understand, represent and solve problems. • Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency. **Clarifications:** Teachers who encourage students to apply mathematics to real-world contexts: • Provide opportunities for students to create models, both concrete and abstract, and perform investigations. • Challenge students to question the accuracy of their models and methods. • Support students as they validate conclusions by comparing them to the given situation. • Indicate how various concepts can be applied to other disciplines.
	Cite evidence to explain and justify reasoning. **Clarifications:** K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing.

ELA.K12.EE.1.1:	2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations. 4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they've directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor. 6-8 Students continue with previous skills and use a style guide to create a proper citation. 9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.
ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.
ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like "Why is the girl smiling?" or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
ELA.K12.EE.4.1:	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully. In grades 1-2, students build upon these skills by justifying what they are thinking. For example: "I think ________ because _______." The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
ELA.K12.EE.5.1:	Use the accepted rules governing a specific format to create quality work. **Clarifications:** Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.
ELA.K12.EE.6.1:	Use appropriate voice and tone when speaking or writing. **Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.
ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.

General Course Information and Notes

VERSION DESCRIPTION

In Algebra 1-B, instructional time will emphasize four areas: (1) performing operations with polynomials and radicals, and extending the Laws of Exponents to include rational exponents; (2) extending understanding of functions to quadratic and exponential functions and using them to model and analyze real-world relationships; (3) solving quadratic equations in one variables and (4) building functions, identifying their key features and representing them in various ways.

All clarifications stated, whether general or specific to Algebra I-B, are expectations for instruction of that benchmark. Please note that all clarifications that address Algebra 1 also should be addressed within Algebra 1-B.

Curricular content for all subjects must integrate critical-thinking, problem-solving, and workforce-literacy skills; communication, reading, and writing skills; mathematics skills; collaboration skills; contextual and applied-learning skills; technology-literacy skills; information and media-literacy skills; and civic-engagement skills.

Special Notes: Credit Recovery courses are credit bearing courses with specific content requirements defined by state academic standards (SAS). Students enrolled in a Credit Recovery course must have previously attempted the corresponding course (and/or End-of-Course assessment) since the course requirements for the Credit Recovery course is exactly the same as the previously attempted corresponding course. For example, Geometry (1206310) and Geometry for Credit Recovery (1206315) have identical content requirements. It is important to note that Credit Recovery courses are not bound by Section 1003.436(1)(a), Florida Statutes, requiring a minimum of 135 hours of bona fide instruction (120 hours in a school/district implementing block scheduling) in a designed course of study that contains student performance standards, since the students have previously attempted successful completion of the corresponding course. Additionally, Credit Recovery courses should ONLY be used for credit recovery, grade forgiveness, or remediation for students needing to prepare for an End-of-Course assessment retake.

General Notes

Florida's Benchmarks for Excellent Student Thinking (B.E.S.T.) Standards
This course includes Florida's B.E.S.T. ELA Expectations (EE) and Mathematical Thinking and Reasoning Standards (MTRs) for students. Florida educators should intentionally embed these standards within the content and their instruction as applicable. For guidance on the implementation of the EEs and MTRs, please visit https://www.cpalms.org/Standards/BEST_Standards.aspx and select the appropriate B.E.S.T. Standards package.

English Language Development ELD Standards Special Notes Section:
Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and

concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link: https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf

General Information

Course Number: 1200385

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Algebra >

Abbreviated Title: ALG 1-B CR

Number of Credits: One (1) credit

Course Length: Credit Recovery (R)

Course Type: Elective Course

Course Level: 2

Course Status: Course Approved

Grade Level(s): 9,10,11,12

Educator Certifications

Mathematics (Grades 6-12)

Middle Grades Mathematics (Middle Grades 5-9)

Classical Education - Restricted (Elementary and Secondary Grades K-12)
Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Pre-Advanced Placement Algebra 1 (#1200386) 2024 - And Beyond (current)

General Course Information and Notes

VERSION DESCRIPTION

The course description for this Pre-Advanced Placement (Pre-AP) course is located on the College Board site at https://pre-ap.collegeboard.org/courses.

General Notes

Students enrolled in this course are required to take the Algebra 1 FSA EOC. Information on the EOC, including test item specifications, can be found at https://www.fldoe.org/accountability/assessments/k-12-student-assessment/end-of-course-eoc-assessments/.

General Information

Course Number: 1200386

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Algebra >

Abbreviated Title: PRE-AP ALGEBRA 1

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Attributes:

- Honors
- Class Size Core Required

Course Type: Core Academic Course

Course Level: 3

Course Status: Course Approved

Grade Level(s): 9

Graduation Requirement: Algebra 1

Educator Certifications

Mathematics (Grades 6-12)
Middle Grades Mathematics (Middle Grades 5-9)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Equivalent Courses

1200320-Algebra 1 Honors Equivalency start year: 2018
1200380-Algebra 1-B Equivalency start year: 2018
1209810-Cambridge Pre-AICE Mathematics 1 IGCSE Level Equivalency start year: 2018
1200390-International Baccalaureate Mid Yrs Prog Algebra 1 Equivalency start year: 2018

Mathematics for Data and Financial Literacy Honors (#1200388) 2024 - And Beyond (current)

Course Standards

Name	Description
MA.912.AR.1.1:	Identify and interpret parts of an equation or expression that represent a quantity in terms of a mathematical or real-world context, including viewing one or more of its parts as a single entity. **Clarifications:** *Clarification 1:* Parts of an expression include factors, terms, constants, coefficients and variables. *Clarification 2:* Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.1.2:	Rearrange equations or formulas to isolate a quantity of interest. **Clarifications:** *Clarification 1*: Instruction includes using formulas for temperature, perimeter, area and volume; using equations for linear (standard, slope-intercept and point-slope forms) and quadratic (standard, factored and vertex forms) functions. *Clarification 2*: Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.2.5:	Solve and graph mathematical and real-world problems that are modeled with linear functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain, range, intercepts and rate of change. *Clarification 2*: Instruction includes the use of standard form, slope-intercept form and point-slope form. *Clarification 3*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation. *Clarification 4*: Within the Algebra 1 course, notations for domain, range and constraints are limited to inequality and set-builder. *Clarification 5*: Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.3.8:	Solve and graph mathematical and real-world problems that are modeled with quadratic functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; vertex; and symmetry. *Clarification 2*: Instruction includes the use of standard form, factored form and vertex form. *Clarification 3*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation. *Clarification 4*: Within the Algebra 1 course, notations for domain, range and constraints are limited to inequality and set-builder.
MA.912.AR.5.7:	Solve and graph mathematical and real-world problems that are modeled with exponential functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; constant percent rate of change; end behavior and asymptotes. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation. *Clarification 3*: Instruction includes understanding that when the logarithm of the dependent variable is taken and graphed, the exponential function will be transformed into a linear function. *Clarification 4*: Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.9.10:	Solve and graph mathematical and real-world problems that are modeled with piecewise functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain, range, intercepts, asymptotes and end behavior. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation.
MA.912.AR.10.1:	Given a mathematical or real-world context, write and solve problems involving arithmetic sequences.
MA.912.AR.10.2:	Given a mathematical or real-world context, write and solve problems involving geometric sequences.
MA.912.DP.1.2:	Interpret data distributions represented in various ways. State whether the data is numerical or categorical, whether it is univariate or bivariate and interpret the different components and quantities in the display. **Clarifications:** *Clarification 1*: Within the Probability and Statistics course, instruction includes the use of spreadsheets and technology.

MA.912.DP.2.4:	Fit a linear function to bivariate numerical data that suggests a linear association and interpret the slope and y-intercept of the model. Use the model to solve real-world problems in terms of the context of the data. **Clarifications:** *Clarification 1*: Instruction includes fitting a linear function both informally and formally with the use of technology. *Clarification 2*: Problems include making a prediction or extrapolation, inside and outside the range of the data, based on the equation of the line of fit.
MA.912.DP.2.8:	Fit a quadratic function to bivariate numerical data that suggests a quadratic association and interpret any intercepts or the vertex of the model. Use the model to solve real-world problems in terms of the context of the data. **Clarifications:** *Clarification 1*: Problems include making a prediction or extrapolation, inside and outside the range of the data, based on the equation of the line of fit.
MA.912.DP.2.9:	Fit an exponential function to bivariate numerical data that suggests an exponential association. Use the model to solve real-world problems in terms of the context of the data. **Clarifications:** *Clarification 1*: Instruction focuses on determining whether an exponential model is appropriate by taking the logarithm of the dependent variable using spreadsheets and other technology. *Clarification 2*: Instruction includes determining whether the transformed scatterplot has an appropriate line of best fit, and interpreting the y-intercept and slope of the line of best fit. *Clarification 3*: Problems include making a prediction or extrapolation, inside and outside the range of the data, based on the equation of the line of fit.
MA.912.DP.3.1:	Construct a two-way frequency table summarizing bivariate categorical data. Interpret joint and marginal frequencies and determine possible associations in terms of a real-world context.
MA.912.DP.3.2:	Given marginal and conditional relative frequencies, construct a two-way relative frequency table summarizing categorical bivariate data. **Clarifications:** *Clarification 1:* Construction includes cases where not all frequencies are given but enough are provided to be able to construct a two-way relative frequency table. *Clarification 2:* Instruction includes the use of a tree diagram when calculating relative frequencies to construct tables.
MA.912.DP.3.3:	Given a two-way relative frequency table or segmented bar graph summarizing categorical bivariate data, interpret joint, marginal and conditional relative frequencies in terms of a real-world context. **Clarifications:** *Clarification 1:* Instruction includes problems involving false positive and false negatives.
MA.912.DP.3.4:	Given a relative frequency table, construct and interpret a segmented bar graph.
MA.912.DP.5.11:	Evaluate reports based on data from diverse media, print and digital resources by interpreting graphs and tables; evaluating data-based arguments; determining whether a valid sampling method was used; or interpreting provided statistics. **Clarifications:** *Clarification 1*: Instruction includes determining whether or not data displays could be misleading.
MA.912.F.1.2:	Given a function represented in function notation, evaluate the function for an input in its domain. For a real-world context, interpret the output. **Clarifications:** *Clarification 1*: Problems include simple functions in two-variables, such as f(x,y)=3x-2y. *Clarification 2*: Within the Algebra 1 course, functions are limited to one-variable such as f(x)=3x.
MA.912.F.3.2:	Given a mathematical or real-world context, combine two or more functions, limited to linear, quadratic, exponential and polynomial, using arithmetic operations. When appropriate, include domain restrictions for the new function. **Clarifications:** *Clarification 1*: Instruction includes representing domain restrictions with inequality notation, interval notation or set-builder notation. *Clarification 2*: Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.FL.1.1:	Extend previous knowledge of operations of fractions, percentages and decimals to solve real-world problems involving money and business. **Clarifications:** *Clarification 1*: Problems include discounts, markups, simple interest, tax, tips, fees, percent increase, percent decrease and percent error.
MA.912.FL.1.2:	Extend previous knowledge of ratios and proportional relationships to solve real-world problems involving money and business.
MA.912.FL.1.3:	Solve real-world problems involving weighted averages using spreadsheets and other technology.
MA.912.FL.2.1:	Given assets and liabilities, calculate net worth using spreadsheets and other technology. **Clarifications:** *Clarification 1*: Instruction includes net worth for a business and for an individual. *Clarification 2*: Instruction includes understanding the difference between a capital asset and a liquid asset. *Clarification 3*: Instruction includes displaying net worth over time in a table or graph.
MA.912.FL.2.2:	Solve real-world problems involving profits, costs and revenues using spreadsheets and other technology. **Clarifications:** *Clarification 1*: Instruction includes the connection to data. *Clarification 2*: Instruction includes displaying profits and costs over time in a table or graph and using the graph to predict profits. *Clarification 3*: Problems include maximizing profits, maximizing revenues and minimizing costs.
	Explain how consumer price index (CPI), gross domestic product (GDP), stock indices, unemployment rate and trade deficit are calculated. Interpret

MA.912.FL.2.3:	their value in terms of the context. **Clarifications:** *Clarification 1*: Instruction includes the understanding that quantities are based on data and may include measurement error.
MA.912.FL.2.4:	Given current exchange rates, convert between currencies. Solve real-world problems involving exchange rates. **Clarifications:** *Clarification 1*: Instruction includes taking into account various fees, such as conversion fee, foreign transaction fee and dynamic concurrency conversion fee.
MA.912.FL.2.5:	Develop budgets that fit within various incomes using spreadsheets and other technology. **Clarifications:** *Clarification 1*: Instruction includes budgets for a business and for an individual. *Clarification 2*: Instruction includes taking into account various cash management strategies, such as checking and savings accounts, and how inflation may affect these strategies.
MA.912.FL.2.6:	Given a real-world scenario, complete and calculate federal income tax using spreadsheets and other technology. **Clarifications:** *Clarification 1*: Instruction includes understanding the difference between standardized deductions and itemized deductions. *Clarification 2*: Instruction includes the connection to piecewise linear functions with slopes relating to the marginal tax rates.
MA.912.FL.3.1:	Compare simple, compound and continuously compounded interest over time. **Clarifications:** *Clarification 1*: Instruction includes taking into consideration the annual percentage rate (APR) when comparing simple and compound interest.
MA.912.FL.3.2:	Solve real-world problems involving simple, compound and continuously compounded interest. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, interest is limited to simple and compound.
MA.912.FL.3.3:	Solve real-world problems involving present value and future value of money
MA.912.FL.3.5:	Compare the advantages and disadvantages of using cash versus personal financing options. **Clarifications:** *Clarification 1*: Instruction includes advantages and disadvantages for a business and for an individual. *Clarification 2*: Personal financing options include debit cards, credit cards, installment plans and loans.
MA.912.FL.3.6:	Calculate the finance charges and total amount due on a bill using various forms of credit using estimation, spreadsheets and other technology. **Clarifications:** *Clarification 1*: Instruction includes how annual percentage rate (APR) and periodic rate are calculated per month and the connection between the two percentages.
MA.912.FL.3.7:	Compare the advantages and disadvantages of different types of student loans by manipulating a variety of variables and calculating the total cost using spreadsheets and other technology. **Clarifications:** *Clarification 1*: Instruction includes students researching the latest information on different student loan options. *Clarification 2*: Instruction includes comparing subsidized (Stafford), unsubsidized, direct unsubsidized and PLUS loans. *Clarification 3*: Instruction includes considering different repayment plans, including deferred payments and forbearance. *Clarification 4*: Instruction includes how interest on student loans may affect one's income taxes.
MA.912.FL.3.8:	Calculate using spreadsheets and other technology the total cost of purchasing consumer durables over time given different monthly payments, down payments, financing options and fees.
MA.912.FL.3.9:	Compare the advantages and disadvantages of different types of mortgage loans by manipulating a variety of variables and calculating fees and total cost using spreadsheets and other technology. **Clarifications:** *Clarification 1*: Instruction includes understanding various considerations that qualify a buyer for a loan, such as Debt-to-Income ratio. *Clarification 2*: Fees include discount prices, origination fee, maximum brokerage fee on a net or gross loan, documentary stamps and prorated expenses. *Clarification 3*: Instruction includes a cost comparison between a higher interest rate and fewer mortgage points versus a lower interest rate and more mortgage points. *Clarification 4*: Instruction includes a cost comparison between the length of the mortgage loan, such as 30-year versus 15-year. Clarification 5: Instruction includes adjustable rate loans, tax implications and equity for mortgages.
MA.912.FL.3.10:	Analyze credit scores qualitatively. Explain how short-term and long-term purchases, including deferred payments, may increase or decrease credit scores. Explain how credit scores influence buying power. **Clarifications:** *Clarification 1*: Instruction includes how each of the following categories affects a credit score: past payment history, amount of debt, public records information, length of credit history and the number of recent credit inquiries. *Clarification 2*: Instruction includes how a credit score affects qualification and interest rate for a home mortgage.
MA.912.FL.3.11:	Given a real-world scenario, establish a plan to pay off debt. **Clarifications:** *Clarification 1*: Instruction includes the comparison of different plans to pay off the debt. *Clarification 2*: Instruction includes pay off plans for a business and for an individual.
	Calculate and compare various options, deductibles and fees for various types of insurance policies using spreadsheets and other technology.

MA.912.FL.4.1:	**Clarifications:** *Clarification 1*: Insurances include medical, car, homeowners, life and rental car. *Clarification 2*: Instruction includes types of insurance for a business and for an individual.
MA.912.FL.4.2:	Compare the advantages and disadvantages for adding on a one-time warranty to a purchase using spreadsheets and other technology. **Clarifications:** *Clarification 1*: Warranties include protection plans from stores, car warranty and home protection plans. *Clarification 2*: Instruction includes types of warranties for a business and for an individual. *Clarification 3*: Instruction includes taking into consideration the risk of utilizing or not utilizing a one-time warranty on one or multiple purchases.
MA.912.FL.4.3:	Compare the advantages and disadvantages of various retirement savings plans using spreadsheets and other technology. **Clarifications:** *Clarification 1*: Instruction includes weighing options based on salary and retirement plans from different potential employers. *Clarification 2*: Instruction includes understanding the need to build one's own retirement plan when starting a business.
MA.912.FL.4.4:	Collect, organize and interpret data to determine an effective retirement savings plan to meet personal financial goals using spreadsheets and other technology. **Clarifications:** *Clarification 1*: Instruction includes students researching the latest information on different retirement options. *Clarification 2*: Instruction includes the understanding of the relationship between salaries and retirement plans. *Clarification 3*: Instruction includes retirement plans from the perspective of a business and of an individual. *Clarification 4*: Instruction includes the comparison of different types of retirement plans, including IRAs, pensions and annuities.
MA.912.FL.4.5:	Compare different ways that portfolios can be diversified in investments. **Clarifications:** *Clarification 1*: Instruction includes diversifying a portfolio with different types of stock and diversifying a portfolio by including both stocks and bonds.
MA.912.FL.4.6:	Simulate the purchase of a stock portfolio with a set amount of money, and evaluate its worth over time considering gains, losses and selling, taking into account any associated fees.
MA.912.NSO.1.1:	Extend previous understanding of the Laws of Exponents to include rational exponents. Apply the Laws of Exponents to evaluate numerical expressions and generate equivalent numerical expressions involving rational exponents. **Clarifications:** *Clarification 1:* Instruction includes the use of technology when appropriate. *Clarification 2:* Refer to the K-12 Formulas (Appendix E) for the Laws of Exponents. *Clarification 3:* Instruction includes converting between expressions involving rational exponents and expressions involving radicals. *Clarification 4:*Within the Mathematics for Data and Financial Literacy course, it is not the expectation to generate equivalent numerical expressions.
MA.912.NSO.1.2:	Generate equivalent algebraic expressions using the properties of exponents.
MA.912.NSO.1.6:	Given a numerical logarithmic expression, evaluate and generate equivalent numerical expressions using the properties of logarithms or exponents. **Clarifications:** *Clarification 1*: Within the Mathematics for Data and Financial Literacy Honors course, problem types focus on money and business.
MA.912.NSO.1.7:	Given an algebraic logarithmic expression, generate an equivalent algebraic expression using the properties of logarithms or exponents. **Clarifications:** *Clarification 1*: Within the Mathematics for Data and Financial Literacy Honors course, problem types focus on money and business.
MA.K12.MTR.1.1:	**Actively participate in effortful learning both individually and collectively.** Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task. • Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach. **Clarifications:** Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging. • Develop students' ability to analyze and problem solve. • Recognize students' effort when solving challenging problems.
	Demonstrate understanding by representing problems in multiple ways. Mathematicians who demonstrate understanding by representing problems in multiple ways: • Build understanding through modeling and using manipulatives. • Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. • Progress from modeling problems with objects and drawings to using algorithms and equations. • Express connections between concepts and representations.

MA.K12.MTR.2.1:	• Choose a representation based on the given context or purpose. **Clarifications:** Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: • Help students make connections between concepts and representations. • Provide opportunities for students to use manipulatives when investigating concepts. • Guide students from concrete to pictorial to abstract representations as understanding progresses. • Show students that various representations can have different purposes and can be useful in different situations.
MA.K12.MTR.3.1:	**Complete tasks with mathematical fluency.** Mathematicians who complete tasks with mathematical fluency: • Select efficient and appropriate methods for solving problems within the given context. • Maintain flexibility and accuracy while performing procedures and mental calculations. • Complete tasks accurately and with confidence. • Adapt procedures to apply them to a new context. • Use feedback to improve efficiency when performing calculations. **Clarifications:** Teachers who encourage students to complete tasks with mathematical fluency: • Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately. • Offer multiple opportunities for students to practice efficient and generalizable methods. • Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.
MA.K12.MTR.4.1:	**Engage in discussions that reflect on the mathematical thinking of self and others.** Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others: • Communicate mathematical ideas, vocabulary and methods effectively. • Analyze the mathematical thinking of others. • Compare the efficiency of a method to those expressed by others. • Recognize errors and suggest how to correctly solve the task. • Justify results by explaining methods and processes. • Construct possible arguments based on evidence. **Clarifications:** Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: • Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning. • Create opportunities for students to discuss their thinking with peers. • Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. • Develop students' ability to justify methods and compare their responses to the responses of their peers.
MA.K12.MTR.5.1:	**Use patterns and structure to help understand and connect mathematical concepts.** Mathematicians who use patterns and structure to help understand and connect mathematical concepts: • Focus on relevant details within a problem. • Create plans and procedures to logically order events, steps or ideas to solve problems. • Decompose a complex problem into manageable parts. • Relate previously learned concepts to new concepts. • Look for similarities among problems. • Connect solutions of problems to more complicated large-scale situations. **Clarifications:** Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts: • Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts. • Support students to develop generalizations based on the similarities found among problems. • Provide opportunities for students to create plans and procedures to solve problems. • Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.
MA.K12.MTR.6.1:	**Assess the reasonableness of solutions.** Mathematicians who assess the reasonableness of solutions: • Estimate to discover possible solutions. • Use benchmark quantities to determine if a solution makes sense. • Check calculations when solving problems. • Verify possible solutions by explaining the methods used. • Evaluate results based on the given context. **Clarifications:** Teachers who encourage students to assess the reasonableness of solutions: • Have students estimate or predict solutions prior to solving. • Prompt students to continually ask, "Does this solution make sense? How do you know?" • Reinforce that students check their work as they progress within and after a task. • Strengthen students' ability to verify solutions through justifications.
	Apply mathematics to real-world contexts. Mathematicians who apply mathematics to real-world contexts: • Connect mathematical concepts to everyday experiences. • Use models and methods to understand, represent and solve problems. • Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or

MA.K12.MTR.7.1:	efficiency. **Clarifications:** Teachers who encourage students to apply mathematics to real-world contexts: • Provide opportunities for students to create models, both concrete and abstract, and perform investigations. • Challenge students to question the accuracy of their models and methods. • Support students as they validate conclusions by comparing them to the given situation. • Indicate how various concepts can be applied to other disciplines.
ELA.K12.EE.1.1:	Cite evidence to explain and justify reasoning. **Clarifications:** K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing. 2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations. 4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they've directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor. 6-8 Students continue with previous skills and use a style guide to create a proper citation. 9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.
ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.
ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like "Why is the girl smiling?" or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
ELA.K12.EE.4.1:	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully. In grades 1-2, students build upon these skills by justifying what they are thinking. For example: "I think _______ because ______." The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
ELA.K12.EE.5.1:	Use the accepted rules governing a specific format to create quality work. **Clarifications:** Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.
ELA.K12.EE.6.1:	Use appropriate voice and tone when speaking or writing. **Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.
ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.

General Course Information and Notes

VERSION DESCRIPTION

In Mathematics for Data and Financial Literacy Honors, instructional time will emphasize five areas: (1) extending knowledge of ratios, proportions and functions to data and financial contexts; (2) developing understanding of basic economic and accounting principles; (3) determining advantages and disadvantages of credit accounts and short- and long-term loans; (4) developing understanding of planning for the future through investments, insurance and retirement plans and (5) extending knowledge of data analysis to create and evaluate reports and to make predictions.

All clarifications stated, whether general or specific to Mathematics for Data and Financial Literacy Honors, are expectations for instruction of that benchmark.

Curricular content for all subjects must integrate critical-thinking, problem-solving, and workforce-literacy skills; communication, reading, and writing skills; mathematics skills; collaboration skills; contextual and applied-learning skills; technology-literacy skills; information and media-literacy skills; and civic-engagement skills.

General Notes

Honors and Accelerated Level Course Note: Accelerated courses require a greater demand on students through increased academic rigor. Academic rigor is obtained through the application, analysis, evaluation, and creation of complex ideas that are often abstract and multi-faceted. Students are challenged to think and collaborate critically on the content they are learning. Honors level rigor will be achieved by increasing text complexity through text selection, focus on high-level qualitative measures, and complexity of task. Instruction will be structured to give students a deeper understanding of conceptual themes and organization within and across disciplines. Academic rigor is more than simply assigning to students a greater quantity of work.

Florida's Benchmarks for Excellent Student Thinking (B.E.S.T.) Standards
This course includes Florida's B.E.S.T. ELA Expectations (EE) and Mathematical Thinking and Reasoning Standards (MTRs) for students. Florida educators should intentionally embed these standards within the content and their instruction as applicable. For guidance on the implementation of the EEs and MTRs, please visit https://www.cpalms.org/Standards/BEST_Standards.aspx and select the appropriate B.E.S.T. Standards package.

English Language Development ELD Standards Special Notes Section:

Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link: https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf

General Information

Course Number: 1200388

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Mathematical Studies/Applications >

Abbreviated Title: MATH DATA & FIN LIT H

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Attributes:

- Honors

Course Type: Core Academic Course

Course Level: 3

Course Status: State Board Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Mathematics

Educator Certifications

Mathematics (Grades 6-12)

Classical Education - Restricted (Elementary and Secondary Grades K-12)
Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

International Baccalaureate Mid Yrs Prog Algebra 1 (#1200390) 2024 - And Beyond (current)

General Course Information and Notes

General Notes

The curriculum description for this IB course is provided at http://www.ibo.org/en/programmes/.

General Information

Course Number: 1200390

Course Path: **Section:** Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Algebra >

Abbreviated Title: IB MYP ALG 1

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Attributes:

- International Baccalaureate (IB)

Course Type: Core Academic Course

Course Level: 3

Course Status: Course Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Algebra 1

Educator Certifications

Middle Grades Mathematics (Middle Grades 5-9)
Mathematics (Grades 6-12)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Equivalent Courses

1200310-Algebra 1 Equivalency start year: 2014
1200386-Pre-Advanced Placement Algebra 1 Equivalency start year: 2018

International Baccalaureate Mid Yrs Prog Algebra 2 (#1200395) 2024 - And Beyond (current)

General Course Information and Notes

General Notes

The curriculum description for this IB course is provided at http://www.ibo.org/en/programmes/.

General Information

Course Number: 1200395

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Algebra >

Abbreviated Title: IB MYP ALG 2

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Attributes:

- International Baccalaureate (IB)

Course Type: Core Academic Course

Course Level: 3

Course Status: Course Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Mathematics

Educator Certifications

Middle Grades Mathematics (Middle Grades 5-9)

Mathematics (Grades 6-12)

Classical Education - Restricted (Elementary and Secondary Grades K-12)
Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Foundational Skills in Mathematics 9-12 (#1200400) 2024 - And Beyond (current)

Course Standards

Name	Description
MA.4.NSO.2.1:	Recall multiplication facts with factors up to 12 and related division facts with automaticity.
MA.5.GR.1.1:	Classify triangles or quadrilaterals into different categories based on shared defining attributes. Explain why a triangle or quadrilateral would or would not belong to a category. **Clarifications:** *Clarification 1:* Triangles include scalene, isosceles, equilateral, acute, obtuse and right; quadrilaterals include parallelograms, rhombi, rectangles, squares and trapezoids.
MA.5.GR.1.2:	Identify and classify three-dimensional figures into categories based on their defining attributes. Figures are limited to right pyramids, right prisms, right circular cylinders, right circular cones and spheres. **Clarifications:** *Clarification 1:* Defining attributes include the number and shape of faces, number and shape of bases, whether or not there is an apex, curved or straight edges and curved or flat faces.
MA.5.GR.2.1:	Find the perimeter and area of a rectangle with fractional or decimal side lengths using visual models and formulas. **Clarifications:** *Clarification 1:* Instruction includes finding the area of a rectangle with fractional side lengths by tiling it with squares having unit fraction side lengths and showing that the area is the same as would be found by multiplying the side lengths. *Clarification 2:* Responses include the appropriate units in word form.
MA.6.AR.1.3:	Evaluate algebraic expressions using substitution and order of operations. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is to perform all operations with integers. *Clarification 2:* Refer to Properties of Operations, Equality and Inequality (Appendix D).
MA.6.AR.3.5:	Solve mathematical and real-world problems involving ratios, rates and unit rates, including comparisons, mixtures, ratios of lengths and conversions within the same measurement system. **Clarifications:** *Clarification 1:* Instruction includes the use of tables, tape diagrams and number lines.
MA.6.DP.1.2:	Given a numerical data set within a real-world context, find and interpret mean, median, mode and range. **Clarifications:** *Clarification 1:* Numerical data is limited to positive rational numbers.
MA.6.GR.1.3:	Solve mathematical and real-world problems by plotting points on a coordinate plane, including finding the perimeter or area of a rectangle. **Clarifications:** *Clarification 1:* Instruction includes finding distances between points, computing dimensions of a rectangle or determining a fourth vertex of a rectangle. *Clarification 2:* Problems involving rectangles are limited to cases where the sides are parallel to the axes.
MA.6.GR.2.2:	Solve mathematical and real-world problems involving the area of quadrilaterals and composite figures by decomposing them into triangles or rectangles. **Clarifications:** *Clarification 1:* Problem types include finding area of composite shapes and determining missing dimensions. *Clarification 2:* Within this benchmark, the expectation is to know from memory a formula for the area of a rectangle and triangle. *Clarification 3:* Dimensions are limited to positive rational numbers.
MA.6.NSO.1.1:	Extend previous understanding of numbers to define rational numbers. Plot, order and compare rational numbers. **Clarifications:** *Clarification 1:* Within this benchmark, the expectation is to plot, order and compare positive and negative rational numbers when given in the same form and to plot, order and compare positive rational numbers when given in different forms (fraction, decimal, percentage). *Clarification 2:* Within this benchmark, the expectation is to use symbols (<, > or =).
MA.6.NSO.4.1:	Apply and extend previous understandings of operations with whole numbers to add and subtract integers with procedural fluency. **Clarifications:** *Clarification 1:* Instruction begins with the use of manipulatives, models and number lines working towards becoming procedurally fluent by the end of grade 6. *Clarification 2:* Instruction focuses on the inverse relationship between the operations of addition and subtraction. If p and q are integers, then p-q=p+(-q) and p+q=p-(-q).
	Apply and extend previous understandings of operations with whole numbers to multiply and divide integers with procedural fluency.

MA.6.NSO.4.2:	**Clarifications:** *Clarification 1:* Instruction includes the use of models and number lines and the inverse relationship between multiplication and division, working towards becoming procedurally fluent by the end of grade 6. *Clarification 2:* Instruction focuses on the understanding that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers where q≠0, then $-\left(\frac{p}{q}\right) = \frac{-p}{q}$, $-\left(\frac{p}{q}\right) = \frac{p}{-q}$ and $\frac{p}{q} = \frac{-p}{-q}$.
MA.7.AR.3.3:	Solve mathematical and real-world problems involving the conversion of units across different measurement systems.
MA.7.AR.4.5:	Solve real-world problems involving proportional relationships.
MA.7.DP.1.2:	Given two numerical or graphical representations of data, use the measure(s) of center and measure(s) of variability to make comparisons, interpret results and draw conclusions about the two populations. **Clarifications:** *Clarification 1:* Graphical representations are limited to histograms, line plots, box plots and stem-and-leaf plots. *Clarification 2:* The measure of center is limited to mean and median. The measure of variation is limited to range and interquartile range.
MA.7.DP.1.5:	Given a real-world numerical or categorical data set, choose and create an appropriate graphical representation. **Clarifications:** *Clarification 1:* Graphical representations are limited to histograms, bar charts, circle graphs, line plots, box plots and stem-and-leaf plots.
MA.7.DP.2.4:	Use a simulation of a simple experiment to find experimental probabilities and compare them to theoretical probabilities. **Clarifications:** *Clarification 1:* Instruction includes representing probability as a fraction, percentage or decimal. *Clarification 2:* Instruction includes recognizing that experimental probabilities may differ from theoretical probabilities due to random variation. As the number of repetitions increases experimental probabilities will typically better approximate the theoretical probabilities. *Clarification 3:* Experiments include tossing a fair coin, rolling a fair die, picking a card randomly from a deck, picking marbles randomly from a bag and spinning a fair spinner.
MA.7.NSO.1.2:	Rewrite rational numbers in different but equivalent forms including fractions, mixed numbers, repeating decimals and percentages to solve mathematical and real-world problems.
MA.7.NSO.2.2:	Add, subtract, multiply and divide rational numbers with procedural fluency.
MA.7.NSO.2.3:	Solve real-world problems involving any of the four operations with rational numbers. **Clarifications:** *Clarification 1:* Instruction includes using one or more operations to solve problems.
MA.8.AR.1.2:	Apply properties of operations to multiply two linear expressions with rational coefficients. **Clarifications:** *Clarification 1:* Problems are limited to products where at least one of the factors is a monomial. *Clarification 2:* Refer to Properties of Operations, Equality and Inequality (Appendix D).
MA.8.AR.1.3:	Rewrite the sum of two algebraic expressions having a common monomial factor as a common factor multiplied by the sum of two algebraic expressions.
MA.8.DP.2.3:	Solve real-world problems involving probabilities related to single or repeated experiments, including making predictions based on theoretical probability. **Clarifications:** *Clarification 1:* Instruction includes making connections to proportional relationships and representing probability as a fraction, percentage or decimal. *Clarification 2:* Experiments to be repeated are limited to tossing a fair coin, rolling a fair die, picking a card randomly from a deck with replacement, picking marbles randomly from a bag with replacement and spinning a fair spinner. *Clarification 3:* Repetition of experiments is limited to two times except for tossing a coin.
MA.8.NSO.1.1:	Extend previous understanding of rational numbers to define irrational numbers within the real number system. Locate an approximate value of a numerical expression involving irrational numbers on a number line. **Clarifications:** *Clarification 1:* Instruction includes the use of number line and rational number approximations, and recognizing pi (π) as an irrational number. *Clarification 2:* Within this benchmark, the expectation is to approximate numerical expressions involving one arithmetic operation and estimating square roots or pi (π).
MA.8.NSO.1.2:	Plot, order and compare rational and irrational numbers, represented in various forms. **Clarifications:** *Clarification 1:* Within this benchmark, it is not the expectation to work with the number e. *Clarification 2:* Within this benchmark, the expectation is to plot, order and compare square roots and cube roots. *Clarification 3:* Within this benchmark, the expectation is to use symbols (<, > or =).
MA.8.NSO.1.7:	Solve multi-step mathematical and real-world problems involving the order of operations with rational numbers including exponents and radicals. **Clarifications:** *Clarification 1:* Multi-step expressions are limited to 6 or fewer steps. *Clarification 2:* Within this benchmark, the expectation is to simplify radicals by factoring square roots of perfect squares up to 225 and cube roots of perfect cubes from -125 to 125.
	Identify and interpret parts of an equation or expression that represent a quantity in terms of a mathematical or real-world context, including viewing one or more of its parts as a single entity.

MA.912.AR.1.1:	**Clarifications:** *Clarification 1:* Parts of an expression include factors, terms, constants, coefficients and variables. *Clarification 2:* Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.1.2:	Rearrange equations or formulas to isolate a quantity of interest. **Clarifications:** *Clarification 1*: Instruction includes using formulas for temperature, perimeter, area and volume; using equations for linear (standard, slope-intercept and point-slope forms) and quadratic (standard, factored and vertex forms) functions. *Clarification 2*: Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.1.3:	Add, subtract and multiply polynomial expressions with rational number coefficients. **Clarifications:** *Clarification 1: I*nstruction includes an understanding that when any of these operations are performed with polynomials the result is also a polynomial. *Clarification 2:* Within the Algebra 1 course, polynomial expressions are limited to 3 or fewer terms.
MA.912.AR.1.4:	Divide a polynomial expression by a monomial expression with rational number coefficients. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, polynomial expressions are limited to 3 or fewer terms.
MA.912.AR.1.5:	Divide polynomial expressions using long division, synthetic division or algebraic manipulation.
MA.912.AR.1.7:	Rewrite a polynomial expression as a product of polynomials over the real number system. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, polynomial expressions are limited to 4 or fewer terms with integer coefficients.
MA.912.AR.1.9:	Apply previous understanding of rational number operations to add, subtract, multiply and divide rational algebraic expressions. **Clarifications:** *Clarification 1*: Instruction includes the connection to fractions and common denominators.
MA.912.AR.2.1:	Given a real-world context, write and solve one-variable multi-step linear equations.
MA.912.AR.2.2:	Write a linear two-variable equation to represent the relationship between two quantities from a graph, a written description or a table of values within a mathematical or real-world context. **Clarifications:** *Clarification 1:* Instruction includes the use of standard form, slope-intercept form and point-slope form, and the conversion between these forms.
MA.912.AR.2.3:	Write a linear two-variable equation for a line that is parallel or perpendicular to a given line and goes through a given point. **Clarifications:** *Clarification 1:* Instruction focuses on recognizing that perpendicular lines have slopes that when multiplied result in -1 and that parallel lines have slopes that are the same. *Clarification 2:* Instruction includes representing a line with a pair of points on the coordinate plane or with an equation. *Clarification 3:* Problems include cases where one variable has a coefficient of zero.
MA.912.AR.2.4:	Given a table, equation or written description of a linear function, graph that function, and determine and interpret its key features. **Clarifications:** *Clarification 1*: Key features are limited to domain, range, intercepts and rate of change. *Clarification 2*: Instruction includes the use of standard form, slope-intercept form and point-slope form. *Clarification 3*: Instruction includes cases where one variable has a coefficient of zero. *Clarification 4*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 5*: Within the Algebra 1 course, notations for domain and range are limited to inequality and set-builder notations.
MA.912.AR.2.5:	Solve and graph mathematical and real-world problems that are modeled with linear functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain, range, intercepts and rate of change. *Clarification 2*: Instruction includes the use of standard form, slope-intercept form and point-slope form. *Clarification 3*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation. *Clarification 4*: Within the Algebra 1 course, notations for domain, range and constraints are limited to inequality and set-builder. *Clarification 5*: Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.2.6:	Given a mathematical or real-world context, write and solve one-variable linear inequalities, including compound inequalities. Represent solutions algebraically or graphically.
MA.912.AR.2.7:	Write two-variable linear inequalities to represent relationships between quantities from a graph or a written description within a mathematical or real-world context. **Clarifications:** *Clarification 1:* Instruction includes the use of standard form, slope-intercept form and point-slope form and any inequality symbol can be represented. *Clarification 2:* Instruction includes cases where one variable has a coefficient of zero.
	Given a mathematical or real-world context, graph the solution set to a two-variable linear inequality.

MA.912.AR.2.8:	**Clarifications:** *Clarification 1:* Instruction includes the use of standard form, slope-intercept form and point-slope form and any inequality symbol can be represented. *Clarification 2:* Instruction includes cases where one variable has a coefficient of zero.
MA.912.AR.3.1:	Given a mathematical or real-world context, write and solve one-variable quadratic equations over the real number system. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, instruction includes the concept of non-real answers, without determining non-real solutions. *Clarification 2:* Within this benchmark, the expectation is to solve by factoring techniques, taking square roots, the quadratic formula and completing the square.
MA.912.AR.3.2:	Given a mathematical or real-world context, write and solve one-variable quadratic equations over the real and complex number systems. **Clarifications:** *Clarification 1*: Within this benchmark, the expectation is to solve by factoring techniques, taking square roots, the quadratic formula and completing the square.
MA.912.AR.3.5:	Given the x-intercepts and another point on the graph of a quadratic function, write the equation for the function.
MA.912.AR.3.6:	Given an expression or equation representing a quadratic function, determine the vertex and zeros and interpret them in terms of a real-world context.
MA.912.AR.3.7:	Given a table, equation or written description of a quadratic function, graph that function, and determine and interpret its key features. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; vertex; and symmetry. *Clarification 2*: Instruction includes the use of standard form, factored form and vertex form, and sketching a graph using the zeros and vertex. *Clarification 3*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 4*: Within the Algebra 1 course, notations for domain and range are limited to inequality and set-builder.
MA.912.AR.3.8:	Solve and graph mathematical and real-world problems that are modeled with quadratic functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; vertex; and symmetry. *Clarification 2*: Instruction includes the use of standard form, factored form and vertex form. *Clarification 3*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation. *Clarification 4*: Within the Algebra 1 course, notations for domain, range and constraints are limited to inequality and set-builder.
MA.912.AR.3.9:	Given a mathematical or real-world context, write two-variable quadratic inequalities to represent relationships between quantities from a graph or a written description. **Clarifications:** *Clarification 1:* Instruction includes the use of standard form, factored form and vertex form where any inequality symbol can be represented.
MA.912.AR.3.10:	Given a mathematical or real-world context, graph the solution set to a two-variable quadratic inequality. **Clarifications:** *Clarification 1*: Instruction includes the use of standard form, factored form and vertex form where any inequality symbol can be represented.
MA.912.AR.4.1:	Given a mathematical or real-world context, write and solve one-variable absolute value equations.
MA.912.AR.4.2:	Given a mathematical or real-world context, write and solve one-variable absolute value inequalities. Represent solutions algebraically or graphically.
MA.912.AR.4.3:	Given a table, equation or written description of an absolute value function, graph that function and determine its key features. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; vertex; end behavior and symmetry. *Clarification 2*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 3*: Within the Algebra 1 course, notations for domain and range are limited to inequality and set-builder.
MA.912.AR.4.4:	Solve and graph mathematical and real-world problems that are modeled with absolute value functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; vertex; end behavior and symmetry. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation.
MA.912.AR.5.1:	Solve one-variable exponential equations using the properties of exponents.
MA.912.AR.5.3:	Given a mathematical or real-world context, classify an exponential function as representing growth or decay. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, exponential functions are limited to the forms $f(x) = ab^x$, where b is a whole number greater than 1 or a unit fraction, or $f(x) = a(1 \pm r)^x$, where $0 < r < 1$.
	Write an exponential function to represent a relationship between two quantities from a graph, a written description or a table of values within a mathematical or real-world context. **Clarifications:**

MA.912.AR.5.4:	*Clarification 1:* Within the Algebra 1 course, exponential functions are limited to the forms $f(x) = ab^x$, where b is a whole number greater than 1 or a unit fraction, or $f(x) = a(1 \pm r)^x$, where $0 < r < 1$. *Clarification 2:* Within the Algebra 1 course, tables are limited to having successive nonnegative integer inputs so that the function may be determined by finding ratios between successive outputs.
MA.912.AR.5.6:	Given a table, equation or written description of an exponential function, graph that function and determine its key features. **Clarifications:** *Clarification 1:* Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; constant percent rate of change; end behavior and asymptotes. *Clarification 2:* Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 3:* Within the Algebra 1 course, notations for domain and range are limited to inequality and set-builder. *Clarification 4:* Within the Algebra 1 course, exponential functions are limited to the forms $f(x) = ab^x$, where b is a whole number greater than 1 or a unit fraction or $f(x) = a(1 \pm r)^x$, where $0 < r < 1$.
MA.912.AR.5.8:	Given a table, equation or written description of a logarithmic function, graph that function and determine its key features. **Clarifications:** *Clarification 1:* Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; and asymptotes. *Clarification 2:* Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation.
MA.912.AR.6.1:	Given a mathematical or real-world context, when suitable factorization is possible, solve one-variable polynomial equations of degree 3 or higher over the real and complex number systems.
MA.912.AR.6.5:	Sketch a rough graph of a polynomial function of degree 3 or higher using zeros, multiplicity and knowledge of end behavior.
MA.912.AR.7.1:	Solve one-variable radical equations. Interpret solutions as viable in terms of context and identify any extraneous solutions.
MA.912.AR.7.2:	Given a table, equation or written description of a square root or cube root function, graph that function and determine its key features. **Clarifications:** *Clarification 1:* Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; and relative maximums and minimums. *Clarification 2:* Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation.
MA.912.AR.8.1:	Write and solve one-variable rational equations. Interpret solutions as viable in terms of the context and identify any extraneous solutions. **Clarifications:** *Clarification 1*: Within the Algebra 2 course, numerators and denominators are limited to linear and quadratic expressions.
MA.912.AR.8.2:	Given a table, equation or written description of a rational function, graph that function and determine its key features. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; and asymptotes. *Clarification 2*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 3*: Within the Algebra 2 course, numerators and denominators are limited to linear and quadratic expressions.
MA.912.AR.9.1:	Given a mathematical or real-world context, write and solve a system of two-variable linear equations algebraically or graphically. **Clarifications:** *Clarification 1*: Within this benchmark, the expectation is to solve systems using elimination, substitution and graphing. *Clarification 2*: Within the Algebra 1 course, the system is limited to two equations.
MA.912.AR.9.4:	Graph the solution set of a system of two-variable linear inequalities. **Clarifications:** *Clarification 1:* Instruction includes cases where one variable has a coefficient of zero. *Clarification 2:* Within the Algebra 1 course, the system is limited to two inequalities.
MA.912.AR.9.6:	Given a real-world context, represent constraints as systems of linear equations or inequalities. Interpret solutions to problems as viable or non-viable options. **Clarifications:** *Clarification 1*: Instruction focuses on analyzing a given function that models a real-world situation and writing constraints that are represented as linear equations or linear inequalities.
MA.912.AR.9.10:	Solve and graph mathematical and real-world problems that are modeled with piecewise functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain, range, intercepts, asymptotes and end behavior. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation.
MA.912.AR.10.1:	Given a mathematical or real-world context, write and solve problems involving arithmetic sequences.
MA.912.AR.10.2:	Given a mathematical or real-world context, write and solve problems involving geometric sequences.
MA.912.DP.1.1:	Given a set of data, select an appropriate method to represent the data, depending on whether it is numerical or categorical data and on whether it is univariate or bivariate. **Clarifications:** *Clarification 1:* Instruction includes discussions regarding the strengths and weaknesses of each data display. *Clarification 2:* Numerical univariate includes histograms, stem-and-leaf plots, box plots and line plots; numerical bivariate includes scatter plots and line graphs; categorical univariate includes bar charts, circle graphs, line plots, frequency tables and relative frequency tables; and

	categorical bivariate includes segmented bar charts, joint frequency tables and joint relative frequency tables. *Clarification 3:* Instruction includes the use of appropriate units and labels and, where appropriate, using technology to create data displays.
MA.912.DP.1.2:	Interpret data distributions represented in various ways. State whether the data is numerical or categorical, whether it is univariate or bivariate and interpret the different components and quantities in the display. **Clarifications:** *Clarification 1*: Within the Probability and Statistics course, instruction includes the use of spreadsheets and technology.
MA.912.DP.1.3:	Explain the difference between correlation and causation in the contexts of both numerical and categorical data.
MA.912.DP.1.4:	Estimate a population total, mean or percentage using data from a sample survey; develop a margin of error through the use of simulation. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, the margin of error will be given.
MA.912.DP.2.1:	For two or more sets of numerical univariate data, calculate and compare the appropriate measures of center and measures of variability, accounting for possible effects of outliers. Interpret any notable features of the shape of the data distribution. **Clarifications:** *Clarification 1*: The measure of center is limited to mean and median. The measure of variation is limited to range, interquartile range, and standard deviation. *Clarification 2*: Shape features include symmetry or skewness and clustering. *Clarification 3*: Within the Probability and Statistics course, instruction includes the use of spreadsheets and technology.
MA.912.DP.2.4:	Fit a linear function to bivariate numerical data that suggests a linear association and interpret the slope and y-intercept of the model. Use the model to solve real-world problems in terms of the context of the data. **Clarifications:** *Clarification 1*: Instruction includes fitting a linear function both informally and formally with the use of technology. *Clarification 2*: Problems include making a prediction or extrapolation, inside and outside the range of the data, based on the equation of the line of fit.
MA.912.DP.2.5:	Given a scatter plot that represents bivariate numerical data, assess the fit of a given linear function by plotting and analyzing residuals. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, instruction includes determining the number of positive and negative residuals; the largest and smallest residuals; and the connection between outliers in the data set and the corresponding residuals.
MA.912.DP.2.6:	Given a scatter plot with a line of fit and residuals, determine the strength and direction of the correlation. Interpret strength and direction within a real-world context. **Clarifications:** *Clarification 1*: Instruction focuses on determining the direction by analyzing the slope and informally determining the strength by analyzing the residuals.
MA.912.DP.3.1:	Construct a two-way frequency table summarizing bivariate categorical data. Interpret joint and marginal frequencies and determine possible associations in terms of a real-world context.
MA.912.DP.3.2:	Given marginal and conditional relative frequencies, construct a two-way relative frequency table summarizing categorical bivariate data. **Clarifications:** *Clarification 1:* Construction includes cases where not all frequencies are given but enough are provided to be able to construct a two-way relative frequency table. *Clarification 2:* Instruction includes the use of a tree diagram when calculating relative frequencies to construct tables.
MA.912.DP.3.3:	Given a two-way relative frequency table or segmented bar graph summarizing categorical bivariate data, interpret joint, marginal and conditional relative frequencies in terms of a real-world context. **Clarifications:** *Clarification 1:* Instruction includes problems involving false positive and false negatives.
MA.912.F.1.1:	Given an equation or graph that defines a function, determine the function type. Given an input-output table, determine a function type that could represent it. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, functions represented as tables are limited to linear, quadratic and exponential. *Clarification 2:* Within the Algebra 1 course, functions represented as equations or graphs are limited to vertical or horizontal translations or reflections over the x-axis of the following parent functions: $f(x)=x$, $f(x)=x^2$, $f(x)=x^3$, $f(x)=\sqrt{x}$, $f(x)=\sqrt[3]{x}$, $f(x)=\lvert x\rvert$, $f(x)=2^x$ and $f(x)=\left(\frac{1}{2}\right)^x$.
MA.912.F.1.2:	Given a function represented in function notation, evaluate the function for an input in its domain. For a real-world context, interpret the output. **Clarifications:** *Clarification 1*: Problems include simple functions in two-variables, such as f(x,y)=3x-2y. *Clarification 2*: Within the Algebra 1 course, functions are limited to one-variable such as f(x)=3x.
MA.912.F.1.3:	Calculate and interpret the average rate of change of a real-world situation represented graphically, algebraically or in a table over a specified interval. **Clarifications:** *Clarification 1*: Instruction includes making the connection to determining the slope of a particular line segment.
MA.912.F.1.5:	Compare key features of linear functions each represented algebraically, graphically, in tables or written descriptions. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; slope and end behavior.

MA.912.F.1.6:	Compare key features of linear and nonlinear functions each represented algebraically, graphically, in tables or written descriptions. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior and asymptotes. *Clarification 2*: Within the Algebra 1 course, functions other than linear, quadratic or exponential must be represented graphically. *Clarification 3*: Within the Algebra 1 course, instruction includes verifying that a quantity increasing exponentially eventually exceeds a quantity increasing linearly or quadratically.
MA.912.F.1.8:	Determine whether a linear, quadratic or exponential function best models a given real-world situation. **Clarifications:** *Clarification 1*: Instruction includes recognizing that linear functions model situations in which a quantity changes by a constant amount per unit interval; that quadratic functions model situations in which a quantity increases to a maximum, then begins to decrease or a quantity decreases to a minimum, then begins to increase; and that exponential functions model situations in which a quantity grows or decays by a constant percent per unit interval. *Clarification 2*: Within this benchmark, the expectation is to identify the type of function from a written description or table.
MA.912.F.2.1:	Identify the effect on the graph or table of a given function after replacing *f(x)* by *f(x)+k,kf(x)*, *f(kx)* and *f(x+k)* for specific values of *k*. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, functions are limited to linear, quadratic and absolute value. *Clarification 2*: Instruction focuses on including positive and negative values for *k*.
MA.912.F.2.3:	Given the graph or table of f(x) and the graph or table of f(x)+k,kf(x), f(kx) and f(x+k), state the type of transformation and find the value of the real number k. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, functions are limited to linear, quadratic and absolute value.
MA.912.F.3.1:	Given a mathematical or real-world context, combine two functions, limited to linear and quadratic, using arithmetic operations. When appropriate, include domain restrictions for the new function. **Clarifications:** *Clarification 1*: Instruction includes representing domain restrictions with inequality notation, interval notation or set-builder notation. *Clarification 2*: Within the Algebra 1 Honors course, notations for domain and range are limited to inequality and set-builder.
MA.912.F.3.6:	Determine whether an inverse function exists by analyzing tables, graphs and equations.
MA.912.FL.1.1:	Extend previous knowledge of operations of fractions, percentages and decimals to solve real-world problems involving money and business. **Clarifications:** *Clarification 1*: Problems include discounts, markups, simple interest, tax, tips, fees, percent increase, percent decrease and percent error.
MA.912.FL.1.2:	Extend previous knowledge of ratios and proportional relationships to solve real-world problems involving money and business.
MA.912.FL.1.3:	Solve real-world problems involving weighted averages using spreadsheets and other technology.
MA.912.FL.3.2:	Solve real-world problems involving simple, compound and continuously compounded interest. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, interest is limited to simple and compound.
MA.912.FL.3.4:	Explain the relationship between simple interest and linear growth. Explain the relationship between compound interest and exponential growth and the relationship between continuously compounded interest and exponential growth. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, exponential growth is limited to compound interest.
MA.912.GR.1.1:	Prove relationships and theorems about lines and angles. Solve mathematical and real-world problems involving postulates, relationships and theorems of lines and angles. **Clarifications:** *Clarification 1*: Postulates, relationships and theorems include vertical angles are congruent; when a transversal crosses parallel lines, the consecutive angles are supplementary and alternate (interior and exterior) angles and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints. *Clarification 2*: Instruction includes constructing two-column proofs, pictorial proofs, paragraph and narrative proofs, flow chart proofs or informal proofs. *Clarification 3*: Instruction focuses on helping a student choose a method they can use reliably.
MA.912.GR.1.2:	Prove triangle congruence or similarity using Side-Side-Side, Side-Angle-Side, Angle-Side-Angle, Angle-Angle-Side, Angle-Angle and Hypotenuse-Leg. **Clarifications:** *Clarification 1*: Instruction includes constructing two-column proofs, pictorial proofs, paragraph and narrative proofs, flow chart proofs or informal proofs. *Clarification 2*: Instruction focuses on helping a student choose a method they can use reliably.
MA.912.GR.1.3:	Prove relationships and theorems about triangles. Solve mathematical and real-world problems involving postulates, relationships and theorems of triangles. **Clarifications:** *Clarification 1*: Postulates, relationships and theorems include measures of interior angles of a triangle sum to 180°; measures of a set of exterior angles of a triangle sum to 360°; triangle inequality theorem; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point. *Clarification 2*: Instruction includes constructing two-column proofs, pictorial proofs, paragraph and narrative proofs, flow chart proofs or informal proofs. *Clarification 3*: Instruction focuses on helping a student choose a method they can use reliably.

MA.912.GR.1.4:	Prove relationships and theorems about parallelograms. Solve mathematical and real-world problems involving postulates, relationships and theorems of parallelograms. **Clarifications:** *Clarification 1*: Postulates, relationships and theorems include opposite sides are congruent, consecutive angles are supplementary, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and rectangles are parallelograms with congruent diagonals. *Clarification 2*: Instruction includes constructing two-column proofs, pictorial proofs, paragraph and narrative proofs, flow chart proofs or informal proofs. *Clarification 3*: Instruction focuses on helping a student choose a method they can use reliably.
MA.912.GR.1.5:	Prove relationships and theorems about trapezoids. Solve mathematical and real-world problems involving postulates, relationships and theorems of trapezoids. **Clarifications:** *Clarification 1*: Postulates, relationships and theorems include the Trapezoid Midsegment Theorem and for isosceles trapezoids: base angles are congruent, opposite angles are supplementary and diagonals are congruent. *Clarification 2*: Instruction includes constructing two-column proofs, pictorial proofs, paragraph and narrative proofs, flow chart proofs or informal proofs. *Clarification 3*: Instruction focuses on helping a student choose a method they can use reliably.
MA.912.GR.1.6:	Solve mathematical and real-world problems involving congruence or similarity in two-dimensional figures. **Clarifications:** *Clarification 1:* Instruction includes demonstrating that two-dimensional figures are congruent or similar based on given information.
MA.912.GR.2.1:	Given a preimage and image, describe the transformation and represent the transformation algebraically using coordinates. **Clarifications:** *Clarification 1*: Instruction includes the connection of transformations to functions that take points in the plane as inputs and give other points in the plane as outputs. *Clarification 2*: Transformations include translations, dilations, rotations and reflections described using words or using coordinates. *Clarification 3*: Within the Geometry course, rotations are limited to 90°, 180° and 270° counterclockwise or clockwise about the center of rotation, and the centers of rotations and dilations are limited to the origin or a point on the figure.
MA.912.GR.2.2:	Identify transformations that do or do not preserve distance. **Clarifications:** *Clarification 1*: Transformations include translations, dilations, rotations and reflections described using words or using coordinates. *Clarification 2*: Instruction includes recognizing that these transformations preserve angle measure.
MA.912.GR.2.3:	Identify a sequence of transformations that will map a given figure onto itself or onto another congruent or similar figure. **Clarifications:** *Clarification 1*: Transformations include translations, dilations, rotations and reflections described using words or using coordinates. *Clarification 2*: Within the Geometry course, figures are limited to triangles and quadrilaterals and rotations are limited to 90°, 180° and 270° counterclockwise or clockwise about the center of rotation. *Clarification 3*: Instruction includes the understanding that when a figure is mapped onto itself using a reflection, it occurs over a line of symmetry.
MA.912.GR.2.5:	Given a geometric figure and a sequence of transformations, draw the transformed figure on a coordinate plane. **Clarifications:** *Clarification 1*: Transformations include translations, dilations, rotations and reflections described using words or using coordinates. *Clarification 2*: Instruction includes two or more transformations.
MA.912.GR.2.6:	Apply rigid transformations to map one figure onto another to justify that the two figures are congruent. **Clarifications:** *Clarification 1*: Instruction includes showing that the corresponding sides and the corresponding angles are congruent.
MA.912.GR.2.8:	Apply an appropriate transformation to map one figure onto another to justify that the two figures are similar. **Clarifications:** *Clarification 1*: Instruction includes showing that the corresponding sides are proportional, and the corresponding angles are congruent.
MA.912.GR.3.1:	Determine the weighted average of two or more points on a line. **Clarifications:** *Clarification 1*: Instruction includes using a number line and determining how changing the weights moves the weighted average of points on the number line.
MA.912.GR.3.2:	Given a mathematical context, use coordinate geometry to classify or justify definitions, properties and theorems involving circles, triangles or quadrilaterals. **Clarifications:** *Clarification 1*: Instruction includes using the distance or midpoint formulas and knowledge of slope to classify or justify definitions, properties and theorems.
MA.912.GR.3.3:	Use coordinate geometry to solve mathematical and real-world geometric problems involving lines, circles, triangles and quadrilaterals. **Clarifications:** *Clarification 1*: Problems involving lines include the coordinates of a point on a line segment including the midpoint. *Clarification 2*: Problems involving circles include determining points on a given circle and finding tangent lines. *Clarification 3*: Problems involving triangles include median and centroid.

	Clarification 4: Problems involving quadrilaterals include using parallel and perpendicular slope criteria.
MA.912.GR.3.4:	Use coordinate geometry to solve mathematical and real-world problems on the coordinate plane involving perimeter or area of polygons.
MA.912.GR.4.1:	Identify the shapes of two-dimensional cross-sections of three-dimensional figures. **Clarifications:** *Clarification 1*: Instruction includes the use of manipulatives and models to visualize cross-sections. *Clarification 2*: Instruction focuses on cross-sections of right cylinders, right prisms, right pyramids and right cones that are parallel or perpendicular to the base.
MA.912.GR.4.2:	Identify three-dimensional objects generated by rotations of two-dimensional figures. **Clarifications:** *Clarification 1*: The axis of rotation must be within the same plane but outside of the given two-dimensional figure.
MA.912.GR.4.3:	Extend previous understanding of scale drawings and scale factors to determine how dilations affect the area of two-dimensional figures and the surface area or volume of three-dimensional figures.
MA.912.GR.4.4:	Solve mathematical and real-world problems involving the area of two-dimensional figures. **Clarifications:** *Clarification 1*: Instruction includes concepts of population density based on area.
MA.912.GR.4.5:	Solve mathematical and real-world problems involving the volume of three-dimensional figures limited to cylinders, pyramids, prisms, cones and spheres. **Clarifications:** *Clarification 1:* Instruction includes concepts of density based on volume. *Clarification 2:* Instruction includes using Cavalieri's Principle to give informal arguments about the formulas for the volumes of right and non-right cylinders, pyramids, prisms and cones.
MA.912.GR.4.6:	Solve mathematical and real-world problems involving the surface area of three-dimensional figures limited to cylinders, pyramids, prisms, cones and spheres.
MA.912.GR.5.1:	Construct a copy of a segment or an angle. **Clarifications:** *Clarification 1*: Instruction includes using compass and straightedge, string, reflective devices, paper folding or dynamic geometric software.
MA.912.GR.5.2:	Construct the bisector of a segment or an angle, including the perpendicular bisector of a line segment. **Clarifications:** *Clarification 1*: Instruction includes using compass and straightedge, string, reflective devices, paper folding or dynamic geometric software.
MA.912.GR.5.3:	Construct the inscribed and circumscribed circles of a triangle. **Clarifications:** *Clarification 1*: Instruction includes using compass and straightedge, string, reflective devices, paper folding or dynamic geometric software.
MA.912.GR.5.4:	Construct a regular polygon inscribed in a circle. Regular polygons are limited to triangles, quadrilaterals and hexagons. **Clarifications:** *Clarification 1*: When given a circle, the center must be provided. *Clarification 2*: Instruction includes using compass and straightedge, string, reflective devices, paper folding or dynamic geometric software.
MA.912.GR.5.5:	Given a point outside a circle, construct a line tangent to the circle that passes through the given point. **Clarifications:** *Clarification 1*: When given a circle, the center must be provided. *Clarification 2*: Instruction includes using compass and straightedge, string, reflective devices, paper folding or dynamic geometric software.
MA.912.GR.6.1:	Solve mathematical and real-world problems involving the length of a secant, tangent, segment or chord in a given circle. **Clarifications:** *Clarification 1:* Problems include relationships between two chords; two secants; a secant and a tangent; and the length of the tangent from a point to a circle.
MA.912.GR.6.2:	Solve mathematical and real-world problems involving the measures of arcs and related angles. **Clarifications:** *Clarification 1*: Within the Geometry course, problems are limited to relationships between inscribed angles; central angles; and angles formed by the following intersections: a tangent and a secant through the center, two tangents, and a chord and its perpendicular bisector.
MA.912.GR.6.3:	Solve mathematical problems involving triangles and quadrilaterals inscribed in a circle. **Clarifications:** *Clarification 1*: Instruction includes cases in which a triangle inscribed in a circle has a side that is the diameter.
MA.912.GR.6.4:	Solve mathematical and real-world problems involving the arc length and area of a sector in a given circle. **Clarifications:** *Clarification 1*: Instruction focuses on the conceptual understanding that for a given angle measure the length of the intercepted arc is proportional to the radius, and for a given radius the length of the intercepted arc is proportional is the angle measure.
MA.912.GR.7.2:	Given a mathematical or real-world context, derive and create the equation of a circle using key features. **Clarifications:** *Clarification 1:* Instruction includes using the Pythagorean Theorem and completing the square. *Clarification 2:* Within the Geometry course, key features are limited to the radius, diameter and the center.
	Graph and solve mathematical and real-world problems that are modeled with an equation of a circle. Determine and interpret key features in terms of the context. **Clarifications:**

MA.912.GR.7.3:	*Clarification 1*: Key features are limited to domain, range, eccentricity, center and radius. *Clarification 2*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 3*: Within the Geometry course, notations for domain and range are limited to inequality and set-builder.
MA.912.NSO.1.1:	Extend previous understanding of the Laws of Exponents to include rational exponents. Apply the Laws of Exponents to evaluate numerical expressions and generate equivalent numerical expressions involving rational exponents. **Clarifications:** *Clarification 1:* Instruction includes the use of technology when appropriate. *Clarification 2:* Refer to the K-12 Formulas (Appendix E) for the Laws of Exponents. *Clarification 3:* Instruction includes converting between expressions involving rational exponents and expressions involving radicals. *Clarification 4:*Within the Mathematics for Data and Financial Literacy course, it is not the expectation to generate equivalent numerical expressions.
MA.912.NSO.1.2:	Generate equivalent algebraic expressions using the properties of exponents.
MA.912.NSO.1.4:	Apply previous understanding of operations with rational numbers to add, subtract, multiply and divide numerical radicals. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, expressions are limited to a single arithmetic operation involving two square roots or two cube roots.
MA.912.NSO.1.6:	Given a numerical logarithmic expression, evaluate and generate equivalent numerical expressions using the properties of logarithms or exponents. **Clarifications:** *Clarification 1*: Within the Mathematics for Data and Financial Literacy Honors course, problem types focus on money and business.
MA.912.NSO.2.2:	Represent addition, subtraction, multiplication and conjugation of complex numbers geometrically on the complex plane.
MA.912.T.1.1:	Define trigonometric ratios for acute angles in right triangles. **Clarifications:** *Clarification 1*: Instruction includes using the Pythagorean Theorem and using similar triangles to demonstrate that trigonometric ratios stay the same for similar right triangles. *Clarification 2*: Within the Geometry course, instruction includes using the coordinate plane to make connections to the unit circle. *Clarification 3*: Within the Geometry course, trigonometric ratios are limited to sine, cosine and tangent.
MA.912.T.1.2:	Solve mathematical and real-world problems involving right triangles using trigonometric ratios and the Pythagorean Theorem. **Clarifications:** *Clarification 1*: Instruction includes procedural fluency with the relationships of side lengths in special right triangles having angle measures of 30°-60°-90° and 45°-45°-90°.
MA.K12.MTR.1.1:	**Actively participate in effortful learning both individually and collectively.** Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task. • Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach. **Clarifications:** Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging. • Develop students' ability to analyze and problem solve. • Recognize students' effort when solving challenging problems.
MA.K12.MTR.2.1:	**Demonstrate understanding by representing problems in multiple ways.** Mathematicians who demonstrate understanding by representing problems in multiple ways: • Build understanding through modeling and using manipulatives. • Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. • Progress from modeling problems with objects and drawings to using algorithms and equations. • Express connections between concepts and representations. • Choose a representation based on the given context or purpose. **Clarifications:** Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: • Help students make connections between concepts and representations. • Provide opportunities for students to use manipulatives when investigating concepts. • Guide students from concrete to pictorial to abstract representations as understanding progresses. • Show students that various representations can have different purposes and can be useful in different situations.
	Complete tasks with mathematical fluency. Mathematicians who complete tasks with mathematical fluency: • Select efficient and appropriate methods for solving problems within the given context. • Maintain flexibility and accuracy while performing procedures and mental calculations. • Complete tasks accurately and with confidence.

MA.K12.MTR.3.1:	• Adapt procedures to apply them to a new context. • Use feedback to improve efficiency when performing calculations. **Clarifications:** Teachers who encourage students to complete tasks with mathematical fluency: • Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately. • Offer multiple opportunities for students to practice efficient and generalizable methods. • Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.
MA.K12.MTR.4.1:	**Engage in discussions that reflect on the mathematical thinking of self and others.** Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others: • Communicate mathematical ideas, vocabulary and methods effectively. • Analyze the mathematical thinking of others. • Compare the efficiency of a method to those expressed by others. • Recognize errors and suggest how to correctly solve the task. • Justify results by explaining methods and processes. • Construct possible arguments based on evidence. **Clarifications:** Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: • Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning. • Create opportunities for students to discuss their thinking with peers. • Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. • Develop students' ability to justify methods and compare their responses to the responses of their peers.
MA.K12.MTR.5.1:	**Use patterns and structure to help understand and connect mathematical concepts.** Mathematicians who use patterns and structure to help understand and connect mathematical concepts: • Focus on relevant details within a problem. • Create plans and procedures to logically order events, steps or ideas to solve problems. • Decompose a complex problem into manageable parts. • Relate previously learned concepts to new concepts. • Look for similarities among problems. • Connect solutions of problems to more complicated large-scale situations. **Clarifications:** Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts: • Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts. • Support students to develop generalizations based on the similarities found among problems. • Provide opportunities for students to create plans and procedures to solve problems. • Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.
MA.K12.MTR.6.1:	**Assess the reasonableness of solutions.** Mathematicians who assess the reasonableness of solutions: • Estimate to discover possible solutions. • Use benchmark quantities to determine if a solution makes sense. • Check calculations when solving problems. • Verify possible solutions by explaining the methods used. • Evaluate results based on the given context. **Clarifications:** Teachers who encourage students to assess the reasonableness of solutions: • Have students estimate or predict solutions prior to solving. • Prompt students to continually ask, "Does this solution make sense? How do you know?" • Reinforce that students check their work as they progress within and after a task. • Strengthen students' ability to verify solutions through justifications.
MA.K12.MTR.7.1:	**Apply mathematics to real-world contexts.** Mathematicians who apply mathematics to real-world contexts: • Connect mathematical concepts to everyday experiences. • Use models and methods to understand, represent and solve problems. • Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency. **Clarifications:** Teachers who encourage students to apply mathematics to real-world contexts: • Provide opportunities for students to create models, both concrete and abstract, and perform investigations. • Challenge students to question the accuracy of their models and methods. • Support students as they validate conclusions by comparing them to the given situation. • Indicate how various concepts can be applied to other disciplines.
	Cite evidence to explain and justify reasoning. **Clarifications:** K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing. 2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations.

ELA.K12.EE.1.1:	4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they've directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor. 6-8 Students continue with previous skills and use a style guide to create a proper citation. 9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.
ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.
ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like "Why is the girl smiling?" or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
ELA.K12.EE.4.1:	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully. In grades 1-2, students build upon these skills by justifying what they are thinking. For example: "I think _______ because ______." The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
ELA.K12.EE.5.1:	Use the accepted rules governing a specific format to create quality work. **Clarifications:** Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.
ELA.K12.EE.6.1:	Use appropriate voice and tone when speaking or writing. **Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.
ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.

General Course Information and Notes

VERSION DESCRIPTION

This course supports students who need additional instruction in foundational mathematics skills as it relates to core instruction. Instruction will use explicit, systematic, and sequential approaches to mathematics instruction addressing all strands including number sense & operations, algebraic reasoning, functions, geometric reasoning and data analysis & probability. Teachers will use the listed benchmarks that correspond to each students' needs.

Effective instruction matches instruction to the need of the students in the group and provides multiple opportunities to practice the skill and receive feedback. The additional time allotted for this course is in addition to core instruction. The intervention includes materials and strategies designed to supplement core instruction.

General Notes

Florida's Benchmarks for Excellent Student Thinking (B.E.S.T.) Standards
This course includes Florida's B.E.S.T. ELA Expectations (EE) and Mathematical Thinking and Reasoning Standards (MTRs) for students. Florida educators should intentionally embed these standards within the content and their instruction as applicable. For guidance on the implementation of the EEs and MTRs, please visit https://www.cpalms.org/Standards/BEST_Standards.aspx and select the appropriate B.E.S.T. Standards package.

English Language Development ELD Standards Special Notes Section:

Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link: https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf

General Information

Course Number: 1200400

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics >

SubSubject: Remedial >

Abbreviated Title: FDN SKILLS MATH 9-12

Number of Credits: Multiple Credit (more than 1 credit)

Course Length: Multiple (M) - Course length can vary

Course Type: Elective Course

Course Level: 2

Course Status: Course Approved

Grade Level(s): 9,10,11,12

Educator Certifications

Mathematics (Grades 6-12)
Middle Grades Mathematics (Middle Grades 5-9)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Florida Advanced Course and Test (FACT) College Algebra (#1200550) 2025 - And Beyond (current)

Course Standards

Name	Description
MA.912.AR.1.2:	Rearrange equations or formulas to isolate a quantity of interest. **Clarifications:** *Clarification 1*: Instruction includes using formulas for temperature, perimeter, area and volume; using equations for linear (standard, slope-intercept and point-slope forms) and quadratic (standard, factored and vertex forms) functions. *Clarification 2*: Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.1.3:	Add, subtract and multiply polynomial expressions with rational number coefficients. **Clarifications:** *Clarification 1: I*nstruction includes an understanding that when any of these operations are performed with polynomials the result is also a polynomial. *Clarification 2:* Within the Algebra 1 course, polynomial expressions are limited to 3 or fewer terms.
MA.912.AR.1.7:	Rewrite a polynomial expression as a product of polynomials over the real number system. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, polynomial expressions are limited to 4 or fewer terms with integer coefficients.
MA.912.AR.2.1:	Given a real-world context, write and solve one-variable multi-step linear equations.
MA.912.AR.2.2:	Write a linear two-variable equation to represent the relationship between two quantities from a graph, a written description or a table of values within a mathematical or real-world context. **Clarifications:** *Clarification 1:* Instruction includes the use of standard form, slope-intercept form and point-slope form, and the conversion between these forms.
MA.912.AR.2.3:	Write a linear two-variable equation for a line that is parallel or perpendicular to a given line and goes through a given point. **Clarifications:** *Clarification 1:* Instruction focuses on recognizing that perpendicular lines have slopes that when multiplied result in -1 and that parallel lines have slopes that are the same. *Clarification 2:* Instruction includes representing a line with a pair of points on the coordinate plane or with an equation. *Clarification 3:* Problems include cases where one variable has a coefficient of zero.
MA.912.AR.2.4:	Given a table, equation or written description of a linear function, graph that function, and determine and interpret its key features. **Clarifications:** *Clarification 1*: Key features are limited to domain, range, intercepts and rate of change. *Clarification 2*: Instruction includes the use of standard form, slope-intercept form and point-slope form. *Clarification 3*: Instruction includes cases where one variable has a coefficient of zero. *Clarification 4*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 5*: Within the Algebra 1 course, notations for domain and range are limited to inequality and set-builder notations.
MA.912.AR.2.5:	Solve and graph mathematical and real-world problems that are modeled with linear functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain, range, intercepts and rate of change. *Clarification 2*: Instruction includes the use of standard form, slope-intercept form and point-slope form. *Clarification 3*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation. *Clarification 4*: Within the Algebra 1 course, notations for domain, range and constraints are limited to inequality and set-builder. *Clarification 5*: Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.2.6:	Given a mathematical or real-world context, write and solve one-variable linear inequalities, including compound inequalities. Represent solutions algebraically or graphically.
MA.912.AR.3.1:	Given a mathematical or real-world context, write and solve one-variable quadratic equations over the real number system. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, instruction includes the concept of non-real answers, without determining non-real solutions. *Clarification 2:* Within this benchmark, the expectation is to solve by factoring techniques, taking square roots, the quadratic formula and completing the square.

MA.912.AR.3.4:	Write a quadratic function to represent the relationship between two quantities from a graph, a written description or a table of values within a mathematical or real-world context. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, a graph, written description or table of values must include the vertex and two points that are equidistant from the vertex. *Clarification 2*: Instruction includes the use of standard form, factored form and vertex form. *Clarification 3*: Within the Algebra 2 course, one of the given points must be the vertex or an *x*-intercept.
MA.912.AR.3.5:	Given the x-intercepts and another point on the graph of a quadratic function, write the equation for the function.
MA.912.AR.3.6:	Given an expression or equation representing a quadratic function, determine the vertex and zeros and interpret them in terms of a real-world context.
MA.912.AR.3.7:	Given a table, equation or written description of a quadratic function, graph that function, and determine and interpret its key features. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; vertex; and symmetry. *Clarification 2*: Instruction includes the use of standard form, factored form and vertex form, and sketching a graph using the zeros and vertex. *Clarification 3*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 4*: Within the Algebra 1 course, notations for domain and range are limited to inequality and set-builder.
MA.912.AR.3.8:	Solve and graph mathematical and real-world problems that are modeled with quadratic functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; vertex; and symmetry. *Clarification 2*: Instruction includes the use of standard form, factored form and vertex form. *Clarification 3*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation. *Clarification 4*: Within the Algebra 1 course, notations for domain, range and constraints are limited to inequality and set-builder.
MA.912.AR.4.1:	Given a mathematical or real-world context, write and solve one-variable absolute value equations.
MA.912.AR.4.2:	Given a mathematical or real-world context, write and solve one-variable absolute value inequalities. Represent solutions algebraically or graphically.
MA.912.AR.4.3:	Given a table, equation or written description of an absolute value function, graph that function and determine its key features. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; vertex; end behavior and symmetry. *Clarification 2*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 3*: Within the Algebra 1 course, notations for domain and range are limited to inequality and set-builder.
MA.912.AR.4.4:	Solve and graph mathematical and real-world problems that are modeled with absolute value functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; vertex; end behavior and symmetry. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation.
MA.912.AR.5.1:	Solve one-variable exponential equations using the properties of exponents.
MA.912.AR.5.2:	Solve one-variable equations involving logarithms or exponential expressions. Interpret solutions as viable in terms of the context and identify any extraneous solutions.
MA.912.AR.5.3:	Given a mathematical or real-world context, classify an exponential function as representing growth or decay. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, exponential functions are limited to the forms $f(x) = ab^x$, where *b* is a whole number greater than 1 or a unit fraction, or $f(x) = a(1 \pm r)^x$, where $0 < r < 1$.
MA.912.AR.5.4:	Write an exponential function to represent a relationship between two quantities from a graph, a written description or a table of values within a mathematical or real-world context. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, exponential functions are limited to the forms $f(x) = ab^x$, where *b* is a whole number greater than 1 or a unit fraction, or $f(x) = a(1 \pm r)^x$, where $0 < r < 1$. *Clarification 2:* Within the Algebra 1 course, tables are limited to having successive nonnegative integer inputs so that the function may be determined by finding ratios between successive outputs.
MA.912.AR.5.6:	Given a table, equation or written description of an exponential function, graph that function and determine its key features. **Clarifications:** *Clarification 1:* Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; constant percent rate of change; end behavior and asymptotes. *Clarification 2:* Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 3:* Within the Algebra 1 course, notations for domain and range are limited to inequality and set-builder. *Clarification 4:* Within the Algebra 1 course, exponential functions are limited to the forms $f(x) = ab^x$, where *b* is a whole number greater than

	1 or a unit fraction or $f(x) = a(1 \pm r)^x$, where $0 < r < 1$.
MA.912.AR.5.7:	Solve and graph mathematical and real-world problems that are modeled with exponential functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; constant percent rate of change; end behavior and asymptotes. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation. *Clarification 3*: Instruction includes understanding that when the logarithm of the dependent variable is taken and graphed, the exponential function will be transformed into a linear function. *Clarification 4*: Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.5.8:	Given a table, equation or written description of a logarithmic function, graph that function and determine its key features. **Clarifications:** *Clarification 1:* Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; and asymptotes. *Clarification 2:* Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation.
MA.912.AR.5.9:	Solve and graph mathematical and real-world problems that are modeled with logarithmic functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; and asymptotes. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation.
MA.912.AR.6.1:	Given a mathematical or real-world context, when suitable factorization is possible, solve one-variable polynomial equations of degree 3 or higher over the real and complex number systems.
MA.912.AR.6.4:	Given a table, equation or written description of a polynomial function of degree 3 or higher, graph that function and determine its key features. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; relative maximums and minimums; symmetry; and end behavior. *Clarification 2*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation.
MA.912.AR.6.5:	Sketch a rough graph of a polynomial function of degree 3 or higher using zeros, multiplicity and knowledge of end behavior.
MA.912.AR.7.1:	Solve one-variable radical equations. Interpret solutions as viable in terms of context and identify any extraneous solutions.
MA.912.AR.8.1:	Write and solve one-variable rational equations. Interpret solutions as viable in terms of the context and identify any extraneous solutions. **Clarifications:** *Clarification 1*: Within the Algebra 2 course, numerators and denominators are limited to linear and quadratic expressions.
MA.912.AR.9.1:	Given a mathematical or real-world context, write and solve a system of two-variable linear equations algebraically or graphically. **Clarifications:** *Clarification 1*: Within this benchmark, the expectation is to solve systems using elimination, substitution and graphing. *Clarification 2*: Within the Algebra 1 course, the system is limited to two equations.
MA.912.AR.9.4:	Graph the solution set of a system of two-variable linear inequalities. **Clarifications:** *Clarification 1:* Instruction includes cases where one variable has a coefficient of zero. *Clarification 2:* Within the Algebra 1 course, the system is limited to two inequalities.
MA.912.AR.9.5:	Graph the solution set of a system of two-variable inequalities. **Clarifications:** *Clarification 1:* Within the Algebra 2 course, two-variable inequalities are limited to linear and quadratic.
MA.912.AR.9.6:	Given a real-world context, represent constraints as systems of linear equations or inequalities. Interpret solutions to problems as viable or non-viable options. **Clarifications:** *Clarification 1*: Instruction focuses on analyzing a given function that models a real-world situation and writing constraints that are represented as linear equations or linear inequalities.
MA.912.DP.2.4:	Fit a linear function to bivariate numerical data that suggests a linear association and interpret the slope and y-intercept of the model. Use the model to solve real-world problems in terms of the context of the data. **Clarifications:** *Clarification 1*: Instruction includes fitting a linear function both informally and formally with the use of technology. *Clarification 2*: Problems include making a prediction or extrapolation, inside and outside the range of the data, based on the equation of the line of fit.
MA.912.F.1.1:	Given an equation or graph that defines a function, determine the function type. Given an input-output table, determine a function type that could represent it. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, functions represented as tables are limited to linear, quadratic and exponential. *Clarification 2:* Within the Algebra 1 course, functions represented as equations or graphs are limited to vertical or horizontal translations or

	reflections over the x-axis of the following parent functions: $f(x) = x$, $f(x) = x^2$, $f(x) = x^3$, $f(x) = \sqrt{x}$, $f(x) = \sqrt[3]{x}$, $f(x) = \lvert x \rvert$, $f(x) = 2^x$ and $f(x) = \left(\frac{1}{2}\right)^x$.
MA.912.F.1.2:	Given a function represented in function notation, evaluate the function for an input in its domain. For a real-world context, interpret the output. **Clarifications:** *Clarification 1*: Problems include simple functions in two-variables, such as f(x,y)=3x-2y. *Clarification 2*: Within the Algebra 1 course, functions are limited to one-variable such as f(x)=3x.
MA.912.F.1.3:	Calculate and interpret the average rate of change of a real-world situation represented graphically, algebraically or in a table over a specified interval. **Clarifications:** *Clarification 1*: Instruction includes making the connection to determining the slope of a particular line segment.
MA.912.F.1.9:	Determine whether a function is even, odd or neither when represented algebraically, graphically or in a table.
MA.912.F.2.1:	Identify the effect on the graph or table of a given function after replacing *f(x)* by *f(x)+k,kf(x)*, *f(kx)* and *f(x+k)* for specific values of *k.* **Clarifications:** *Clarification 1*: Within the Algebra 1 course, functions are limited to linear, quadratic and absolute value. *Clarification 2*: Instruction focuses on including positive and negative values for *k.*
MA.912.F.2.2:	Identify the effect on the graph of a given function of two or more transformations defined by adding a real number to the x- or y- values or multiplying the x- or y- values by a real number.
MA.912.F.2.3:	Given the graph or table of f(x) and the graph or table of f(x)+k,kf(x), f(kx) and f(x+k), state the type of transformation and find the value of the real number k. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, functions are limited to linear, quadratic and absolute value.
MA.912.F.2.4:	Given the graph or table of values of two or more transformations of a function, state the type of transformation and find the values of the real number that defines the transformation.
MA.912.F.2.5:	Given a table, equation or graph that represents a function, create a corresponding table, equation or graph of the transformed function defined by adding a real number to the *x*- or *y*-values or multiplying the *x*- or *y*-values by a real number.
MA.912.F.3.4:	Represent the composition of two functions algebraically or in a table. Determine the domain and range of the composite function.
MA.912.F.3.5:	Solve mathematical and real-world problems involving composite functions.
MA.912.F.3.6:	Determine whether an inverse function exists by analyzing tables, graphs and equations.
MA.912.F.3.7:	Represent the inverse of a function algebraically, graphically or in a table. Use composition of functions to verify that one function is the inverse of the other. **Clarifications:** *Clarification 1*: Instruction includes the understanding that a logarithmic function is the inverse of an exponential function.
MA.912.NSO.1.1:	Extend previous understanding of the Laws of Exponents to include rational exponents. Apply the Laws of Exponents to evaluate numerical expressions and generate equivalent numerical expressions involving rational exponents. **Clarifications:** *Clarification 1:* Instruction includes the use of technology when appropriate. *Clarification 2:* Refer to the K-12 Formulas (Appendix E) for the Laws of Exponents. *Clarification 3:* Instruction includes converting between expressions involving rational exponents and expressions involving radicals. *Clarification 4:*Within the Mathematics for Data and Financial Literacy course, it is not the expectation to generate equivalent numerical expressions.
MA.912.NSO.1.2:	Generate equivalent algebraic expressions using the properties of exponents.
MA.912.NSO.1.3:	Generate equivalent algebraic expressions involving radicals or rational exponents using the properties of exponents. **Clarifications:** *Clarification 1*: Within the Algebra 2 course, radicands are limited to monomial algebraic expressions.
MA.912.NSO.1.4:	Apply previous understanding of operations with rational numbers to add, subtract, multiply and divide numerical radicals. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, expressions are limited to a single arithmetic operation involving two square roots or two cube roots.
MA.912.NSO.1.5:	Add, subtract, multiply and divide algebraic expressions involving radicals. **Clarifications:** *Clarification 1*: Within the Algebra 2 course, radicands are limited to monomial algebraic expressions.
MA.912.NSO.1.6:	Given a numerical logarithmic expression, evaluate and generate equivalent numerical expressions using the properties of logarithms or exponents. **Clarifications:** *Clarification 1*: Within the Mathematics for Data and Financial Literacy Honors course, problem types focus on money and business.
MA.912.NSO.1.7:	Given an algebraic logarithmic expression, generate an equivalent algebraic expression using the properties of logarithms or exponents. **Clarifications:** *Clarification 1*: Within the Mathematics for Data and Financial Literacy Honors course, problem types focus on money and business.
MA.912.NSO.2.1:	Extend previous understanding of the real number system to include the complex number system. Add, subtract, multiply and divide complex numbers.
	Actively participate in effortful learning both individually and collectively. Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task.

MA.K12.MTR.1.1:	• Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach. **Clarifications:** Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging. • Develop students' ability to analyze and problem solve. • Recognize students' effort when solving challenging problems.
MA.K12.MTR.2.1:	**Demonstrate understanding by representing problems in multiple ways.** Mathematicians who demonstrate understanding by representing problems in multiple ways: • Build understanding through modeling and using manipulatives. • Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. • Progress from modeling problems with objects and drawings to using algorithms and equations. • Express connections between concepts and representations. • Choose a representation based on the given context or purpose. **Clarifications:** Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: • Help students make connections between concepts and representations. • Provide opportunities for students to use manipulatives when investigating concepts. • Guide students from concrete to pictorial to abstract representations as understanding progresses. • Show students that various representations can have different purposes and can be useful in different situations.
MA.K12.MTR.3.1:	**Complete tasks with mathematical fluency.** Mathematicians who complete tasks with mathematical fluency: • Select efficient and appropriate methods for solving problems within the given context. • Maintain flexibility and accuracy while performing procedures and mental calculations. • Complete tasks accurately and with confidence. • Adapt procedures to apply them to a new context. • Use feedback to improve efficiency when performing calculations. **Clarifications:** Teachers who encourage students to complete tasks with mathematical fluency: • Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately. • Offer multiple opportunities for students to practice efficient and generalizable methods. • Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.
MA.K12.MTR.4.1:	**Engage in discussions that reflect on the mathematical thinking of self and others.** Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others: • Communicate mathematical ideas, vocabulary and methods effectively. • Analyze the mathematical thinking of others. • Compare the efficiency of a method to those expressed by others. • Recognize errors and suggest how to correctly solve the task. • Justify results by explaining methods and processes. • Construct possible arguments based on evidence. **Clarifications:** Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: • Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning. • Create opportunities for students to discuss their thinking with peers. • Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. • Develop students' ability to justify methods and compare their responses to the responses of their peers.
MA.K12.MTR.5.1:	**Use patterns and structure to help understand and connect mathematical concepts.** Mathematicians who use patterns and structure to help understand and connect mathematical concepts: • Focus on relevant details within a problem. • Create plans and procedures to logically order events, steps or ideas to solve problems. • Decompose a complex problem into manageable parts. • Relate previously learned concepts to new concepts. • Look for similarities among problems. • Connect solutions of problems to more complicated large-scale situations. **Clarifications:** Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts: • Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts. • Support students to develop generalizations based on the similarities found among problems. • Provide opportunities for students to create plans and procedures to solve problems. • Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.
	Assess the reasonableness of solutions.

MA.K12.MTR.6.1:	Mathematicians who assess the reasonableness of solutions: • Estimate to discover possible solutions. • Use benchmark quantities to determine if a solution makes sense. • Check calculations when solving problems. • Verify possible solutions by explaining the methods used. • Evaluate results based on the given context. **Clarifications:** Teachers who encourage students to assess the reasonableness of solutions: • Have students estimate or predict solutions prior to solving. • Prompt students to continually ask, “Does this solution make sense? How do you know?” • Reinforce that students check their work as they progress within and after a task. • Strengthen students’ ability to verify solutions through justifications.
MA.K12.MTR.7.1:	**Apply mathematics to real-world contexts.** Mathematicians who apply mathematics to real-world contexts: • Connect mathematical concepts to everyday experiences. • Use models and methods to understand, represent and solve problems. • Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency. **Clarifications:** Teachers who encourage students to apply mathematics to real-world contexts: • Provide opportunities for students to create models, both concrete and abstract, and perform investigations. • Challenge students to question the accuracy of their models and methods. • Support students as they validate conclusions by comparing them to the given situation. • Indicate how various concepts can be applied to other disciplines.
ELA.K12.EE.1.1:	Cite evidence to explain and justify reasoning. **Clarifications:** K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing. 2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations. 4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they’ve directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor. 6-8 Students continue with previous skills and use a style guide to create a proper citation. 9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.
ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.
ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like “Why is the girl smiling?” or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
ELA.K12.EE.4.1:	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully. In grades 1-2, students build upon these skills by justifying what they are thinking. For example: “I think _______ because ______.” The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
ELA.K12.EE.5.1:	Use the accepted rules governing a specific format to create quality work. **Clarifications:** Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.
ELA.K12.EE.6.1:	Use appropriate voice and tone when speaking or writing. **Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.
ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.

General Course Information and Notes

VERSION DESCRIPTION

In Florida Advanced College Algebra, instructional time will emphasize five areas:

- applying properties of exponents and logarithms using numerical and algebraic expressions;
- extending arithmetic operations with numerical and algebraic expressions to include radical and polynomial expressions;
- solving one-variable linear, absolute value, quadratic, polynomial, exponential, logarithmic, radical and rational equations, and interpreting the viability of solutions in real-world contexts;
- modeling and applying linear, absolute value, quadratic, polynomial, exponential and logarithmic functions to solve mathematical and real-world problems; and
- extending the knowledge of functions through compositions, transformations of parent functions and interpreting key features.

Curricular content for all subjects must integrate critical-thinking, problem-solving, and workforce-literacy skills; communication, reading, and writing skills; mathematics skills; collaboration skills; contextual and applied-learning skills; technology-literacy skills; information and media-literacy skills; and civic-engagement skills.

All clarifications stated, whether general or specific to Florida Advanced College Algebra, are expectations for instruction of that benchmark.

General Notes

Honors and Accelerated Level Course Note: Accelerated courses require a greater demand on students through increased academic rigor. Academic rigor is obtained through the application, analysis, evaluation and creation of complex ideas that are often abstract and multi-faceted. Students are challenged to think and collaborate critically on the content they are learning. Honors level rigor will be achieved by increasing text complexity through text selection, focusing on high-level qualitative measures, and complexity of task. Instruction will be structured to give students a deeper understanding of conceptual themes and organization within and across disciplines. Academic rigor is more than simply assigning to students a greater quantity of work.

For students enrolled in this course, college credit may be earned through completion of the course and a passing score on the Florida Advanced Course Test (FACT).

Florida's Benchmarks for Excellent Student Thinking (B.E.S.T.) Standards: This course includes Florida's B.E.S.T. ELA Expectations (EE) and Mathematical Thinking and Reasoning Standards (MTRs) for students. Florida educators should intentionally embed these standards within the content and their instruction as applicable. For guidance on the implementation of the EEs and MTRs, please visit https://www.cpalms.org/Standards/BEST_Standards.aspx and select the appropriate B.E.S.T. Standards package.

English Language Development ELD Standards Special Notes Section: Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link: https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf.

General Information

Course Number: 1200550

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Algebra >

Abbreviated Title: FACT COLLEGE ALGEBRA

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Attributes:

- Honors

Course Type: Core Academic Course

Course Level: 3

Course Status: Course Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Mathematics

Educator Certifications

Mathematics (Grades 6-12)
Classical Education - Restricted (Elementary and Secondary Grades K-12)

Mathematics for College Algebra (#1200710) 2024 - And Beyond (current)

Course Standards

Name	Description
MA.912.AR.1.2:	Rearrange equations or formulas to isolate a quantity of interest. **Clarifications:** *Clarification 1*: Instruction includes using formulas for temperature, perimeter, area and volume; using equations for linear (standard, slope-intercept and point-slope forms) and quadratic (standard, factored and vertex forms) functions. *Clarification 2*: Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.1.3:	Add, subtract and multiply polynomial expressions with rational number coefficients. **Clarifications:** *Clarification 1: I*nstruction includes an understanding that when any of these operations are performed with polynomials the result is also a polynomial. *Clarification 2:* Within the Algebra 1 course, polynomial expressions are limited to 3 or fewer terms.
MA.912.AR.1.5:	Divide polynomial expressions using long division, synthetic division or algebraic manipulation.
MA.912.AR.1.9:	Apply previous understanding of rational number operations to add, subtract, multiply and divide rational algebraic expressions. **Clarifications:** *Clarification 1*: Instruction includes the connection to fractions and common denominators.
MA.912.AR.2.4:	Given a table, equation or written description of a linear function, graph that function, and determine and interpret its key features. **Clarifications:** *Clarification 1*: Key features are limited to domain, range, intercepts and rate of change. *Clarification 2*: Instruction includes the use of standard form, slope-intercept form and point-slope form. *Clarification 3*: Instruction includes cases where one variable has a coefficient of zero. *Clarification 4*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 5*: Within the Algebra 1 course, notations for domain and range are limited to inequality and set-builder notations.
MA.912.AR.2.5:	Solve and graph mathematical and real-world problems that are modeled with linear functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain, range, intercepts and rate of change. *Clarification 2*: Instruction includes the use of standard form, slope-intercept form and point-slope form. *Clarification 3*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation. *Clarification 4*: Within the Algebra 1 course, notations for domain, range and constraints are limited to inequality and set-builder. *Clarification 5*: Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.3.7:	Given a table, equation or written description of a quadratic function, graph that function, and determine and interpret its key features. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; vertex; and symmetry. *Clarification 2*: Instruction includes the use of standard form, factored form and vertex form, and sketching a graph using the zeros and vertex. *Clarification 3*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 4*: Within the Algebra 1 course, notations for domain and range are limited to inequality and set-builder.
MA.912.AR.3.8:	Solve and graph mathematical and real-world problems that are modeled with quadratic functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; vertex; and symmetry. *Clarification 2*: Instruction includes the use of standard form, factored form and vertex form. *Clarification 3*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation. *Clarification 4*: Within the Algebra 1 course, notations for domain, range and constraints are limited to inequality and set-builder.
MA.912.AR.4.2:	Given a mathematical or real-world context, write and solve one-variable absolute value inequalities. Represent solutions algebraically or graphically.
	Solve and graph mathematical and real-world problems that are modeled with absolute value functions. Interpret key features and determine constraints in terms of the context. **Clarifications:**

MA.912.AR.4.4:	*Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; vertex; end behavior and symmetry. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation.
MA.912.AR.5.2:	Solve one-variable equations involving logarithms or exponential expressions. Interpret solutions as viable in terms of the context and identify any extraneous solutions.
MA.912.AR.5.4:	Write an exponential function to represent a relationship between two quantities from a graph, a written description or a table of values within a mathematical or real-world context. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, exponential functions are limited to the forms $f(x) = ab^x$, where b is a whole number greater than 1 or a unit fraction, or $f(x) = a(1 \pm r)^x$, where $0 < r < 1$. *Clarification 2:* Within the Algebra 1 course, tables are limited to having successive nonnegative integer inputs so that the function may be determined by finding ratios between successive outputs.
MA.912.AR.5.6:	Given a table, equation or written description of an exponential function, graph that function and determine its key features. **Clarifications:** *Clarification 1:* Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; constant percent rate of change; end behavior and asymptotes. *Clarification 2:* Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 3:* Within the Algebra 1 course, notations for domain and range are limited to inequality and set-builder. *Clarification 4:* Within the Algebra 1 course, exponential functions are limited to the forms $f(x) = ab^x$, where b is a whole number greater than 1 or a unit fraction or $f(x) = a(1 \pm r)^x$, where $0 < r < 1$.
MA.912.AR.5.7:	Solve and graph mathematical and real-world problems that are modeled with exponential functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; constant percent rate of change; end behavior and asymptotes. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation. *Clarification 3*: Instruction includes understanding that when the logarithm of the dependent variable is taken and graphed, the exponential function will be transformed into a linear function. *Clarification 4*: Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.5.8:	Given a table, equation or written description of a logarithmic function, graph that function and determine its key features. **Clarifications:** *Clarification 1:* Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; and asymptotes. *Clarification 2:* Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation.
MA.912.AR.5.9:	Solve and graph mathematical and real-world problems that are modeled with logarithmic functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; and asymptotes. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation.
MA.912.AR.7.1:	Solve one-variable radical equations. Interpret solutions as viable in terms of context and identify any extraneous solutions.
MA.912.AR.8.1:	Write and solve one-variable rational equations. Interpret solutions as viable in terms of the context and identify any extraneous solutions. **Clarifications:** *Clarification 1*: Within the Algebra 2 course, numerators and denominators are limited to linear and quadratic expressions.
MA.912.AR.9.4:	Graph the solution set of a system of two-variable linear inequalities. **Clarifications:** *Clarification 1:* Instruction includes cases where one variable has a coefficient of zero. *Clarification 2:* Within the Algebra 1 course, the system is limited to two inequalities.
MA.912.AR.9.6:	Given a real-world context, represent constraints as systems of linear equations or inequalities. Interpret solutions to problems as viable or non-viable options. **Clarifications:** *Clarification 1*: Instruction focuses on analyzing a given function that models a real-world situation and writing constraints that are represented as linear equations or linear inequalities.
MA.912.AR.9.10:	Solve and graph mathematical and real-world problems that are modeled with piecewise functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain, range, intercepts, asymptotes and end behavior. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation.

MA.912.F.1.1:	Given an equation or graph that defines a function, determine the function type. Given an input-output table, determine a function type that could represent it. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, functions represented as tables are limited to linear, quadratic and exponential. *Clarification 2:* Within the Algebra 1 course, functions represented as equations or graphs are limited to vertical or horizontal translations or reflections over the x-axis of the following parent functions: $f(x)=x$, $f(x)=x^2$, $f(x)=x^3$, $f(x)=\sqrt{x}$, $f(x)=\sqrt[3]{x}$, $f(x)=\|x\|$, $f(x)=2^x$ and $f(x)=\left(\frac{1}{2}\right)^x$.
MA.912.F.1.2:	Given a function represented in function notation, evaluate the function for an input in its domain. For a real-world context, interpret the output. **Clarifications:** *Clarification 1*: Problems include simple functions in two-variables, such as f(x,y)=3x-2y. *Clarification 2*: Within the Algebra 1 course, functions are limited to one-variable such as f(x)=3x.
MA.912.F.1.3:	Calculate and interpret the average rate of change of a real-world situation represented graphically, algebraically or in a table over a specified interval. **Clarifications:** *Clarification 1*: Instruction includes making the connection to determining the slope of a particular line segment.
MA.912.F.1.6:	Compare key features of linear and nonlinear functions each represented algebraically, graphically, in tables or written descriptions. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior and asymptotes. *Clarification 2*: Within the Algebra 1 course, functions other than linear, quadratic or exponential must be represented graphically. *Clarification 3*: Within the Algebra 1 course, instruction includes verifying that a quantity increasing exponentially eventually exceeds a quantity increasing linearly or quadratically.
MA.912.F.2.1:	Identify the effect on the graph or table of a given function after replacing *f(x)* by *f(x)+k,kf(x)*, *f(kx)* and *f(x+k)* for specific values of *k*. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, functions are limited to linear, quadratic and absolute value. *Clarification 2*: Instruction focuses on including positive and negative values for *k*.
MA.912.F.2.2:	Identify the effect on the graph of a given function of two or more transformations defined by adding a real number to the x- or y- values or multiplying the x- or y- values by a real number.
MA.912.F.2.3:	Given the graph or table of f(x) and the graph or table of f(x)+k,kf(x), f(kx) and f(x+k), state the type of transformation and find the value of the real number k. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, functions are limited to linear, quadratic and absolute value.
MA.912.F.2.4:	Given the graph or table of values of two or more transformations of a function, state the type of transformation and find the values of the real number that defines the transformation.
MA.912.F.2.5:	Given a table, equation or graph that represents a function, create a corresponding table, equation or graph of the transformed function defined by adding a real number to the *x*- or *y*-values or multiplying the *x*- or *y*-values by a real number.
MA.912.F.3.2:	Given a mathematical or real-world context, combine two or more functions, limited to linear, quadratic, exponential and polynomial, using arithmetic operations. When appropriate, include domain restrictions for the new function. **Clarifications:** *Clarification 1*: Instruction includes representing domain restrictions with inequality notation, interval notation or set-builder notation. *Clarification 2*: Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.F.3.4:	Represent the composition of two functions algebraically or in a table. Determine the domain and range of the composite function.
MA.912.F.3.6:	Determine whether an inverse function exists by analyzing tables, graphs and equations.
MA.912.F.3.7:	Represent the inverse of a function algebraically, graphically or in a table. Use composition of functions to verify that one function is the inverse of the other. **Clarifications:** *Clarification 1*: Instruction includes the understanding that a logarithmic function is the inverse of an exponential function.
MA.912.NSO.1.1:	Extend previous understanding of the Laws of Exponents to include rational exponents. Apply the Laws of Exponents to evaluate numerical expressions and generate equivalent numerical expressions involving rational exponents. **Clarifications:** *Clarification 1:* Instruction includes the use of technology when appropriate. *Clarification 2:* Refer to the K-12 Formulas (Appendix E) for the Laws of Exponents. *Clarification 3:* Instruction includes converting between expressions involving rational exponents and expressions involving radicals. *Clarification 4:*Within the Mathematics for Data and Financial Literacy course, it is not the expectation to generate equivalent numerical expressions.
MA.912.NSO.1.2:	Generate equivalent algebraic expressions using the properties of exponents.
MA.912.NSO.1.3:	Generate equivalent algebraic expressions involving radicals or rational exponents using the properties of exponents. **Clarifications:** *Clarification 1*: Within the Algebra 2 course, radicands are limited to monomial algebraic expressions.
MA.912.NSO.1.6:	Given a numerical logarithmic expression, evaluate and generate equivalent numerical expressions using the properties of logarithms or exponents. **Clarifications:** *Clarification 1*: Within the Mathematics for Data and Financial Literacy Honors course, problem types focus on money and business.

MA.912.NSO.1.7:	Given an algebraic logarithmic expression, generate an equivalent algebraic expression using the properties of logarithms or exponents. **Clarifications:** *Clarification 1*: Within the Mathematics for Data and Financial Literacy Honors course, problem types focus on money and business.
MA.K12.MTR.1.1:	**Actively participate in effortful learning both individually and collectively.** Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task. • Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach. **Clarifications:** Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging. • Develop students' ability to analyze and problem solve. • Recognize students' effort when solving challenging problems.
MA.K12.MTR.2.1:	**Demonstrate understanding by representing problems in multiple ways.** Mathematicians who demonstrate understanding by representing problems in multiple ways: • Build understanding through modeling and using manipulatives. • Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. • Progress from modeling problems with objects and drawings to using algorithms and equations. • Express connections between concepts and representations. • Choose a representation based on the given context or purpose. **Clarifications:** Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: • Help students make connections between concepts and representations. • Provide opportunities for students to use manipulatives when investigating concepts. • Guide students from concrete to pictorial to abstract representations as understanding progresses. • Show students that various representations can have different purposes and can be useful in different situations.
MA.K12.MTR.3.1:	**Complete tasks with mathematical fluency.** Mathematicians who complete tasks with mathematical fluency: • Select efficient and appropriate methods for solving problems within the given context. • Maintain flexibility and accuracy while performing procedures and mental calculations. • Complete tasks accurately and with confidence. • Adapt procedures to apply them to a new context. • Use feedback to improve efficiency when performing calculations. **Clarifications:** Teachers who encourage students to complete tasks with mathematical fluency: • Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately. • Offer multiple opportunities for students to practice efficient and generalizable methods. • Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.
MA.K12.MTR.4.1:	**Engage in discussions that reflect on the mathematical thinking of self and others.** Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others: • Communicate mathematical ideas, vocabulary and methods effectively. • Analyze the mathematical thinking of others. • Compare the efficiency of a method to those expressed by others. • Recognize errors and suggest how to correctly solve the task. • Justify results by explaining methods and processes. • Construct possible arguments based on evidence. **Clarifications:** Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: • Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning. • Create opportunities for students to discuss their thinking with peers. • Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. • Develop students' ability to justify methods and compare their responses to the responses of their peers.
MA.K12.MTR.5.1:	**Use patterns and structure to help understand and connect mathematical concepts.** Mathematicians who use patterns and structure to help understand and connect mathematical concepts: • Focus on relevant details within a problem. • Create plans and procedures to logically order events, steps or ideas to solve problems. • Decompose a complex problem into manageable parts. • Relate previously learned concepts to new concepts. • Look for similarities among problems. • Connect solutions of problems to more complicated large-scale situations.

	Clarifications: Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts: • Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts. • Support students to develop generalizations based on the similarities found among problems. • Provide opportunities for students to create plans and procedures to solve problems. • Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.
MA.K12.MTR.6.1:	**Assess the reasonableness of solutions.** Mathematicians who assess the reasonableness of solutions: • Estimate to discover possible solutions. • Use benchmark quantities to determine if a solution makes sense. • Check calculations when solving problems. • Verify possible solutions by explaining the methods used. • Evaluate results based on the given context. **Clarifications:** Teachers who encourage students to assess the reasonableness of solutions: • Have students estimate or predict solutions prior to solving. • Prompt students to continually ask, "Does this solution make sense? How do you know?" • Reinforce that students check their work as they progress within and after a task. • Strengthen students' ability to verify solutions through justifications.
MA.K12.MTR.7.1:	**Apply mathematics to real-world contexts.** Mathematicians who apply mathematics to real-world contexts: • Connect mathematical concepts to everyday experiences. • Use models and methods to understand, represent and solve problems. • Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency. **Clarifications:** Teachers who encourage students to apply mathematics to real-world contexts: • Provide opportunities for students to create models, both concrete and abstract, and perform investigations. • Challenge students to question the accuracy of their models and methods. • Support students as they validate conclusions by comparing them to the given situation. • Indicate how various concepts can be applied to other disciplines.
ELA.K12.EE.1.1:	Cite evidence to explain and justify reasoning. **Clarifications:** K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing. 2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations. 4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they've directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor. 6-8 Students continue with previous skills and use a style guide to create a proper citation. 9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.
ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.
ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like "Why is the girl smiling?" or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
ELA.K12.EE.4.1:	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully. In grades 1-2, students build upon these skills by justifying what they are thinking. For example: "I think _______ because ______." The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
ELA.K12.EE.5.1:	Use the accepted rules governing a specific format to create quality work. **Clarifications:** Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.
	Use appropriate voice and tone when speaking or writing.

ELA.K12.EE.6.1:	**Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.
ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.

General Course Information and Notes

VERSION DESCRIPTION

In Mathematics for College Algebra, instructional time will emphasize five areas: (1) developing fluency with the Laws of Exponents with numerical and algebraic expressions; (2) extending arithmetic operations with algebraic expressions to include rational and polynomial expressions; (3) solving one-variable exponential, logarithmic, radical and rational equations and interpreting the viability of solutions in real-world contexts; (4) modeling with and applying linear, quadratic, absolute value, exponential, logarithmic and piecewise functions and systems of linear equations and inequalities; (5) extending knowledge of functions to include inverse and composition.

All clarifications stated, whether general or specific to Mathematics for College Algebra, are expectations for instruction of that benchmark.

Curricular content for all subjects must integrate critical-thinking, problem-solving, and workforce-literacy skills; communication, reading, and writing skills; mathematics skills; collaboration skills; contextual and applied-learning skills; technology-literacy skills; information and media-literacy skills; and civic-engagement skills.

General Notes

Florida's Benchmarks for Excellent Student Thinking (B.E.S.T.) Standards
This course includes Florida's B.E.S.T. ELA Expectations (EE) and Mathematical Thinking and Reasoning Standards (MTRs) for students. Florida educators should intentionally embed these standards within the content and their instruction as applicable. For guidance on the implementation of the EEs and MTRs, please visit https://www.cpalms.org/Standards/BEST_Standards.aspx and select the appropriate B.E.S.T. Standards package.

English Language Development ELD Standards Special Notes Section:

Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link: https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf

General Information

Course Number: 1200710

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Algebra >

Abbreviated Title: MATH COLL ALGEBRA

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Type: Core Academic Course

Course Level: 2

Course Status: Course Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Mathematics

Educator Certifications

Mathematics (Grades 6-12)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Mathematics Transfer (#1200990) 2015 - And Beyond (current)

General Course Information and Notes

VERSION DESCRIPTION

SUBJECT AREA TRANSFER NUMBERS

Each course transferred into a Florida public school by an out-of-state or non-public school student should be matched with a course title and number when such course provides substantially the same content. However, a few transfer courses may not be close enough in content to be matched. For those courses a subject area transfer number is provided.

General Information

Course Number: 1200990

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Transfer and CTE Industry Certification Substitutions >

Abbreviated Title: MATH TRAN

Course Length: Not Applicable

Course Type: Transfer Course
Course Status: Course Approved
Grade Level(s): 9,10,11,12

Computer Science Substitution for Mathematics (#1200997) 2020 - And Beyond (current)

General Course Information and Notes

VERSION DESCRIPTION

Section 1007.2616(6)(a), F.S., authorizes the substitution of up to one (1) mathematics credit (MA) and one (1) equally rigorous science (EQ) credit toward high school graduation for a student receiving a passing score on an industry certification examination and using an eligible computer science course containing content related to the course for which it is substituting. A listing of eligible computer science courses for the current school year is posted at https://www.fldoe.org/core/fileparse.php/7746/urlt/1819CompSci.pdf.

The school district would determine which industry certification exams (passing scores) can yield course substitutions for mathematics and science. It is important to note that one qualifying industry certification attainment equates to one substitution credit. A student would need to earn two distinct industry certifications tied to college credit in order to earn the maximum two substitution credits (one for math, one for science). The eligible industry certifications that are tied to statewide college credit may be found at https://www.fldoe.org/academics/career-adult-edu/career-technical-edu-agreements/industry-certification.stml.

Per statute, the substitution does not apply to Algebra 1, Geometry or higher-level mathematics courses; higher-level courses are Level 3 courses in the Florida Course Code Directory.

Students who receive a course substitution earn course credit counted toward high school graduation. A course substitution does not factor into a student's grade point average (GPA).

Please note that course substitutions may not meet State University System (SUS) admission requirements or state scholarship program requirements.

General Information

Course Number: 1200997

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Transfer and CTE Industry Certification Substitutions >

Abbreviated Title: COMP SCI SUB MATH

Course Length: Not Applicable

Course Type: Course Substitution

Course Status: Course Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Mathematics

Qualifications

not applicable

Industry Certification Mathematics Substitution1 (#1200998) 2015 - And Beyond (current)

Course Standards

Name	Description
ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.
ELD.K12.ELL.SI.1:	English language learners communicate for social and instructional purposes within the school setting.

General Course Information and Notes

VERSION DESCRIPTION

Section 1003.4282, F.S., authorizes the substitution of up to two (2) mathematics credits (MA) toward high school graduation for a student receiving a passing score on an industry certification examination. Only one substitution per industry certification attained is allowed.

The school district would determine which industry certification exams (passing scores) can yield course substitutions for mathematics. It is important to note that one qualifying industry certification attainment equates to one substitution credit. A student would need to earn two distinct industry certifications tied to college credit in order to earn the maximum two substitution credits in Mathematics. The eligible industry certifications that are tied to statewide college credit may be found at https://www.fldoe.org/academics/career-adult-edu/career-technical-edu-agreements/industry-certification.stml.

Students who receive a course substitution earn course credit counted toward high school graduation. A course substitution does not factor into a student's grade point average (GPA).

General Notes

English Language Development ELD Standards Special Notes Section:
Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link:
https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf

For additional information on the development and implementation of the ELD standards, please contact the Bureau of Student Achievement through Language Acquisition at sala@fldoe.org.

General Information

Course Number: 1200998

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Transfer and CTE Industry Certification Substitutions >

Abbreviated Title: CTEIC MATH SUB 1

Course Length: Not Applicable

Course Type: Course Substitution

Course Status: Draft - Course Pending Approval

Graduation Requirement: Mathematics

Industry Certification Mathematics Substitution 2 (#1200999) 2015 - And Beyond (current)

Course Standards

Name	Description
ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.
ELD.K12.ELL.SI.1:	English language learners communicate for social and instructional purposes within the school setting.

General Course Information and Notes

VERSION DESCRIPTION

Course Substitutions

Section 1003.4282, F.S., authorizes the substitution of up to two (2) mathematics credits (MA) toward high school graduation for a student receiving a passing score on an industry certification examination. Only one substitution per industry certification attained is allowed.

The school district would determine which industry certification exams (passing scores) can yield course substitutions for mathematics. It is important to note that one qualifying industry certification attainment equates to one substitution credit. A student would need to earn two distinct industry certifications tied to college credit in order to earn the maximum two substitution credits in Mathematics. The eligible industry certifications that are tied to statewide college credit may be found at https://www.fldoe.org/academics/career-adult-edu/career-technical-edu-agreements/industry-certification.stml.

Students who receive a course substitution earn course credit counted toward high school graduation. A course substitution does not factor into a student's grade point average (GPA).

General Notes

English Language Development ELD Standards Special Notes Section:
Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link: https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf

For additional information on the development and implementation of the ELD standards, please contact the Bureau of Student Achievement through Language Acquisition at sala@fldoe.org.

General Information

Course Number: 1200999

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Transfer and CTE Industry Certification Substitutions >

Abbreviated Title: CTE/IC MATH SUB 2

Course Length: Not Applicable

Course Type: Course Substitution

Course Status: Draft - Course Pending Approval

Graduation Requirement: Mathematics

International Baccalaureate Mathematics: Analysis and Approaches 1 (#1201325) 2024 - And Beyond (current)

General Course Information and Notes

VERSION DESCRIPTION

The curriculum description for this IB course is provided at http://www.ibo.org/en/programmes/.

General Information

Course Number: 1201325

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Mathematical Analysis >

Abbreviated Title: IB MATH: ANLYS/APPR1

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Attributes:

- International Baccalaureate (IB)

Course Type: Core Academic Course

Course Level: 3

Course Status: Course Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Mathematics

Educator Certifications

Mathematics (Grades 6-12)

Classical Education - Restricted (Elementary and Secondary Grades K-12)
Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

International Baccalaureate Mathematics: Analysis and Approaches 2 (#1201330) 2024 - And Beyond (current)

General Course Information and Notes

VERSION DESCRIPTION

The curriculum description for this IB course is provided at http://www.ibo.org/en/programmes/.

General Information

Course Number: 1201330

Number of Credits: One (1) credit

Course Type: Core Academic Course
Course Status: Course Approved
Grade Level(s): 9,10,11,12
Graduation Requirement: Mathematics

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Mathematical Analysis >
Abbreviated Title: IB MATH: ANLYS/APPR2
Course Length: Year (Y)
Course Attributes:

- International Baccalaureate (IB)

Course Level: 3

Educator Certifications

Mathematics (Grades 6-12)

Classical Education - Restricted (Elementary and Secondary Grades K-12)
Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

International Baccalaureate Mathematics: Analysis and Approaches 3 (#1201335) 2024 - And Beyond (current)

General Course Information and Notes

VERSION DESCRIPTION

The curriculum description for this IB course is provided at http://www.ibo.org/en/programmes/.

General Information

Course Number: 1201335

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Mathematical Analysis >

Abbreviated Title: IB MATH: ANLYS/APPR3

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Attributes:

- International Baccalaureate (IB)

Course Type: Core Academic Course

Course Level: 3

Course Status: Course Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Mathematics

Educator Certifications

Mathematics (Grades 6-12)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Calculus Honors (#1202300) 2024 - And Beyond (current)

Course Standards

Name	Description
MA.912.C.1.1:	Demonstrate understanding of the concept of a limit and estimate limits from graphs and tables of values.
MA.912.C.1.2:	Determine the value of a limit if it exists algebraically using limits of sums, differences, products, quotients and compositions of continuous functions.
MA.912.C.1.3:	Find limits of rational functions that are undefined at a point.
MA.912.C.1.4:	Find one-sided limits.
MA.912.C.1.5:	Find limits at infinity.
MA.912.C.1.6:	Decide when a limit is infinite and use limits involving infinity to describe asymptotic behavior.
MA.912.C.1.7:	Find special limits by using the Squeeze Theorem or algebraic manipulation.
MA.912.C.1.8:	Find limits of indeterminate forms using L'Hôpital's Rule.
MA.912.C.1.9:	Define continuity in terms of limits.
MA.912.C.1.10:	Given the graph of a function, identify whether a function is continuous at a point. If not, identify the type of discontinuity for the given function.
MA.912.C.1.11:	Apply the Intermediate Value Theorem and the Extreme Value Theorem.
MA.912.C.2.1:	State, understand and apply the definition of derivative. Apply and interpret derivatives geometrically and numerically.
MA.912.C.2.2:	Interpret the derivative as an instantaneous rate of change or as the slope of the tangent line.
MA.912.C.2.3:	Prove the rules for finding derivatives of constants, sums, products, quotients and the Chain Rule. **Clarifications:** *Clarification 1*: Special cases of rules include a constant multiple of a function and the power of a function.
MA.912.C.2.4:	Apply the rules for finding derivatives of constants, sums, products, quotients and the Chain Rule to solve problems with functions limited to algebraic, trigonometric, inverse trigonometric, logarithmic and exponential. **Clarifications:** *Clarification 1*: Special cases of rules include a constant multiple of a function and the power of a function.
MA.912.C.2.5:	Find the derivatives of implicitly defined functions.
MA.912.C.2.6:	Find derivatives of inverse functions.
MA.912.C.2.7:	Find second derivatives and derivatives of higher order.
MA.912.C.2.8:	Find derivatives using logarithmic differentiation.
MA.912.C.2.9:	Demonstrate and use the relationship between differentiability and continuity.
MA.912.C.2.10:	Apply the Mean Value Theorem.
MA.912.C.3.1:	Find the slope of a curve at a point, including points at which there are vertical tangent lines.
MA.912.C.3.2:	Find an equation for the tangent line to a curve at a point and use it to make local linear approximation.
MA.912.C.3.3:	Determine where a function is decreasing and increasing using its derivative.
MA.912.C.3.4:	Find local and absolute maximum and minimum points of a function.
MA.912.C.3.5:	Determine the concavity and points of inflection of a function using its second derivative.
MA.912.C.3.6:	Sketch graphs by using first and second derivatives. Compare the corresponding characteristics of the graphs of f, f' and f''.
MA.912.C.3.7:	Solve optimization problems using derivatives.
MA.912.C.3.8:	Find average and instantaneous rates of change. Explain the instantaneous rate of change as the limit of the average rate of change. Interpret a derivative as a rate of change in applications, including velocity, speed and acceleration.
MA.912.C.3.9:	Find the velocity and acceleration of a particle moving in a straight line.
MA.912.C.3.10:	Model and solve problems involving rates of change, including related rates.
MA.912.C.4.1:	Interpret a definite integral as a limit of Riemann sums. Calculate the values of Riemann sums over equal subdivisions using left, right and midpoint evaluation points.
MA.912.C.4.2:	Apply Riemann sums, the Trapezoidal Rule and technology to approximate definite integrals of functions represented algebraically, geometrically and by tables of values.
MA.912.C.4.3:	Interpret a definite integral of the rate of change of a quantity over an interval as the change of the quantity over the interval. **Clarifications:** *Clarification 1*: Instruction focuses on the relationship $\int_a^b f'(x)dx = f(b) - f(a)$ which is the Fundamental Theorem of Calculus.
MA.912.C.4.4:	Evaluate definite integrals by using the Fundamental Theorem of Calculus.
MA.912.C.4.5:	Analyze function graphs by using derivative graphs and the Fundamental Theorem of Calculus.
MA.912.C.4.6:	Evaluate or solve problems using the properties of definite integrals. Properties are limited to the following: • $\int_a^b [f(x) + g(x)]dx = \int_a^b f(x)dx + \int_a^b g(x)dx$ • $\int_a^b k \cdot f(x)dx = k\int_a^b f(x)dx$ • $\int_a^a f(x)dx = 0$ • $\int_a^b f(x)dx = -\int_b^a f(x)dx$ • $\int_a^b f(x)dx + \int_b^c f(x)dx = \int_a^c f(x)dx$ • If $f(x) \le g(x)$ on $[a, b]$, then $\int_a^b f(x)dx \le \int_a^b g(x)dx$.
MA.912.C.4.7:	Evaluate definite and indefinite integrals by using integration by substitution.

MA.912.C.5.1:	Find specific antiderivatives using initial conditions, including finding velocity functions from acceleration functions, finding position functions from velocity functions and solving applications related to motion along a line.
MA.912.C.5.2:	Solve separable differential equations.
MA.912.C.5.3:	Solve differential equations of the form $\frac{dy}{dt} = ky$ as applied to growth and decay problems.
MA.912.C.5.4:	Display a graphic representation of the solution to a differential equation by using slope fields, and locate particular solutions to the equation.
MA.912.C.5.5:	Find the area between a curve and the x-axis or between two curves by using definite integrals.
MA.912.C.5.6:	Find the average value of a function over a closed interval by using definite integrals.
MA.912.C.5.7:	Find the volume of a figure with known cross-sectional area, including figures of revolution, by using definite integrals.
MA.K12.MTR.1.1:	**Actively participate in effortful learning both individually and collectively.** Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task. • Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach. **Clarifications:** Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging. • Develop students' ability to analyze and problem solve. • Recognize students' effort when solving challenging problems.
MA.K12.MTR.2.1:	**Demonstrate understanding by representing problems in multiple ways.** Mathematicians who demonstrate understanding by representing problems in multiple ways: • Build understanding through modeling and using manipulatives. • Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. • Progress from modeling problems with objects and drawings to using algorithms and equations. • Express connections between concepts and representations. • Choose a representation based on the given context or purpose. **Clarifications:** Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: • Help students make connections between concepts and representations. • Provide opportunities for students to use manipulatives when investigating concepts. • Guide students from concrete to pictorial to abstract representations as understanding progresses. • Show students that various representations can have different purposes and can be useful in different situations.
MA.K12.MTR.3.1:	**Complete tasks with mathematical fluency.** Mathematicians who complete tasks with mathematical fluency: • Select efficient and appropriate methods for solving problems within the given context. • Maintain flexibility and accuracy while performing procedures and mental calculations. • Complete tasks accurately and with confidence. • Adapt procedures to apply them to a new context. • Use feedback to improve efficiency when performing calculations. **Clarifications:** Teachers who encourage students to complete tasks with mathematical fluency: • Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately. • Offer multiple opportunities for students to practice efficient and generalizable methods. • Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.
MA.K12.MTR.4.1:	**Engage in discussions that reflect on the mathematical thinking of self and others.** Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others: • Communicate mathematical ideas, vocabulary and methods effectively. • Analyze the mathematical thinking of others. • Compare the efficiency of a method to those expressed by others. • Recognize errors and suggest how to correctly solve the task. • Justify results by explaining methods and processes. • Construct possible arguments based on evidence. **Clarifications:** Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: • Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning. • Create opportunities for students to discuss their thinking with peers. • Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. • Develop students' ability to justify methods and compare their responses to the responses of their peers.
	Use patterns and structure to help understand and connect mathematical concepts. Mathematicians who use patterns and structure to help understand and connect mathematical concepts: • Focus on relevant details within a problem.

MA.K12.MTR.5.1:	- Create plans and procedures to logically order events, steps or ideas to solve problems. - Decompose a complex problem into manageable parts. - Relate previously learned concepts to new concepts. - Look for similarities among problems. - Connect solutions of problems to more complicated large-scale situations. **Clarifications:** Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts: - Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts. - Support students to develop generalizations based on the similarities found among problems. - Provide opportunities for students to create plans and procedures to solve problems. - Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.
MA.K12.MTR.6.1:	**Assess the reasonableness of solutions.** Mathematicians who assess the reasonableness of solutions: - Estimate to discover possible solutions. - Use benchmark quantities to determine if a solution makes sense. - Check calculations when solving problems. - Verify possible solutions by explaining the methods used. - Evaluate results based on the given context. **Clarifications:** Teachers who encourage students to assess the reasonableness of solutions: - Have students estimate or predict solutions prior to solving. - Prompt students to continually ask, "Does this solution make sense? How do you know?" - Reinforce that students check their work as they progress within and after a task. - Strengthen students' ability to verify solutions through justifications.
MA.K12.MTR.7.1:	**Apply mathematics to real-world contexts.** Mathematicians who apply mathematics to real-world contexts: - Connect mathematical concepts to everyday experiences. - Use models and methods to understand, represent and solve problems. - Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency. **Clarifications:** Teachers who encourage students to apply mathematics to real-world contexts: - Provide opportunities for students to create models, both concrete and abstract, and perform investigations. - Challenge students to question the accuracy of their models and methods. - Support students as they validate conclusions by comparing them to the given situation. - Indicate how various concepts can be applied to other disciplines.
ELA.K12.EE.1.1:	Cite evidence to explain and justify reasoning. **Clarifications:** K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing. 2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations. 4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they've directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor. 6-8 Students continue with previous skills and use a style guide to create a proper citation. 9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.
ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.
ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like "Why is the girl smiling?" or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
ELA.K12.EE.4.1:	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully. In grades 1-2, students build upon these skills by justifying what they are thinking. For example: "I think _______ because ______." The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
	Use the accepted rules governing a specific format to create quality work. **Clarifications:**

ELA.K12.EE.5.1:	Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.
ELA.K12.EE.6.1:	Use appropriate voice and tone when speaking or writing. **Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.
ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.

General Course Information and Notes

VERSION DESCRIPTION

In Calculus Honors, instructional time will emphasize four areas: (1) developing understanding of limits and continuity of functions; (2) finding derivatives and applying them to motions, slopes, related rates and optimizations; (3) applying limits and derivatives to graph and analyze functions and (4) evaluating integrals and applying them to areas, volumes, average values and differential equations.

All clarifications stated, whether general or specific to Calculus Honors, are expectations for instruction of that benchmark.

Curricular content for all subjects must integrate critical-thinking, problem-solving, and workforce-literacy skills; communication, reading, and writing skills; mathematics skills; collaboration skills; contextual and applied-learning skills; technology-literacy skills; information and media-literacy skills; and civic-engagement skills.

General Notes

Honors and Accelerated Level Course Note: Accelerated courses require a greater demand on students through increased academic rigor. Academic rigor is obtained through the application, analysis, evaluation, and creation of complex ideas that are often abstract and multi-faceted. Students are challenged to think and collaborate critically on the content they are learning. Honors level rigor will be achieved by increasing text complexity through text selection, focus on high-level qualitative measures, and complexity of task. Instruction will be structured to give students a deeper understanding of conceptual themes and organization within and across disciplines. Academic rigor is more than simply assigning to students a greater quantity of work.

Florida's Benchmarks for Excellent Student Thinking (B.E.S.T.) Standards
This course includes Florida's B.E.S.T. ELA Expectations (EE) and Mathematical Thinking and Reasoning Standards (MTRs) for students. Florida educators should intentionally embed these standards within the content and their instruction as applicable. For guidance on the implementation of the EEs and MTRs, please visit https://www.cpalms.org/Standards/BEST_Standards.aspx and select the appropriate B.E.S.T. Standards package.

English Language Development ELD Standards Special Notes Section:

Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link: https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf

General Information

Course Number: 1202300

Number of Credits: One (1) credit

Course Type: Core Academic Course
Course Status: State Board Approved
Grade Level(s): 9,10,11,12
Graduation Requirement: Mathematics

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Calculus >
Abbreviated Title: CALCULUS HON
Course Length: Year (Y)
Course Attributes:
- Honors

Course Level: 3

Educator Certifications

Mathematics (Grades 6-12)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Advanced Placement Precalculus (#1202305) 2024 - And Beyond (current)

General Course Information and Notes

General Notes

The course description for this Advanced Placement courses is located on the College Board site at http://apcentral.collegeboard.com/apc/public/courses/teachers_corner/index.html.

General Information

Course Number: 1202305

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Calculus >

Abbreviated Title: AP PRECALCULUS

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Attributes:

- Advanced Placement (AP)
- External Course Description

Course Type: Core Academic Course

Course Level: 3

Course Status: Course Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Mathematics

Educator Certifications

Mathematics (Grades 6-12)

Classical Education - Restricted (Elementary and Secondary Grades K-12)
Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Advanced Placement Calculus AB (#1202310) 2024 - And Beyond (current)

General Course Information and Notes

General Notes

The course description for this Advanced Placement courses is located on the College Board site at http://apcentral.collegeboard.com/apc/public/courses/teachers_corner/index.html.

General Information

Course Number: 1202310

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Calculus >

Abbreviated Title: AP CALCULUS AB

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Attributes:

- Advanced Placement (AP)

Course Type: Core Academic Course

Course Level: 3

Course Status: Course Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Mathematics

Educator Certifications

Mathematics (Grades 6-12)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Advanced Placement Calculus BC (#1202320) 2024 - And Beyond (current)

General Course Information and Notes

General Notes

The course description for this Advanced Placement courses is located on the College Board site at http://apcentral.collegeboard.com/apc/public/courses/teachers_corner/index.html.

General Information

Course Number: 1202320

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Calculus >

Abbreviated Title: AP CALCULUS BC

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Attributes:

- Advanced Placement (AP)

Course Type: Core Academic Course

Course Level: 3

Course Status: Course Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Mathematics

Educator Certifications

Mathematics (Grades 6-12)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Precalculus Honors (#1202340) 2024 - And Beyond (current)

Course Standards

Name	Description
MA.912.AR.5.7:	Solve and graph mathematical and real-world problems that are modeled with exponential functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; constant percent rate of change; end behavior and asymptotes. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation. *Clarification 3*: Instruction includes understanding that when the logarithm of the dependent variable is taken and graphed, the exponential function will be transformed into a linear function. *Clarification 4*: Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.5.9:	Solve and graph mathematical and real-world problems that are modeled with logarithmic functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; and asymptotes. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation.
MA.912.AR.6.3:	Explain and apply theorems for polynomials to solve mathematical and real-world problems. **Clarifications:** *Clarification 1*: Theorems include the Factor Theorem and the Fundamental Theorem of Algebra.
MA.912.AR.6.4:	Given a table, equation or written description of a polynomial function of degree 3 or higher, graph that function and determine its key features. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; relative maximums and minimums; symmetry; and end behavior. *Clarification 2*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation.
MA.912.AR.6.6:	Solve and graph mathematical and real-world problems that are modeled with polynomial functions of degree 3 or higher. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; relative maximums and minimums; symmetry; and end behavior. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation.
MA.912.AR.7.4:	Solve and graph mathematical and real-world problems that are modeled with radical functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; and relative maximums and minimums. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation.
MA.912.AR.8.3:	Solve and graph mathematical and real-world problems that are modeled with rational functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; and asymptotes. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation. *Clarification 3*: Instruction includes using rational functions to represent inverse proportional relationships. *Clarification 4*: Within the Algebra 2 course, numerators and denominators are limited to linear and quadratic expressions.
MA.912.AR.9.3:	Given a mathematical or real-world context, solve a system consisting of two-variable linear or non-linear equations algebraically or graphically. **Clarifications:** *Clarification 1*: Within the Algebra 2 course, non-linear equations are limited to quadratic equations.
	Solve and graph mathematical and real-world problems that are modeled with piecewise functions. Interpret key features and determine constraints in terms of the context.

MA.912.AR.9.10:	**Clarifications:** *Clarification 1*: Key features are limited to domain, range, intercepts, asymptotes and end behavior. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation.
MA.912.AR.10.1:	Given a mathematical or real-world context, write and solve problems involving arithmetic sequences.
MA.912.AR.10.2:	Given a mathematical or real-world context, write and solve problems involving geometric sequences.
MA.912.AR.10.3:	Recognize and apply the formula for the sum of a finite arithmetic series to solve mathematical and real-world problems.
MA.912.AR.10.4:	Recognize and apply the formula for the sum of a finite or an infinite geometric series to solve mathematical and real-world problems.
MA.912.AR.10.5:	Given a mathematical or real-world context, write a sequence using function notation, defined explicitly or recursively, to represent relationships between quantities from a written description.
MA.912.F.1.4:	Write an algebraic expression that represents the difference quotient of a function. Calculate the numerical value of the difference quotient at a given pair of points. **Clarifications:** *Clarification 1*: Instruction focuses on making connections between difference quotients and slopes of lines.
MA.912.F.1.7:	Compare key features of two functions each represented algebraically, graphically, in tables or written descriptions. **Clarifications:** *Clarification 1*: Key features include domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior and asymptotes.
MA.912.F.3.3:	Solve mathematical and real-world problems involving functions that have been combined using arithmetic operations.
MA.912.F.3.4:	Represent the composition of two functions algebraically or in a table. Determine the domain and range of the composite function.
MA.912.F.3.5:	Solve mathematical and real-world problems involving composite functions.
MA.912.F.3.7:	Represent the inverse of a function algebraically, graphically or in a table. Use composition of functions to verify that one function is the inverse of the other. **Clarifications:** *Clarification 1*: Instruction includes the understanding that a logarithmic function is the inverse of an exponential function.
MA.912.F.3.8:	Produce an invertible function from a non-invertible function by restricting the domain.
MA.912.F.3.9:	Solve mathematical and real-world problems involving inverse functions.
MA.912.GR.7.1:	Given a conic section, describe how it can result from the slicing of two cones.
MA.912.GR.7.2:	Given a mathematical or real-world context, derive and create the equation of a circle using key features. **Clarifications:** *Clarification 1:* Instruction includes using the Pythagorean Theorem and completing the square. *Clarification 2:* Within the Geometry course, key features are limited to the radius, diameter and the center.
MA.912.GR.7.3:	Graph and solve mathematical and real-world problems that are modeled with an equation of a circle. Determine and interpret key features in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain, range, eccentricity, center and radius. *Clarification 2*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 3*: Within the Geometry course, notations for domain and range are limited to inequality and set-builder.
MA.912.GR.7.4:	Given a mathematical or real-world context, derive and create the equation of a parabola using key features.
MA.912.GR.7.5:	Graph and solve mathematical and real-world problems that are modeled with an equation of a parabola. Determine and interpret key features in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain, range, eccentricity, intercepts, focus, focal width (latus rectum), vertex and directrix. *Clarification 2*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation.
MA.912.GR.7.6:	Given a mathematical or real-world context, derive and create the equation of an ellipse using key features.
MA.912.GR.7.7:	Graph and solve mathematical and real-world problems that are modeled with an equation of an ellipse. Determine and interpret key features in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain, range, eccentricity, center, foci, major axis, minor axis and vertices. *Clarification 2*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation.
MA.912.GR.7.8:	Given a mathematical or real-world context, derive and create the equation of a hyperbola using key features.
MA.912.GR.7.9:	Graph and solve mathematical and real-world problems that are modeled with an equation of a hyperbola. Determine and interpret key features in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain, range, eccentricity, center, vertices, foci, transverse axis, conjugate axis, asymptotes and directrices. *Clarification 2*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation.
MA.912.NSO.2.2:	Represent addition, subtraction, multiplication and conjugation of complex numbers geometrically on the complex plane.
MA.912.NSO.2.3:	Calculate the distance and midpoint between two numbers on the complex coordinate plane.
MA.912.NSO.2.4:	Solve mathematical and real-world problems involving complex numbers represented algebraically or on the coordinate plane.
MA.912.NSO.2.5:	Represent complex numbers on the complex plane in rectangular and polar forms. **Clarifications:** *Clarification 1*: Instruction includes explaining why the rectangular and polar forms of a given complex numbers represent the same number.

MA.912.NSO.2.6:	Rewrite complex numbers to trigonometric form. Multiply complex numbers in trigonometric form.
MA.912.NSO.3.1:	Apply appropriate notation and symbols to represent vectors in the plane as directed line segments. Determine the magnitude and direction of a vector in component form.
MA.912.NSO.3.2:	Represent vectors in component form, linear form or trigonometric form. Rewrite vectors from one form to another.
MA.912.NSO.3.3:	Solve mathematical and real-world problems involving velocity and other quantities that can be represented by vectors.
MA.912.NSO.3.4:	Solve mathematical and real-world problems involving vectors in two dimensions using the dot product and vector projections.
MA.912.NSO.3.6:	Multiply a vector by a scalar algebraically or graphically.
MA.912.NSO.3.7:	Compute the magnitude and direction of a vector scalar multiple.
MA.912.NSO.3.8:	Add and subtract vectors algebraically or graphically.
MA.912.NSO.3.9:	Given the magnitude and direction of two or more vectors, determine the magnitude and direction of their sum.
MA.912.T.1.3:	Apply the Law of Sines and the Law of Cosines to solve mathematical and real-world problems involving triangles.
MA.912.T.1.4:	Solve mathematical problems involving finding the area of a triangle given two sides and the included angle. **Clarifications:** *Clarification 1:* Problems include right triangles, heights inside of a triangle and heights outside of a triangle.
MA.912.T.1.5:	Prove Pythagorean Identities. Apply Pythagorean Identities to calculate trigonometric ratios and to solve problems.
MA.912.T.1.6:	Prove the Double-Angle, Half-Angle, Angle Sum and Difference formulas for sine, cosine, and tangent. Apply these formulas to solve problems.
MA.912.T.1.7:	Simplify expressions using trigonometric identities. **Clarifications:** *Clarification 1:* Identities are limited to Double-Angle, Half-Angle, Angle Sum and Difference, Pythagorean Identities, Sum Identities and Product Identities.
MA.912.T.1.8:	Solve mathematical and real-world problems involving one-variable trigonometric ratios.
MA.912.T.2.1:	Given any positive or negative angle measure in degrees or radians, identify its corresponding angle measure between 0° and 360° or between 0 and 2π. Convert between degrees and radians.
MA.912.T.2.2:	Define the six basic trigonometric functions for all real numbers by identifying corresponding angle measures and using right triangles drawn in the unit circle.
MA.912.T.2.3:	Determine the values of the six basic trigonometric functions for $0, \frac{\pi}{6}, \frac{\pi}{3}$ and $\frac{\pi}{4}$ and their multiples using special triangles.
MA.912.T.2.4:	Use the unit circle to express the values of sine, cosine and tangent for $\pi - x$, $\pi + x$, and $2\pi - x$ in terms of their values for x, where x is any real number.
MA.912.T.2.5:	Given angles measured in radians or degrees, calculate the values of the six basic trigonometric functions using the unit circle, trigonometric identities or technology.
MA.912.T.3.1:	Given a mathematical or real-world context, choose sine, cosine or tangent trigonometric functions to model periodic phenomena with specified amplitude, frequency, horizontal shift and midline.
MA.912.T.3.2:	Given a table, equation or written description of a trigonometric function, graph that function and determine key features. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; relative maximums and minimums; symmetry; end behavior; periodicity; midline; amplitude; shift(s) and asymptotes. *Clarification 2*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation.
MA.912.T.3.3:	Solve and graph mathematical and real-world problems that are modeled with trigonometric functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; relative maximums and minimums; symmetry; end behavior; periodicity; midline; amplitude; shift(s) and asymptotes. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation. *Clarification 3*: Instruction includes using technology when appropriate.
MA.912.T.4.1:	Define and plot polar coordinates. Convert between polar coordinates and rectangular coordinates with and without the use of technology.
MA.912.T.4.2:	Represent equations given in rectangular coordinates in terms of polar coordinates. Represent equations given in polar coordinates in terms of rectangular coordinates.
MA.912.T.4.3:	Graph equations in the polar coordinate plane with and without the use of graphing technology.
MA.912.T.4.4:	Identify and graph special polar equations, including circles, cardioids, limacons, rose curves and lemniscates.
MA.912.T.4.5:	Sketch the graph of a curve in the plane represented parametrically, indicating the direction of motion.
MA.912.T.4.6:	Convert from a parametric representation of a plane curve to a rectangular equation, and convert from a rectangular equation to a parametric representation of a plane curve.
MA.912.T.4.7:	Apply parametric equations to model applications involving motion in the plane.
MA.K12.MTR.1.1:	**Actively participate in effortful learning both individually and collectively.** Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task. • Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach. **Clarifications:** Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging.

- Develop students' ability to analyze and problem solve.
- Recognize students' effort when solving challenging problems.

MA.K12.MTR.2.1:

Demonstrate understanding by representing problems in multiple ways.
Mathematicians who demonstrate understanding by representing problems in multiple ways:

- Build understanding through modeling and using manipulatives.
- Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations.
- Progress from modeling problems with objects and drawings to using algorithms and equations.
- Express connections between concepts and representations.
- Choose a representation based on the given context or purpose.

Clarifications:
Teachers who encourage students to demonstrate understanding by representing problems in multiple ways:
- Help students make connections between concepts and representations.
- Provide opportunities for students to use manipulatives when investigating concepts.
- Guide students from concrete to pictorial to abstract representations as understanding progresses.
- Show students that various representations can have different purposes and can be useful in different situations.

MA.K12.MTR.3.1:

Complete tasks with mathematical fluency.
Mathematicians who complete tasks with mathematical fluency:

- Select efficient and appropriate methods for solving problems within the given context.
- Maintain flexibility and accuracy while performing procedures and mental calculations.
- Complete tasks accurately and with confidence.
- Adapt procedures to apply them to a new context.
- Use feedback to improve efficiency when performing calculations.

Clarifications:
Teachers who encourage students to complete tasks with mathematical fluency:
- Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately.
- Offer multiple opportunities for students to practice efficient and generalizable methods.
- Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.

MA.K12.MTR.4.1:

Engage in discussions that reflect on the mathematical thinking of self and others.
Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others:

- Communicate mathematical ideas, vocabulary and methods effectively.
- Analyze the mathematical thinking of others.
- Compare the efficiency of a method to those expressed by others.
- Recognize errors and suggest how to correctly solve the task.
- Justify results by explaining methods and processes.
- Construct possible arguments based on evidence.

Clarifications:
Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others:
- Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning.
- Create opportunities for students to discuss their thinking with peers.
- Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods.
- Develop students' ability to justify methods and compare their responses to the responses of their peers.

MA.K12.MTR.5.1:

Use patterns and structure to help understand and connect mathematical concepts.
Mathematicians who use patterns and structure to help understand and connect mathematical concepts:

- Focus on relevant details within a problem.
- Create plans and procedures to logically order events, steps or ideas to solve problems.
- Decompose a complex problem into manageable parts.
- Relate previously learned concepts to new concepts.
- Look for similarities among problems.
- Connect solutions of problems to more complicated large-scale situations.

Clarifications:
Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts:
- Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts.
- Support students to develop generalizations based on the similarities found among problems.
- Provide opportunities for students to create plans and procedures to solve problems.
- Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.

MA.K12.MTR.6.1:

Assess the reasonableness of solutions.
Mathematicians who assess the reasonableness of solutions:

- Estimate to discover possible solutions.
- Use benchmark quantities to determine if a solution makes sense.
- Check calculations when solving problems.
- Verify possible solutions by explaining the methods used.
- Evaluate results based on the given context.

Clarifications:
Teachers who encourage students to assess the reasonableness of solutions:
- Have students estimate or predict solutions prior to solving.

	- Prompt students to continually ask, “Does this solution make sense? How do you know?” - Reinforce that students check their work as they progress within and after a task. - Strengthen students’ ability to verify solutions through justifications.
MA.K12.MTR.7.1:	**Apply mathematics to real-world contexts.** Mathematicians who apply mathematics to real-world contexts: - Connect mathematical concepts to everyday experiences. - Use models and methods to understand, represent and solve problems. - Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency. **Clarifications:** Teachers who encourage students to apply mathematics to real-world contexts: - Provide opportunities for students to create models, both concrete and abstract, and perform investigations. - Challenge students to question the accuracy of their models and methods. - Support students as they validate conclusions by comparing them to the given situation. - Indicate how various concepts can be applied to other disciplines.
ELA.K12.EE.1.1:	Cite evidence to explain and justify reasoning. **Clarifications:** K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing. 2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations. 4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they’ve directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor. 6-8 Students continue with previous skills and use a style guide to create a proper citation. 9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.
ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.
ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like “Why is the girl smiling?” or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
ELA.K12.EE.4.1:	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully. In grades 1-2, students build upon these skills by justifying what they are thinking. For example: “I think _______ because ______.” The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
ELA.K12.EE.5.1:	Use the accepted rules governing a specific format to create quality work. **Clarifications:** Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.
ELA.K12.EE.6.1:	Use appropriate voice and tone when speaking or writing. **Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.
ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.

General Course Information and Notes

VERSION DESCRIPTION

In Precalculus Honors, instructional time will emphasize six areas: (1) extending right triangle trigonometry to unit circle trigonometry and trigonometric functions; (2) extending understanding of functions to trigonometric; (3) developing understanding of conic sections; (4) representing and performing operations with complex numbers and vectors in the coordinate plane; (5) extending understanding of relations in the plane using parametric representations, including polar coordinates and (6) analyzing arithmetic and geometric sequences and series.

All clarifications stated, whether general or specific to Precalculus Honors, are expectations for instruction of that benchmark.

Curricular content for all subjects must integrate critical-thinking, problem-solving, and workforce-literacy skills; communication, reading, and writing skills; mathematics skills; collaboration skills; contextual and applied-learning skills; technology-literacy skills; information and media-literacy skills; and civic-engagement skills.

General Notes

Honors and Accelerated Level Course Note: Accelerated courses require a greater demand on students through increased academic rigor. Academic rigor is obtained through the application, analysis, evaluation, and creation of complex ideas that are often abstract and multi-faceted. Students are challenged to think and collaborate critically on the content they are learning. Honors level rigor will be achieved by increasing text complexity through text selection, focus on high-level qualitative measures, and complexity of task. Instruction will be structured to give students a deeper understanding of conceptual themes and organization within and across disciplines. Academic rigor is more than simply assigning to students a greater quantity of work.

Florida's Benchmarks for Excellent Student Thinking (B.E.S.T.) Standards
This course includes Florida's B.E.S.T. ELA Expectations (EE) and Mathematical Thinking and Reasoning Standards (MTRs) for students. Florida educators should intentionally embed these standards within the content and their instruction as applicable. For guidance on the implementation of the EEs and MTRs, please visit https://www.cpalms.org/Standards/BEST_Standards.aspx and select the appropriate B.E.S.T. Standards package.

English Language Development ELD Standards Special Notes Section:

Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link: https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf

General Information

Course Number: 1202340

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Calculus >

Abbreviated Title: PRECALCULUS HON

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Attributes:

- Honors

Course Type: Core Academic Course

Course Level: 3

Course Status: State Board Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Mathematics

Educator Certifications

Mathematics (Grades 6-12)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Cambridge AICE Mathematics 1 AS Level (#1202352) 2024 - And Beyond (current)

General Course Information and Notes

General Information

Course Number: 1202352

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Calculus >

Abbreviated Title: AICE MATH 1 AS

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Attributes:
- Advanced International Certificate of Education (AICE)
- External Course Description

Course Type: Core Academic Course

Course Level: 3

Course Status: Course Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Mathematics

Educator Certifications

Mathematics (Grades 6-12)

Classical Education - Restricted (Elementary and Secondary Grades K-12)
Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Cambridge AICE Mathematics & Mechanics 1 AS Level (#1202354) 2024 - And Beyond (current)

General Course Information and Notes

General Notes

For more information about this Cambridge course, visit Cambridge International AS & A Level subjects.

General Information

Course Number: 1202354

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Calculus >

Abbreviated Title: AICE MATH&MECH 1 AS

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Attributes:

- Advanced International Certificate of Education (AICE)
- External Course Description

Course Type: Core Academic Course

Course Level: 3

Course Status: Course Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Mathematics

Educator Certifications

Mathematics (Grades 6-12)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Cambridge AICE Mathematics and Probability and Statistics 1 AS Level (#1202362) 2024 - And Beyond (current)

General Course Information and Notes

General Notes

For more information about this Cambridge course, visit Cambridge International AS & A Level subjects.

General Information

Course Number: 1202362

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Probablility and Statistics >

Abbreviated Title: AICE MA PR ST 1 AS

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Attributes:

- Advanced International Certificate of Education (AICE)
- External Course Description

Course Type: Core Academic Course

Course Level: 3

Course Status: Course Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Mathematics

Educator Certifications

Mathematics (Grades 6-12)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Cambridge AICE Mathematics and Probability and Statistics 2 A Level (#1202364) 2024 - And Beyond (current)

General Course Information and Notes

General Notes

For more information about this Cambridge course, visit Cambridge International AS & A Level subjects.

General Information

Course Number: 1202364

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Probablility and Statistics >

Abbreviated Title: AICE MA PR ST 2 AL

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Attributes:

- Advanced International Certificate of Education (AICE)
- External Course Description

Course Type: Core Academic Course

Course Level: 3

Course Status: Course Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Mathematics

Educator Certifications

Mathematics (Grades 6-12)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Cambridge AICE Further Mathematics 1 AS Level (#1202365) 2024 - And Beyond (current)

General Course Information and Notes

VERSION DESCRIPTION

For more information about this Cambridge course, visit Cambridge International AS & A Level subjects.

General Information

Course Number: 1202365

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Calculus >

Abbreviated Title: AICE FURTHERMATH 1AS

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Attributes:

- Advanced International Certificate of Education (AICE)
- External Course Description

Course Type: Core Academic Course

Course Level: 3

Course Status: Course Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Mathematics

Educator Certifications

Mathematics (Grades 6-12)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Cambridge AICE Mathematics and Mechanics and Probability and Statistics 2 A Level (#1202366) 2024 - And Beyond

(current)

General Course Information and Notes

General Notes

For more information about this Cambridge course, visit Cambridge International AS & A Level subjects.

General Information

Course Number: 1202366

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Probablility and Statistics >

Abbreviated Title: AICE MA ME PR ST 2 AL

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Attributes:

- Advanced International Certificate of Education (AICE)
- External Course Description

Course Type: Core Academic Course

Course Level: 3

Course Status: Course Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Mathematics

Educator Certifications

Mathematics (Grades 6-12)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Cambridge AICE Further Mathematics 2 A Level (#1202370) 2024 - And Beyond (current)

General Course Information and Notes

General Notes

For more information about this Cambridge course, visit Cambridge International AS & A Level subjects.

General Information

Course Number: 1202370

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Calculus >

Abbreviated Title: AICE FURTHERMATH 2AL

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Attributes:

- Advanced International Certificate of Education (AICE)
- External Course Description

Course Type: Core Academic Course

Course Level: 3

Course Status: Course Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Mathematics

Educator Certifications

Mathematics (Grades 6-12)

Classical Education - Restricted (Elementary and Secondary Grades K-12)
Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Cambridge Pre-AICE Additional Mathematics 3 IGCSE Level (#1202371) 2024 - And Beyond (current)

General Course Information and Notes

General Notes

For more information about this Cambridge course, visit Cambridge IGCSE subjects.

General Information

Course Number: 1202371

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Calculus >

Abbreviated Title: PRE-AICE ADD MTH3 IG

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Attributes:

- Advanced International Certificate of Education (AICE)
- External Course Description

Course Type: Core Academic Course

Course Level: 3

Course Status: Course Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Mathematics

Educator Certifications

Mathematics (Grades 6-12)

Classical Education - Restricted (Elementary and Secondary Grades K-12)
Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

International Baccalaureate Precalculus (#1202375) 2024 - And Beyond (current)

General Course Information and Notes

General Notes

The curriculum description for this IB course is provided at http://www.ibo.org/en/programmes/.

General Information

Course Number: 1202375

Number of Credits: One (1) credit

Course Type: Core Academic Course
Course Status: Course Approved
Grade Level(s): 9,10,11,12
Graduation Requirement: Mathematics

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Calculus >
Abbreviated Title: IB PRECALCULUS
Course Length: Year (Y)
Course Attributes:

- International Baccalaureate (IB)

Course Level: 3

Educator Certifications

Mathematics (Grades 6-12)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

International Baccalaureate MYP Precalculus (#1202380) 2024 - And Beyond (current)

General Course Information and Notes

General Notes

The curriculum description for this IB course is provided at http://www.ibo.org/en/programmes/.

General Information

Course Number: 1202380

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Calculus >

Abbreviated Title: IB MYP PRECALCULUS

Course Length: Year (Y)

Course Attributes:

- International Baccalaureate (IB)

Course Level: 3

Course Status: Course Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Mathematics

Educator Certifications

Mathematics (Grades 6-12)
Middle Grades Mathematics (Middle Grades 5-9)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Pre-Advanced Placement Geometry with Statistics (#1206305) 2024 - And Beyond (current)

General Course Information and Notes

General Notes

The course description for this Pre-Advanced Placement (Pre-AP) course is located on the College Board site at https://pre-ap.collegeboard.org/courses.

General Information

Course Number: 1206305

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Geometry >

Abbreviated Title: PRE-AP GEOM W/STAT

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Attributes:

- Advanced Placement (AP)

Course Type: Core Academic Course

Course Level: 3

Course Status: Course Approved

Grade Level(s): 10

Graduation Requirement: Mathematics

Educator Certifications

Mathematics (Grades 6-12)

Classical Education - Restricted (Elementary and Secondary Grades K-12)
Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Geometry (#1206310) 2024 - And Beyond (current)

Course Standards

Name	Description
MA.912.GR.1.1:	Prove relationships and theorems about lines and angles. Solve mathematical and real-world problems involving postulates, relationships and theorems of lines and angles. **Clarifications:** *Clarification 1*: Postulates, relationships and theorems include vertical angles are congruent; when a transversal crosses parallel lines, the consecutive angles are supplementary and alternate (interior and exterior) angles and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints. *Clarification 2*: Instruction includes constructing two-column proofs, pictorial proofs, paragraph and narrative proofs, flow chart proofs or informal proofs. *Clarification 3*: Instruction focuses on helping a student choose a method they can use reliably.
MA.912.GR.1.2:	Prove triangle congruence or similarity using Side-Side-Side, Side-Angle-Side, Angle-Side-Angle, Angle-Angle-Side, Angle-Angle and Hypotenuse-Leg. **Clarifications:** *Clarification 1*: Instruction includes constructing two-column proofs, pictorial proofs, paragraph and narrative proofs, flow chart proofs or informal proofs. *Clarification 2*: Instruction focuses on helping a student choose a method they can use reliably.
MA.912.GR.1.3:	Prove relationships and theorems about triangles. Solve mathematical and real-world problems involving postulates, relationships and theorems of triangles. **Clarifications:** *Clarification 1*: Postulates, relationships and theorems include measures of interior angles of a triangle sum to 180°; measures of a set of exterior angles of a triangle sum to 360°; triangle inequality theorem; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point. *Clarification 2*: Instruction includes constructing two-column proofs, pictorial proofs, paragraph and narrative proofs, flow chart proofs or informal proofs. *Clarification 3*: Instruction focuses on helping a student choose a method they can use reliably.
MA.912.GR.1.4:	Prove relationships and theorems about parallelograms. Solve mathematical and real-world problems involving postulates, relationships and theorems of parallelograms. **Clarifications:** *Clarification 1*: Postulates, relationships and theorems include opposite sides are congruent, consecutive angles are supplementary, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and rectangles are parallelograms with congruent diagonals. *Clarification 2*: Instruction includes constructing two-column proofs, pictorial proofs, paragraph and narrative proofs, flow chart proofs or informal proofs. *Clarification 3*: Instruction focuses on helping a student choose a method they can use reliably.
MA.912.GR.1.5:	Prove relationships and theorems about trapezoids. Solve mathematical and real-world problems involving postulates, relationships and theorems of trapezoids. **Clarifications:** *Clarification 1*: Postulates, relationships and theorems include the Trapezoid Midsegment Theorem and for isosceles trapezoids: base angles are congruent, opposite angles are supplementary and diagonals are congruent. *Clarification 2*: Instruction includes constructing two-column proofs, pictorial proofs, paragraph and narrative proofs, flow chart proofs or informal proofs. *Clarification 3*: Instruction focuses on helping a student choose a method they can use reliably.
MA.912.GR.1.6:	Solve mathematical and real-world problems involving congruence or similarity in two-dimensional figures. **Clarifications:** *Clarification 1:* Instruction includes demonstrating that two-dimensional figures are congruent or similar based on given information.
MA.912.GR.2.1:	Given a preimage and image, describe the transformation and represent the transformation algebraically using coordinates. **Clarifications:** *Clarification 1*: Instruction includes the connection of transformations to functions that take points in the plane as inputs and give other points in the plane as outputs. *Clarification 2*: Transformations include translations, dilations, rotations and reflections described using words or using coordinates. *Clarification 3*: Within the Geometry course, rotations are limited to 90°, 180° and 270° counterclockwise or clockwise about the center of rotation, and the centers of rotations and dilations are limited to the origin or a point on the figure.
MA.912.GR.2.2:	Identify transformations that do or do not preserve distance. **Clarifications:** *Clarification 1*: Transformations include translations, dilations, rotations and reflections described using words or using coordinates. *Clarification 2*: Instruction includes recognizing that these transformations preserve angle measure.

MA.912.GR.2.3:	Identify a sequence of transformations that will map a given figure onto itself or onto another congruent or similar figure. **Clarifications:** *Clarification 1*: Transformations include translations, dilations, rotations and reflections described using words or using coordinates. *Clarification 2*: Within the Geometry course, figures are limited to triangles and quadrilaterals and rotations are limited to 90°, 180° and 270° counterclockwise or clockwise about the center of rotation. *Clarification 3*: Instruction includes the understanding that when a figure is mapped onto itself using a reflection, it occurs over a line of symmetry.
MA.912.GR.2.5:	Given a geometric figure and a sequence of transformations, draw the transformed figure on a coordinate plane. **Clarifications:** *Clarification 1*: Transformations include translations, dilations, rotations and reflections described using words or using coordinates. *Clarification 2*: Instruction includes two or more transformations.
MA.912.GR.2.6:	Apply rigid transformations to map one figure onto another to justify that the two figures are congruent. **Clarifications:** *Clarification 1*: Instruction includes showing that the corresponding sides and the corresponding angles are congruent.
MA.912.GR.2.8:	Apply an appropriate transformation to map one figure onto another to justify that the two figures are similar. **Clarifications:** *Clarification 1*: Instruction includes showing that the corresponding sides are proportional, and the corresponding angles are congruent.
MA.912.GR.3.1:	Determine the weighted average of two or more points on a line. **Clarifications:** *Clarification 1*: Instruction includes using a number line and determining how changing the weights moves the weighted average of points on the number line.
MA.912.GR.3.2:	Given a mathematical context, use coordinate geometry to classify or justify definitions, properties and theorems involving circles, triangles or quadrilaterals. **Clarifications:** *Clarification 1*: Instruction includes using the distance or midpoint formulas and knowledge of slope to classify or justify definitions, properties and theorems.
MA.912.GR.3.3:	Use coordinate geometry to solve mathematical and real-world geometric problems involving lines, circles, triangles and quadrilaterals. **Clarifications:** *Clarification 1*: Problems involving lines include the coordinates of a point on a line segment including the midpoint. *Clarification 2*: Problems involving circles include determining points on a given circle and finding tangent lines. *Clarification 3*: Problems involving triangles include median and centroid. *Clarification 4*: Problems involving quadrilaterals include using parallel and perpendicular slope criteria.
MA.912.GR.3.4:	Use coordinate geometry to solve mathematical and real-world problems on the coordinate plane involving perimeter or area of polygons.
MA.912.GR.4.1:	Identify the shapes of two-dimensional cross-sections of three-dimensional figures. **Clarifications:** *Clarification 1*: Instruction includes the use of manipulatives and models to visualize cross-sections. *Clarification 2*: Instruction focuses on cross-sections of right cylinders, right prisms, right pyramids and right cones that are parallel or perpendicular to the base.
MA.912.GR.4.2:	Identify three-dimensional objects generated by rotations of two-dimensional figures. **Clarifications:** *Clarification 1*: The axis of rotation must be within the same plane but outside of the given two-dimensional figure.
MA.912.GR.4.3:	Extend previous understanding of scale drawings and scale factors to determine how dilations affect the area of two-dimensional figures and the surface area or volume of three-dimensional figures.
MA.912.GR.4.4:	Solve mathematical and real-world problems involving the area of two-dimensional figures. **Clarifications:** *Clarification 1*: Instruction includes concepts of population density based on area.
MA.912.GR.4.5:	Solve mathematical and real-world problems involving the volume of three-dimensional figures limited to cylinders, pyramids, prisms, cones and spheres. **Clarifications:** *Clarification 1:* Instruction includes concepts of density based on volume. *Clarification 2:* Instruction includes using Cavalieri's Principle to give informal arguments about the formulas for the volumes of right and non-right cylinders, pyramids, prisms and cones.
MA.912.GR.4.6:	Solve mathematical and real-world problems involving the surface area of three-dimensional figures limited to cylinders, pyramids, prisms, cones and spheres.
MA.912.GR.5.1:	Construct a copy of a segment or an angle. **Clarifications:** *Clarification 1*: Instruction includes using compass and straightedge, string, reflective devices, paper folding or dynamic geometric software.
MA.912.GR.5.2:	Construct the bisector of a segment or an angle, including the perpendicular bisector of a line segment. **Clarifications:** *Clarification 1*: Instruction includes using compass and straightedge, string, reflective devices, paper folding or dynamic geometric software.
	Construct the inscribed and circumscribed circles of a triangle.

MA.912.GR.5.3:	**Clarifications:** *Clarification 1*: Instruction includes using compass and straightedge, string, reflective devices, paper folding or dynamic geometric software.
MA.912.GR.6.1:	Solve mathematical and real-world problems involving the length of a secant, tangent, segment or chord in a given circle. **Clarifications:** *Clarification 1:* Problems include relationships between two chords; two secants; a secant and a tangent; and the length of the tangent from a point to a circle.
MA.912.GR.6.2:	Solve mathematical and real-world problems involving the measures of arcs and related angles. **Clarifications:** *Clarification 1*: Within the Geometry course, problems are limited to relationships between inscribed angles; central angles; and angles formed by the following intersections: a tangent and a secant through the center, two tangents, and a chord and its perpendicular bisector.
MA.912.GR.6.3:	Solve mathematical problems involving triangles and quadrilaterals inscribed in a circle. **Clarifications:** *Clarification 1*: Instruction includes cases in which a triangle inscribed in a circle has a side that is the diameter.
MA.912.GR.6.4:	Solve mathematical and real-world problems involving the arc length and area of a sector in a given circle. **Clarifications:** *Clarification 1*: Instruction focuses on the conceptual understanding that for a given angle measure the length of the intercepted arc is proportional to the radius, and for a given radius the length of the intercepted arc is proportional is the angle measure.
MA.912.GR.7.2:	Given a mathematical or real-world context, derive and create the equation of a circle using key features. **Clarifications:** *Clarification 1:* Instruction includes using the Pythagorean Theorem and completing the square. *Clarification 2:* Within the Geometry course, key features are limited to the radius, diameter and the center.
MA.912.GR.7.3:	Graph and solve mathematical and real-world problems that are modeled with an equation of a circle. Determine and interpret key features in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain, range, eccentricity, center and radius. *Clarification 2*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 3*: Within the Geometry course, notations for domain and range are limited to inequality and set-builder.
MA.912.LT.4.3:	Identify and accurately interpret "if…then," "if and only if," "all" and "not" statements. Find the converse, inverse and contrapositive of a statement. **Clarifications:** *Clarification 1:* Instruction focuses on recognizing the relationships between an "if…then" statement and the converse, inverse and contrapositive of that statement. *Clarification 2:* Within the Geometry course, instruction focuses on the connection to proofs within the course.
MA.912.LT.4.10:	Judge the validity of arguments and give counterexamples to disprove statements. **Clarifications:** *Clarification 1:* Within the Geometry course, instruction focuses on the connection to proofs within the course.
MA.912.T.1.1:	Define trigonometric ratios for acute angles in right triangles. **Clarifications:** *Clarification 1*: Instruction includes using the Pythagorean Theorem and using similar triangles to demonstrate that trigonometric ratios stay the same for similar right triangles. *Clarification 2*: Within the Geometry course, instruction includes using the coordinate plane to make connections to the unit circle. *Clarification 3*: Within the Geometry course, trigonometric ratios are limited to sine, cosine and tangent.
MA.912.T.1.2:	Solve mathematical and real-world problems involving right triangles using trigonometric ratios and the Pythagorean Theorem. **Clarifications:** *Clarification 1*: Instruction includes procedural fluency with the relationships of side lengths in special right triangles having angle measures of 30°-60°-90° and 45°-45°-90°.
MA.K12.MTR.1.1:	**Actively participate in effortful learning both individually and collectively.** Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task. • Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach. **Clarifications:** Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging. • Develop students' ability to analyze and problem solve. • Recognize students' effort when solving challenging problems.
	Demonstrate understanding by representing problems in multiple ways. Mathematicians who demonstrate understanding by representing problems in multiple ways:

MA.K12.MTR.2.1:	• Build understanding through modeling and using manipulatives. • Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. • Progress from modeling problems with objects and drawings to using algorithms and equations. • Express connections between concepts and representations. • Choose a representation based on the given context or purpose. **Clarifications:** Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: • Help students make connections between concepts and representations. • Provide opportunities for students to use manipulatives when investigating concepts. • Guide students from concrete to pictorial to abstract representations as understanding progresses. • Show students that various representations can have different purposes and can be useful in different situations.
MA.K12.MTR.3.1:	**Complete tasks with mathematical fluency.** Mathematicians who complete tasks with mathematical fluency: • Select efficient and appropriate methods for solving problems within the given context. • Maintain flexibility and accuracy while performing procedures and mental calculations. • Complete tasks accurately and with confidence. • Adapt procedures to apply them to a new context. • Use feedback to improve efficiency when performing calculations. **Clarifications:** Teachers who encourage students to complete tasks with mathematical fluency: • Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately. • Offer multiple opportunities for students to practice efficient and generalizable methods. • Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.
MA.K12.MTR.4.1:	**Engage in discussions that reflect on the mathematical thinking of self and others.** Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others: • Communicate mathematical ideas, vocabulary and methods effectively. • Analyze the mathematical thinking of others. • Compare the efficiency of a method to those expressed by others. • Recognize errors and suggest how to correctly solve the task. • Justify results by explaining methods and processes. • Construct possible arguments based on evidence. **Clarifications:** Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: • Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning. • Create opportunities for students to discuss their thinking with peers. • Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. • Develop students' ability to justify methods and compare their responses to the responses of their peers.
MA.K12.MTR.5.1:	**Use patterns and structure to help understand and connect mathematical concepts.** Mathematicians who use patterns and structure to help understand and connect mathematical concepts: • Focus on relevant details within a problem. • Create plans and procedures to logically order events, steps or ideas to solve problems. • Decompose a complex problem into manageable parts. • Relate previously learned concepts to new concepts. • Look for similarities among problems. • Connect solutions of problems to more complicated large-scale situations. **Clarifications:** Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts: • Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts. • Support students to develop generalizations based on the similarities found among problems. • Provide opportunities for students to create plans and procedures to solve problems. • Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.
MA.K12.MTR.6.1:	**Assess the reasonableness of solutions.** Mathematicians who assess the reasonableness of solutions: • Estimate to discover possible solutions. • Use benchmark quantities to determine if a solution makes sense. • Check calculations when solving problems. • Verify possible solutions by explaining the methods used. • Evaluate results based on the given context. **Clarifications:** Teachers who encourage students to assess the reasonableness of solutions: • Have students estimate or predict solutions prior to solving. • Prompt students to continually ask, "Does this solution make sense? How do you know?" • Reinforce that students check their work as they progress within and after a task. • Strengthen students' ability to verify solutions through justifications.
	Apply mathematics to real-world contexts. Mathematicians who apply mathematics to real-world contexts:

MA.K12.MTR.7.1:	• Connect mathematical concepts to everyday experiences. • Use models and methods to understand, represent and solve problems. • Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency. **Clarifications:** Teachers who encourage students to apply mathematics to real-world contexts: • Provide opportunities for students to create models, both concrete and abstract, and perform investigations. • Challenge students to question the accuracy of their models and methods. • Support students as they validate conclusions by comparing them to the given situation. • Indicate how various concepts can be applied to other disciplines.
ELA.K12.EE.1.1:	Cite evidence to explain and justify reasoning. **Clarifications:** K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing. 2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations. 4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they've directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor. 6-8 Students continue with previous skills and use a style guide to create a proper citation. 9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.
ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.
ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like "Why is the girl smiling?" or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
ELA.K12.EE.4.1:	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully. In grades 1-2, students build upon these skills by justifying what they are thinking. For example: "I think _______ because ______." The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
ELA.K12.EE.5.1:	Use the accepted rules governing a specific format to create quality work. **Clarifications:** Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.
ELA.K12.EE.6.1:	Use appropriate voice and tone when speaking or writing. **Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.
ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.

General Course Information and Notes

VERSION DESCRIPTION

In Geometry, instructional time will emphasize five areas: (1) proving and applying relationships and theorems involving two-dimensional figures using Euclidean geometry and coordinate geometry; (2) establishing congruence and similarity using criteria from Euclidean geometry and using rigid transformations; (3) extending knowledge of geometric measurement to two-dimensional figures and three-dimensional figures; (4) creating and applying equations of circles in the coordinate plane and (5)developing an understanding of right triangle trigonometry.

All clarifications stated, whether general or specific to Geometry, are expectations for instruction of that benchmark.

Curricular content for all subjects must integrate critical-thinking, problem-solving, and workforce-literacy skills; communication, reading, and writing skills; mathematics skills; collaboration skills; contextual and applied-learning skills; technology-literacy skills; information and media-literacy skills; and civic-engagement skills.

General Notes

Florida's Benchmarks for Excellent Student Thinking (B.E.S.T.) Standards
This course includes Florida's B.E.S.T. ELA Expectations (EE) and Mathematical Thinking and Reasoning Standards (MTRs) for students. Florida educators should intentionally embed these standards within the content and their instruction as applicable. For guidance on the implementation of the EEs and MTRs, please visit https://www.cpalms.org/Standards/BEST_Standards.aspx and select the appropriate B.E.S.T. Standards package.

English Language Development ELD Standards Special Notes Section:

Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link: https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf

General Information

Course Number: 1206310

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Geometry >

Abbreviated Title: GEO

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Attributes:

- Class Size Core Required

Course Type: Core Academic Course

Course Level: 2

Course Status: State Board Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Geometry

Educator Certifications

Mathematics (Grades 6-12)
Middle Grades Mathematics (Middle Grades 5-9)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Geometry for Credit Recovery (#1206315) 2024 - And Beyond (current)

Course Standards

Name	Description
MA.912.GR.1.1:	Prove relationships and theorems about lines and angles. Solve mathematical and real-world problems involving postulates, relationships and theorems of lines and angles. **Clarifications:** *Clarification 1*: Postulates, relationships and theorems include vertical angles are congruent; when a transversal crosses parallel lines, the consecutive angles are supplementary and alternate (interior and exterior) angles and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints. *Clarification 2*: Instruction includes constructing two-column proofs, pictorial proofs, paragraph and narrative proofs, flow chart proofs or informal proofs. *Clarification 3*: Instruction focuses on helping a student choose a method they can use reliably.
MA.912.GR.1.2:	Prove triangle congruence or similarity using Side-Side-Side, Side-Angle-Side, Angle-Side-Angle, Angle-Angle-Side, Angle-Angle and Hypotenuse-Leg. **Clarifications:** *Clarification 1*: Instruction includes constructing two-column proofs, pictorial proofs, paragraph and narrative proofs, flow chart proofs or informal proofs. *Clarification 2*: Instruction focuses on helping a student choose a method they can use reliably.
MA.912.GR.1.3:	Prove relationships and theorems about triangles. Solve mathematical and real-world problems involving postulates, relationships and theorems of triangles. **Clarifications:** *Clarification 1*: Postulates, relationships and theorems include measures of interior angles of a triangle sum to 180°; measures of a set of exterior angles of a triangle sum to 360°; triangle inequality theorem; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point. *Clarification 2*: Instruction includes constructing two-column proofs, pictorial proofs, paragraph and narrative proofs, flow chart proofs or informal proofs. *Clarification 3*: Instruction focuses on helping a student choose a method they can use reliably.
MA.912.GR.1.4:	Prove relationships and theorems about parallelograms. Solve mathematical and real-world problems involving postulates, relationships and theorems of parallelograms. **Clarifications:** *Clarification 1*: Postulates, relationships and theorems include opposite sides are congruent, consecutive angles are supplementary, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and rectangles are parallelograms with congruent diagonals. *Clarification 2*: Instruction includes constructing two-column proofs, pictorial proofs, paragraph and narrative proofs, flow chart proofs or informal proofs. *Clarification 3*: Instruction focuses on helping a student choose a method they can use reliably.
MA.912.GR.1.5:	Prove relationships and theorems about trapezoids. Solve mathematical and real-world problems involving postulates, relationships and theorems of trapezoids. **Clarifications:** *Clarification 1*: Postulates, relationships and theorems include the Trapezoid Midsegment Theorem and for isosceles trapezoids: base angles are congruent, opposite angles are supplementary and diagonals are congruent. *Clarification 2*: Instruction includes constructing two-column proofs, pictorial proofs, paragraph and narrative proofs, flow chart proofs or informal proofs. *Clarification 3*: Instruction focuses on helping a student choose a method they can use reliably.
MA.912.GR.1.6:	Solve mathematical and real-world problems involving congruence or similarity in two-dimensional figures. **Clarifications:** *Clarification 1:* Instruction includes demonstrating that two-dimensional figures are congruent or similar based on given information.
MA.912.GR.2.1:	Given a preimage and image, describe the transformation and represent the transformation algebraically using coordinates. **Clarifications:** *Clarification 1*: Instruction includes the connection of transformations to functions that take points in the plane as inputs and give other points in the plane as outputs. *Clarification 2*: Transformations include translations, dilations, rotations and reflections described using words or using coordinates. *Clarification 3*: Within the Geometry course, rotations are limited to 90°, 180° and 270° counterclockwise or clockwise about the center of rotation, and the centers of rotations and dilations are limited to the origin or a point on the figure.
MA.912.GR.2.2:	Identify transformations that do or do not preserve distance. **Clarifications:** *Clarification 1*: Transformations include translations, dilations, rotations and reflections described using words or using coordinates. *Clarification 2*: Instruction includes recognizing that these transformations preserve angle measure.

MA.912.GR.2.3:	Identify a sequence of transformations that will map a given figure onto itself or onto another congruent or similar figure. **Clarifications:** *Clarification 1*: Transformations include translations, dilations, rotations and reflections described using words or using coordinates. *Clarification 2*: Within the Geometry course, figures are limited to triangles and quadrilaterals and rotations are limited to 90°, 180° and 270° counterclockwise or clockwise about the center of rotation. *Clarification 3*: Instruction includes the understanding that when a figure is mapped onto itself using a reflection, it occurs over a line of symmetry.
MA.912.GR.2.5:	Given a geometric figure and a sequence of transformations, draw the transformed figure on a coordinate plane. **Clarifications:** *Clarification 1*: Transformations include translations, dilations, rotations and reflections described using words or using coordinates. *Clarification 2*: Instruction includes two or more transformations.
MA.912.GR.2.6:	Apply rigid transformations to map one figure onto another to justify that the two figures are congruent. **Clarifications:** *Clarification 1*: Instruction includes showing that the corresponding sides and the corresponding angles are congruent.
MA.912.GR.2.8:	Apply an appropriate transformation to map one figure onto another to justify that the two figures are similar. **Clarifications:** *Clarification 1*: Instruction includes showing that the corresponding sides are proportional, and the corresponding angles are congruent.
MA.912.GR.3.1:	Determine the weighted average of two or more points on a line. **Clarifications:** *Clarification 1*: Instruction includes using a number line and determining how changing the weights moves the weighted average of points on the number line.
MA.912.GR.3.2:	Given a mathematical context, use coordinate geometry to classify or justify definitions, properties and theorems involving circles, triangles or quadrilaterals. **Clarifications:** *Clarification 1*: Instruction includes using the distance or midpoint formulas and knowledge of slope to classify or justify definitions, properties and theorems.
MA.912.GR.3.3:	Use coordinate geometry to solve mathematical and real-world geometric problems involving lines, circles, triangles and quadrilaterals. **Clarifications:** *Clarification 1*: Problems involving lines include the coordinates of a point on a line segment including the midpoint. *Clarification 2*: Problems involving circles include determining points on a given circle and finding tangent lines. *Clarification 3*: Problems involving triangles include median and centroid. *Clarification 4*: Problems involving quadrilaterals include using parallel and perpendicular slope criteria.
MA.912.GR.3.4:	Use coordinate geometry to solve mathematical and real-world problems on the coordinate plane involving perimeter or area of polygons.
MA.912.GR.4.1:	Identify the shapes of two-dimensional cross-sections of three-dimensional figures. **Clarifications:** *Clarification 1*: Instruction includes the use of manipulatives and models to visualize cross-sections. *Clarification 2*: Instruction focuses on cross-sections of right cylinders, right prisms, right pyramids and right cones that are parallel or perpendicular to the base.
MA.912.GR.4.2:	Identify three-dimensional objects generated by rotations of two-dimensional figures. **Clarifications:** *Clarification 1*: The axis of rotation must be within the same plane but outside of the given two-dimensional figure.
MA.912.GR.4.3:	Extend previous understanding of scale drawings and scale factors to determine how dilations affect the area of two-dimensional figures and the surface area or volume of three-dimensional figures.
MA.912.GR.4.4:	Solve mathematical and real-world problems involving the area of two-dimensional figures. **Clarifications:** *Clarification 1*: Instruction includes concepts of population density based on area.
MA.912.GR.4.5:	Solve mathematical and real-world problems involving the volume of three-dimensional figures limited to cylinders, pyramids, prisms, cones and spheres. **Clarifications:** *Clarification 1:* Instruction includes concepts of density based on volume. *Clarification 2:* Instruction includes using Cavalieri's Principle to give informal arguments about the formulas for the volumes of right and non-right cylinders, pyramids, prisms and cones.
MA.912.GR.4.6:	Solve mathematical and real-world problems involving the surface area of three-dimensional figures limited to cylinders, pyramids, prisms, cones and spheres.
MA.912.GR.5.1:	Construct a copy of a segment or an angle. **Clarifications:** *Clarification 1*: Instruction includes using compass and straightedge, string, reflective devices, paper folding or dynamic geometric software.
MA.912.GR.5.2:	Construct the bisector of a segment or an angle, including the perpendicular bisector of a line segment. **Clarifications:** *Clarification 1*: Instruction includes using compass and straightedge, string, reflective devices, paper folding or dynamic geometric software.
	Construct the inscribed and circumscribed circles of a triangle.

MA.912.GR.5.3:	**Clarifications:** *Clarification 1*: Instruction includes using compass and straightedge, string, reflective devices, paper folding or dynamic geometric software.
MA.912.GR.6.1:	Solve mathematical and real-world problems involving the length of a secant, tangent, segment or chord in a given circle. **Clarifications:** *Clarification 1:* Problems include relationships between two chords; two secants; a secant and a tangent; and the length of the tangent from a point to a circle.
MA.912.GR.6.2:	Solve mathematical and real-world problems involving the measures of arcs and related angles. **Clarifications:** *Clarification 1*: Within the Geometry course, problems are limited to relationships between inscribed angles; central angles; and angles formed by the following intersections: a tangent and a secant through the center, two tangents, and a chord and its perpendicular bisector.
MA.912.GR.6.3:	Solve mathematical problems involving triangles and quadrilaterals inscribed in a circle. **Clarifications:** *Clarification 1*: Instruction includes cases in which a triangle inscribed in a circle has a side that is the diameter.
MA.912.GR.6.4:	Solve mathematical and real-world problems involving the arc length and area of a sector in a given circle. **Clarifications:** *Clarification 1*: Instruction focuses on the conceptual understanding that for a given angle measure the length of the intercepted arc is proportional to the radius, and for a given radius the length of the intercepted arc is proportional is the angle measure.
MA.912.GR.7.2:	Given a mathematical or real-world context, derive and create the equation of a circle using key features. **Clarifications:** *Clarification 1:* Instruction includes using the Pythagorean Theorem and completing the square. *Clarification 2:* Within the Geometry course, key features are limited to the radius, diameter and the center.
MA.912.GR.7.3:	Graph and solve mathematical and real-world problems that are modeled with an equation of a circle. Determine and interpret key features in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain, range, eccentricity, center and radius. *Clarification 2*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 3*: Within the Geometry course, notations for domain and range are limited to inequality and set-builder.
MA.912.LT.4.3:	Identify and accurately interpret “if…then,” “if and only if,” “all” and “not” statements. Find the converse, inverse and contrapositive of a statement. **Clarifications:** *Clarification 1:* Instruction focuses on recognizing the relationships between an “if…then” statement and the converse, inverse and contrapositive of that statement. *Clarification 2:* Within the Geometry course, instruction focuses on the connection to proofs within the course.
MA.912.LT.4.10:	Judge the validity of arguments and give counterexamples to disprove statements. **Clarifications:** *Clarification 1:* Within the Geometry course, instruction focuses on the connection to proofs within the course.
MA.912.T.1.1:	Define trigonometric ratios for acute angles in right triangles. **Clarifications:** *Clarification 1*: Instruction includes using the Pythagorean Theorem and using similar triangles to demonstrate that trigonometric ratios stay the same for similar right triangles. *Clarification 2*: Within the Geometry course, instruction includes using the coordinate plane to make connections to the unit circle. *Clarification 3*: Within the Geometry course, trigonometric ratios are limited to sine, cosine and tangent.
MA.912.T.1.2:	Solve mathematical and real-world problems involving right triangles using trigonometric ratios and the Pythagorean Theorem. **Clarifications:** *Clarification 1*: Instruction includes procedural fluency with the relationships of side lengths in special right triangles having angle measures of 30°-60°-90° and 45°-45°-90°.
MA.K12.MTR.1.1:	**Actively participate in effortful learning both individually and collectively.** Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task. • Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach. **Clarifications:** Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging. • Develop students’ ability to analyze and problem solve. • Recognize students’ effort when solving challenging problems.
	Demonstrate understanding by representing problems in multiple ways. Mathematicians who demonstrate understanding by representing problems in multiple ways:

MA.K12.MTR.2.1:	• Build understanding through modeling and using manipulatives. • Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. • Progress from modeling problems with objects and drawings to using algorithms and equations. • Express connections between concepts and representations. • Choose a representation based on the given context or purpose. **Clarifications:** Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: • Help students make connections between concepts and representations. • Provide opportunities for students to use manipulatives when investigating concepts. • Guide students from concrete to pictorial to abstract representations as understanding progresses. • Show students that various representations can have different purposes and can be useful in different situations.
MA.K12.MTR.3.1:	**Complete tasks with mathematical fluency.** Mathematicians who complete tasks with mathematical fluency: • Select efficient and appropriate methods for solving problems within the given context. • Maintain flexibility and accuracy while performing procedures and mental calculations. • Complete tasks accurately and with confidence. • Adapt procedures to apply them to a new context. • Use feedback to improve efficiency when performing calculations. **Clarifications:** Teachers who encourage students to complete tasks with mathematical fluency: • Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately. • Offer multiple opportunities for students to practice efficient and generalizable methods. • Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.
MA.K12.MTR.4.1:	**Engage in discussions that reflect on the mathematical thinking of self and others.** Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others: • Communicate mathematical ideas, vocabulary and methods effectively. • Analyze the mathematical thinking of others. • Compare the efficiency of a method to those expressed by others. • Recognize errors and suggest how to correctly solve the task. • Justify results by explaining methods and processes. • Construct possible arguments based on evidence. **Clarifications:** Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: • Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning. • Create opportunities for students to discuss their thinking with peers. • Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. • Develop students' ability to justify methods and compare their responses to the responses of their peers.
MA.K12.MTR.5.1:	**Use patterns and structure to help understand and connect mathematical concepts.** Mathematicians who use patterns and structure to help understand and connect mathematical concepts: • Focus on relevant details within a problem. • Create plans and procedures to logically order events, steps or ideas to solve problems. • Decompose a complex problem into manageable parts. • Relate previously learned concepts to new concepts. • Look for similarities among problems. • Connect solutions of problems to more complicated large-scale situations. **Clarifications:** Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts: • Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts. • Support students to develop generalizations based on the similarities found among problems. • Provide opportunities for students to create plans and procedures to solve problems. • Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.
MA.K12.MTR.6.1:	**Assess the reasonableness of solutions.** Mathematicians who assess the reasonableness of solutions: • Estimate to discover possible solutions. • Use benchmark quantities to determine if a solution makes sense. • Check calculations when solving problems. • Verify possible solutions by explaining the methods used. • Evaluate results based on the given context. **Clarifications:** Teachers who encourage students to assess the reasonableness of solutions: • Have students estimate or predict solutions prior to solving. • Prompt students to continually ask, "Does this solution make sense? How do you know?" • Reinforce that students check their work as they progress within and after a task. • Strengthen students' ability to verify solutions through justifications.
	Apply mathematics to real-world contexts. Mathematicians who apply mathematics to real-world contexts:

MA.K12.MTR.7.1:	- Connect mathematical concepts to everyday experiences. - Use models and methods to understand, represent and solve problems. - Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency. **Clarifications:** Teachers who encourage students to apply mathematics to real-world contexts: - Provide opportunities for students to create models, both concrete and abstract, and perform investigations. - Challenge students to question the accuracy of their models and methods. - Support students as they validate conclusions by comparing them to the given situation. - Indicate how various concepts can be applied to other disciplines.
ELA.K12.EE.1.1:	Cite evidence to explain and justify reasoning. **Clarifications:** K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing. 2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations. 4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they've directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor. 6-8 Students continue with previous skills and use a style guide to create a proper citation. 9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.
ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.
ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like "Why is the girl smiling?" or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
ELA.K12.EE.4.1:	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully. In grades 1-2, students build upon these skills by justifying what they are thinking. For example: "I think _______ because ______." The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
ELA.K12.EE.5.1:	Use the accepted rules governing a specific format to create quality work. **Clarifications:** Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.
ELA.K12.EE.6.1:	Use appropriate voice and tone when speaking or writing. **Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.
ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.

General Course Information and Notes

VERSION DESCRIPTION

In Geometry for Credit Recovery, instructional time will emphasize six areas: (1) proving and applying relationships and theorems involving two-dimensional figures using Euclidean geometry and coordinate geometry; (2) establishing congruence and similarity using criteria from Euclidean geometry and using rigid transformations; (3) extending knowledge of geometric measurement to two-dimensional figures and three-dimensional figures; (4) creating and applying equations of circles in the coordinate plane and (5) developing an understanding of right triangle trigonometry.

All clarifications stated, whether general or specific to Geometry, are expectations for instruction of that benchmark.

Curricular content for all subjects must integrate critical-thinking, problem-solving, and workforce-literacy skills; communication, reading, and writing skills; mathematics skills; collaboration skills; contextual and applied-learning skills; technology-literacy skills; information and media-literacy skills; and civic-engagement skills.

Credit Recovery courses are credit bearing courses with specific content requirements defined by state academic standards (SAS). Students enrolled in a Credit Recovery course must have previously attempted the corresponding course (and/or End-of-Course assessment) since the course requirements for the Credit Recovery course are exactly the same as the previously attempted corresponding course. For example, Geometry (1206310) and Geometry for Credit Recovery (1206315) have identical content requirements. It is important to note that Credit Recovery courses are not bound by Section 1003.436(1)(a), Florida Statutes, requiring a minimum of 135 hours of bona fide instruction (120 hours in a school/district implementing block scheduling) in a designed course of study that contains student performance standards, since the students have previously attempted successful completion of the corresponding course. Additionally, Credit Recovery courses should ONLY be used for credit recovery, grade forgiveness, or remediation for students needing to prepare for an End-of-Course assessment retake.

General Notes

Florida's Benchmarks for Excellent Student Thinking (B.E.S.T.) Standards

This course includes Florida's B.E.S.T. ELA Expectations (EE) and Mathematical Thinking and Reasoning Standards (MTRs) for students. Florida educators should intentionally embed these standards within the content and their instruction as applicable. For guidance on the implementation of the EEs and MTRs, please visit https://www.cpalms.org/Standards/BEST_Standards.aspx and select the appropriate B.E.S.T. Standards package.

English Language Development ELD Standards Special Notes Section:

Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link: https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf

General Information

Course Number: 1206315

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Geometry >

Abbreviated Title: GEO CR

Number of Credits: One (1) credit

Course Length: Credit Recovery (R)

Course Type: Elective Course

Course Level: 2

Course Status: State Board Approved

Grade Level(s): 9,10,11,12

Educator Certifications

Mathematics (Grades 6-12)

Middle Grades Mathematics (Middle Grades 5-9)

Classical Education - Restricted (Elementary and Secondary Grades K-12)

Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Geometry Honors (#1206320) 2024 - And Beyond (current)

Course Standards

Name	Description
MA.912.GR.1.1:	Prove relationships and theorems about lines and angles. Solve mathematical and real-world problems involving postulates, relationships and theorems of lines and angles. **Clarifications:** *Clarification 1*: Postulates, relationships and theorems include vertical angles are congruent; when a transversal crosses parallel lines, the consecutive angles are supplementary and alternate (interior and exterior) angles and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints. *Clarification 2*: Instruction includes constructing two-column proofs, pictorial proofs, paragraph and narrative proofs, flow chart proofs or informal proofs. *Clarification 3*: Instruction focuses on helping a student choose a method they can use reliably.
MA.912.GR.1.2:	Prove triangle congruence or similarity using Side-Side-Side, Side-Angle-Side, Angle-Side-Angle, Angle-Angle-Side, Angle-Angle and Hypotenuse-Leg. **Clarifications:** *Clarification 1*: Instruction includes constructing two-column proofs, pictorial proofs, paragraph and narrative proofs, flow chart proofs or informal proofs. *Clarification 2*: Instruction focuses on helping a student choose a method they can use reliably.
MA.912.GR.1.3:	Prove relationships and theorems about triangles. Solve mathematical and real-world problems involving postulates, relationships and theorems of triangles. **Clarifications:** *Clarification 1*: Postulates, relationships and theorems include measures of interior angles of a triangle sum to 180°; measures of a set of exterior angles of a triangle sum to 360°; triangle inequality theorem; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point. *Clarification 2*: Instruction includes constructing two-column proofs, pictorial proofs, paragraph and narrative proofs, flow chart proofs or informal proofs. *Clarification 3*: Instruction focuses on helping a student choose a method they can use reliably.
MA.912.GR.1.4:	Prove relationships and theorems about parallelograms. Solve mathematical and real-world problems involving postulates, relationships and theorems of parallelograms. **Clarifications:** *Clarification 1*: Postulates, relationships and theorems include opposite sides are congruent, consecutive angles are supplementary, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and rectangles are parallelograms with congruent diagonals. *Clarification 2*: Instruction includes constructing two-column proofs, pictorial proofs, paragraph and narrative proofs, flow chart proofs or informal proofs. *Clarification 3*: Instruction focuses on helping a student choose a method they can use reliably.
MA.912.GR.1.5:	Prove relationships and theorems about trapezoids. Solve mathematical and real-world problems involving postulates, relationships and theorems of trapezoids. **Clarifications:** *Clarification 1*: Postulates, relationships and theorems include the Trapezoid Midsegment Theorem and for isosceles trapezoids: base angles are congruent, opposite angles are supplementary and diagonals are congruent. *Clarification 2*: Instruction includes constructing two-column proofs, pictorial proofs, paragraph and narrative proofs, flow chart proofs or informal proofs. *Clarification 3*: Instruction focuses on helping a student choose a method they can use reliably.
MA.912.GR.1.6:	Solve mathematical and real-world problems involving congruence or similarity in two-dimensional figures. **Clarifications:** *Clarification 1:* Instruction includes demonstrating that two-dimensional figures are congruent or similar based on given information.
MA.912.GR.2.1:	Given a preimage and image, describe the transformation and represent the transformation algebraically using coordinates. **Clarifications:** *Clarification 1*: Instruction includes the connection of transformations to functions that take points in the plane as inputs and give other points in the plane as outputs. *Clarification 2*: Transformations include translations, dilations, rotations and reflections described using words or using coordinates. *Clarification 3*: Within the Geometry course, rotations are limited to 90°, 180° and 270° counterclockwise or clockwise about the center of rotation, and the centers of rotations and dilations are limited to the origin or a point on the figure.
MA.912.GR.2.2:	Identify transformations that do or do not preserve distance. **Clarifications:** *Clarification 1*: Transformations include translations, dilations, rotations and reflections described using words or using coordinates. *Clarification 2*: Instruction includes recognizing that these transformations preserve angle measure.

MA.912.GR.2.3:	Identify a sequence of transformations that will map a given figure onto itself or onto another congruent or similar figure. **Clarifications:** *Clarification 1*: Transformations include translations, dilations, rotations and reflections described using words or using coordinates. *Clarification 2*: Within the Geometry course, figures are limited to triangles and quadrilaterals and rotations are limited to 90°, 180° and 270° counterclockwise or clockwise about the center of rotation. *Clarification 3*: Instruction includes the understanding that when a figure is mapped onto itself using a reflection, it occurs over a line of symmetry.
MA.912.GR.2.4:	Determine symmetries of reflection, symmetries of rotation and symmetries of translation of a geometric figure. **Clarifications:** *Clarification 1*: Instruction includes determining the order of each symmetry. *Clarification 2*: Instruction includes the connection between tessellations of the plane and symmetries of translations.
MA.912.GR.2.5:	Given a geometric figure and a sequence of transformations, draw the transformed figure on a coordinate plane. **Clarifications:** *Clarification 1*: Transformations include translations, dilations, rotations and reflections described using words or using coordinates. *Clarification 2*: Instruction includes two or more transformations.
MA.912.GR.2.6:	Apply rigid transformations to map one figure onto another to justify that the two figures are congruent. **Clarifications:** *Clarification 1*: Instruction includes showing that the corresponding sides and the corresponding angles are congruent.
MA.912.GR.2.7:	Justify the criteria for triangle congruence using the definition of congruence in terms of rigid transformations.
MA.912.GR.2.8:	Apply an appropriate transformation to map one figure onto another to justify that the two figures are similar. **Clarifications:** *Clarification 1*: Instruction includes showing that the corresponding sides are proportional, and the corresponding angles are congruent.
MA.912.GR.2.9:	Justify the criteria for triangle similarity using the definition of similarity in terms of non-rigid transformations.
MA.912.GR.3.1:	Determine the weighted average of two or more points on a line. **Clarifications:** *Clarification 1*: Instruction includes using a number line and determining how changing the weights moves the weighted average of points on the number line.
MA.912.GR.3.2:	Given a mathematical context, use coordinate geometry to classify or justify definitions, properties and theorems involving circles, triangles or quadrilaterals. **Clarifications:** *Clarification 1*: Instruction includes using the distance or midpoint formulas and knowledge of slope to classify or justify definitions, properties and theorems.
MA.912.GR.3.3:	Use coordinate geometry to solve mathematical and real-world geometric problems involving lines, circles, triangles and quadrilaterals. **Clarifications:** *Clarification 1*: Problems involving lines include the coordinates of a point on a line segment including the midpoint. *Clarification 2*: Problems involving circles include determining points on a given circle and finding tangent lines. *Clarification 3*: Problems involving triangles include median and centroid. *Clarification 4*: Problems involving quadrilaterals include using parallel and perpendicular slope criteria.
MA.912.GR.3.4:	Use coordinate geometry to solve mathematical and real-world problems on the coordinate plane involving perimeter or area of polygons.
MA.912.GR.4.1:	Identify the shapes of two-dimensional cross-sections of three-dimensional figures. **Clarifications:** *Clarification 1*: Instruction includes the use of manipulatives and models to visualize cross-sections. *Clarification 2*: Instruction focuses on cross-sections of right cylinders, right prisms, right pyramids and right cones that are parallel or perpendicular to the base.
MA.912.GR.4.2:	Identify three-dimensional objects generated by rotations of two-dimensional figures. **Clarifications:** *Clarification 1*: The axis of rotation must be within the same plane but outside of the given two-dimensional figure.
MA.912.GR.4.3:	Extend previous understanding of scale drawings and scale factors to determine how dilations affect the area of two-dimensional figures and the surface area or volume of three-dimensional figures.
MA.912.GR.4.4:	Solve mathematical and real-world problems involving the area of two-dimensional figures. **Clarifications:** *Clarification 1*: Instruction includes concepts of population density based on area.
MA.912.GR.4.5:	Solve mathematical and real-world problems involving the volume of three-dimensional figures limited to cylinders, pyramids, prisms, cones and spheres. **Clarifications:** *Clarification 1:* Instruction includes concepts of density based on volume. *Clarification 2:* Instruction includes using Cavalieri's Principle to give informal arguments about the formulas for the volumes of right and non-right cylinders, pyramids, prisms and cones.
MA.912.GR.4.6:	Solve mathematical and real-world problems involving the surface area of three-dimensional figures limited to cylinders, pyramids, prisms, cones and spheres.
	Construct a copy of a segment or an angle.

MA.912.GR.5.1:	**Clarifications:** *Clarification 1*: Instruction includes using compass and straightedge, string, reflective devices, paper folding or dynamic geometric software.
MA.912.GR.5.2:	Construct the bisector of a segment or an angle, including the perpendicular bisector of a line segment. **Clarifications:** *Clarification 1*: Instruction includes using compass and straightedge, string, reflective devices, paper folding or dynamic geometric software.
MA.912.GR.5.3:	Construct the inscribed and circumscribed circles of a triangle. **Clarifications:** *Clarification 1*: Instruction includes using compass and straightedge, string, reflective devices, paper folding or dynamic geometric software.
MA.912.GR.5.4:	Construct a regular polygon inscribed in a circle. Regular polygons are limited to triangles, quadrilaterals and hexagons. **Clarifications:** *Clarification 1*: When given a circle, the center must be provided. *Clarification 2*: Instruction includes using compass and straightedge, string, reflective devices, paper folding or dynamic geometric software.
MA.912.GR.5.5:	Given a point outside a circle, construct a line tangent to the circle that passes through the given point. **Clarifications:** *Clarification 1*: When given a circle, the center must be provided. *Clarification 2*: Instruction includes using compass and straightedge, string, reflective devices, paper folding or dynamic geometric software.
MA.912.GR.6.1:	Solve mathematical and real-world problems involving the length of a secant, tangent, segment or chord in a given circle. **Clarifications:** *Clarification 1:* Problems include relationships between two chords; two secants; a secant and a tangent; and the length of the tangent from a point to a circle.
MA.912.GR.6.2:	Solve mathematical and real-world problems involving the measures of arcs and related angles. **Clarifications:** *Clarification 1*: Within the Geometry course, problems are limited to relationships between inscribed angles; central angles; and angles formed by the following intersections: a tangent and a secant through the center, two tangents, and a chord and its perpendicular bisector.
MA.912.GR.6.3:	Solve mathematical problems involving triangles and quadrilaterals inscribed in a circle. **Clarifications:** *Clarification 1*: Instruction includes cases in which a triangle inscribed in a circle has a side that is the diameter.
MA.912.GR.6.4:	Solve mathematical and real-world problems involving the arc length and area of a sector in a given circle. **Clarifications:** *Clarification 1*: Instruction focuses on the conceptual understanding that for a given angle measure the length of the intercepted arc is proportional to the radius, and for a given radius the length of the intercepted arc is proportional is the angle measure.
MA.912.GR.6.5:	Apply transformations to prove that all circles are similar.
MA.912.GR.7.2:	Given a mathematical or real-world context, derive and create the equation of a circle using key features. **Clarifications:** *Clarification 1:* Instruction includes using the Pythagorean Theorem and completing the square. *Clarification 2:* Within the Geometry course, key features are limited to the radius, diameter and the center.
MA.912.GR.7.3:	Graph and solve mathematical and real-world problems that are modeled with an equation of a circle. Determine and interpret key features in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain, range, eccentricity, center and radius. *Clarification 2*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 3*: Within the Geometry course, notations for domain and range are limited to inequality and set-builder.
MA.912.LT.4.3:	Identify and accurately interpret “if…then,” “if and only if,” “all” and “not” statements. Find the converse, inverse and contrapositive of a statement. **Clarifications:** *Clarification 1:* Instruction focuses on recognizing the relationships between an “if…then” statement and the converse, inverse and contrapositive of that statement. *Clarification 2:* Within the Geometry course, instruction focuses on the connection to proofs within the course.
MA.912.LT.4.8:	Construct proofs, including proofs by contradiction. **Clarifications:** *Clarification 1*: Within the Geometry course, proofs are limited to geometric statements within the course.
MA.912.LT.4.10:	Judge the validity of arguments and give counterexamples to disprove statements. **Clarifications:** *Clarification 1:* Within the Geometry course, instruction focuses on the connection to proofs within the course.
MA.912.T.1.1:	Define trigonometric ratios for acute angles in right triangles. **Clarifications:** *Clarification 1*: Instruction includes using the Pythagorean Theorem and using similar triangles to demonstrate that trigonometric ratios stay the same for similar right triangles. *Clarification 2*: Within the Geometry course, instruction includes using the coordinate plane to make connections to the unit circle. *Clarification 3*: Within the Geometry course, trigonometric ratios are limited to sine, cosine and tangent.
	Solve mathematical and real-world problems involving right triangles using trigonometric ratios and the Pythagorean Theorem.

MA.912.T.1.2:	**Clarifications:** *Clarification 1*: Instruction includes procedural fluency with the relationships of side lengths in special right triangles having angle measures of 30°-60°-90° and 45°-45°-90°.
MA.912.T.1.3:	Apply the Law of Sines and the Law of Cosines to solve mathematical and real-world problems involving triangles.
MA.912.T.1.4:	Solve mathematical problems involving finding the area of a triangle given two sides and the included angle. **Clarifications:** *Clarification 1:* Problems include right triangles, heights inside of a triangle and heights outside of a triangle.
MA.K12.MTR.1.1:	**Actively participate in effortful learning both individually and collectively.** Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task. • Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach. **Clarifications:** Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging. • Develop students' ability to analyze and problem solve. • Recognize students' effort when solving challenging problems.
MA.K12.MTR.2.1:	**Demonstrate understanding by representing problems in multiple ways.** Mathematicians who demonstrate understanding by representing problems in multiple ways: • Build understanding through modeling and using manipulatives. • Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. • Progress from modeling problems with objects and drawings to using algorithms and equations. • Express connections between concepts and representations. • Choose a representation based on the given context or purpose. **Clarifications:** Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: • Help students make connections between concepts and representations. • Provide opportunities for students to use manipulatives when investigating concepts. • Guide students from concrete to pictorial to abstract representations as understanding progresses. • Show students that various representations can have different purposes and can be useful in different situations.
MA.K12.MTR.3.1:	**Complete tasks with mathematical fluency.** Mathematicians who complete tasks with mathematical fluency: • Select efficient and appropriate methods for solving problems within the given context. • Maintain flexibility and accuracy while performing procedures and mental calculations. • Complete tasks accurately and with confidence. • Adapt procedures to apply them to a new context. • Use feedback to improve efficiency when performing calculations. **Clarifications:** Teachers who encourage students to complete tasks with mathematical fluency: • Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately. • Offer multiple opportunities for students to practice efficient and generalizable methods. • Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.
MA.K12.MTR.4.1:	**Engage in discussions that reflect on the mathematical thinking of self and others.** Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others: • Communicate mathematical ideas, vocabulary and methods effectively. • Analyze the mathematical thinking of others. • Compare the efficiency of a method to those expressed by others. • Recognize errors and suggest how to correctly solve the task. • Justify results by explaining methods and processes. • Construct possible arguments based on evidence. **Clarifications:** Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: • Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning. • Create opportunities for students to discuss their thinking with peers. • Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. • Develop students' ability to justify methods and compare their responses to the responses of their peers.
	Use patterns and structure to help understand and connect mathematical concepts. Mathematicians who use patterns and structure to help understand and connect mathematical concepts: • Focus on relevant details within a problem. • Create plans and procedures to logically order events, steps or ideas to solve problems.

MA.K12.MTR.5.1:	• Decompose a complex problem into manageable parts. • Relate previously learned concepts to new concepts. • Look for similarities among problems. • Connect solutions of problems to more complicated large-scale situations. **Clarifications:** Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts: • Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts. • Support students to develop generalizations based on the similarities found among problems. • Provide opportunities for students to create plans and procedures to solve problems. • Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.
MA.K12.MTR.6.1:	**Assess the reasonableness of solutions.** Mathematicians who assess the reasonableness of solutions: • Estimate to discover possible solutions. • Use benchmark quantities to determine if a solution makes sense. • Check calculations when solving problems. • Verify possible solutions by explaining the methods used. • Evaluate results based on the given context. **Clarifications:** Teachers who encourage students to assess the reasonableness of solutions: • Have students estimate or predict solutions prior to solving. • Prompt students to continually ask, "Does this solution make sense? How do you know?" • Reinforce that students check their work as they progress within and after a task. • Strengthen students' ability to verify solutions through justifications.
MA.K12.MTR.7.1:	**Apply mathematics to real-world contexts.** Mathematicians who apply mathematics to real-world contexts: • Connect mathematical concepts to everyday experiences. • Use models and methods to understand, represent and solve problems. • Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency. **Clarifications:** Teachers who encourage students to apply mathematics to real-world contexts: • Provide opportunities for students to create models, both concrete and abstract, and perform investigations. • Challenge students to question the accuracy of their models and methods. • Support students as they validate conclusions by comparing them to the given situation. • Indicate how various concepts can be applied to other disciplines.
ELA.K12.EE.1.1:	Cite evidence to explain and justify reasoning. **Clarifications:** K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing. 2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations. 4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they've directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor. 6-8 Students continue with previous skills and use a style guide to create a proper citation. 9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.
ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.
ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like "Why is the girl smiling?" or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
ELA.K12.EE.4.1:	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully. In grades 1-2, students build upon these skills by justifying what they are thinking. For example: "I think _______ because ______." The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
ELA.K12.EE.5.1:	Use the accepted rules governing a specific format to create quality work. **Clarifications:** Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they

	must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.
ELA.K12.EE.6.1:	Use appropriate voice and tone when speaking or writing. **Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.
ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.

General Course Information and Notes

VERSION DESCRIPTION

In Geometry Honors, instructional time will emphasize five areas: (1) proving and applying relationships and theorems involving two-dimensional figures using Euclidean geometry and coordinate geometry; (2) establishing congruence and similarity using criteria from Euclidean geometry and using rigid transformations; (3) extending knowledge of geometric measurement to two-dimensional figures and three-dimensional figures; (4) creating and applying equations of circles in the coordinate plane and (5) developing an understanding of right triangle trigonometry.

All clarifications stated, whether general or specific to Geometry Honors, are expectations for instruction of that benchmark.

Curricular content for all subjects must integrate critical-thinking, problem-solving, and workforce-literacy skills; communication, reading, and writing skills; mathematics skills; collaboration skills; contextual and applied-learning skills; technology-literacy skills; information and media-literacy skills; and civic-engagement skills.

General Notes

Honors and Accelerated Level Course Note: Accelerated courses require a greater demand on students through increased academic rigor. Academic rigor is obtained through the application, analysis, evaluation, and creation of complex ideas that are often abstract and multi-faceted. Students are challenged to think and collaborate critically on the content they are learning. Honors level rigor will be achieved by increasing text complexity through text selection, focus on high-level qualitative measures, and complexity of task. Instruction will be structured to give students a deeper understanding of conceptual themes and organization within and across disciplines. Academic rigor is more than simply assigning to students a greater quantity of work.

Florida’s Benchmarks for Excellent Student Thinking (B.E.S.T.) Standards

This course includes Florida’s B.E.S.T. ELA Expectations (EE) and Mathematical Thinking and Reasoning Standards (MTRs) for students. Florida educators should intentionally embed these standards within the content and their instruction as applicable. For guidance on the implementation of the EEs and MTRs, please visit https://www.cpalms.org/Standards/BEST_Standards.aspx and select the appropriate B.E.S.T. Standards package.

English Language Development ELD Standards Special Notes Section:

Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL’s need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link: https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf

General Information

Course Number: 1206320

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Geometry >

Abbreviated Title: GEO HONORS

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Attributes:

- Honors
- Class Size Core Required

Course Type: Core Academic Course

Course Level: 3

Course Status: State Board Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Geometry

Educator Certifications

Mathematics (Grades 6-12)
Middle Grades Mathematics (Middle Grades 5-9)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the

requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

International Baccalaureate Mid Yrs Prog Geometry (#1206810) 2024 - And Beyond (current)

General Course Information and Notes

General Notes

The curriculum description for this IB course is provided at http://www.ibo.org/en/programmes/.

General Information

Course Number: 1206810

Course Path: **Section:** Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Geometry >

Abbreviated Title: IB MYP GEOM

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Attributes:

- International Baccalaureate (IB)

Course Type: Core Academic Course

Course Level: 3

Course Status: Course Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Geometry

Educator Certifications

Middle Grades Mathematics (Middle Grades 5-9)

Mathematics (Grades 6-12)

Classical Education - Restricted (Elementary and Secondary Grades K-12)
Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Mathematics for College Liberal Arts (#1207350) 2024 - And Beyond (current)

Course Standards

Name	Description
MA.912.AR.2.5:	Solve and graph mathematical and real-world problems that are modeled with linear functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain, range, intercepts and rate of change. *Clarification 2*: Instruction includes the use of standard form, slope-intercept form and point-slope form. *Clarification 3*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation. *Clarification 4*: Within the Algebra 1 course, notations for domain, range and constraints are limited to inequality and set-builder. *Clarification 5*: Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.5.3:	Given a mathematical or real-world context, classify an exponential function as representing growth or decay. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, exponential functions are limited to the forms $f(x) = ab^x$, where b is a whole number greater than 1 or a unit fraction, or $f(x) = a(1 \pm r)^x$, where $0 < r < 1$.
MA.912.AR.5.4:	Write an exponential function to represent a relationship between two quantities from a graph, a written description or a table of values within a mathematical or real-world context. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, exponential functions are limited to the forms $f(x) = ab^x$, where b is a whole number greater than 1 or a unit fraction, or $f(x) = a(1 \pm r)^x$, where $0 < r < 1$. *Clarification 2:* Within the Algebra 1 course, tables are limited to having successive nonnegative integer inputs so that the function may be determined by finding ratios between successive outputs.
MA.912.AR.5.5:	Given an expression or equation representing an exponential function, reveal the constant percent rate of change per unit interval using the properties of exponents. Interpret the constant percent rate of change in terms of a real-world context.
MA.912.AR.5.6:	Given a table, equation or written description of an exponential function, graph that function and determine its key features. **Clarifications:** *Clarification 1:* Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; constant percent rate of change; end behavior and asymptotes. *Clarification 2:* Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 3:* Within the Algebra 1 course, notations for domain and range are limited to inequality and set-builder. *Clarification 4:* Within the Algebra 1 course, exponential functions are limited to the forms $f(x) = ab^x$, where b is a whole number greater than 1 or a unit fraction or $f(x) = a(1 \pm r)^x$, where $0 < r < 1$.
MA.912.DP.1.1:	Given a set of data, select an appropriate method to represent the data, depending on whether it is numerical or categorical data and on whether it is univariate or bivariate. **Clarifications:** *Clarification 1:* Instruction includes discussions regarding the strengths and weaknesses of each data display. *Clarification 2:* Numerical univariate includes histograms, stem-and-leaf plots, box plots and line plots; numerical bivariate includes scatter plots and line graphs; categorical univariate includes bar charts, circle graphs, line plots, frequency tables and relative frequency tables; and categorical bivariate includes segmented bar charts, joint frequency tables and joint relative frequency tables. *Clarification 3:* Instruction includes the use of appropriate units and labels and, where appropriate, using technology to create data displays.
MA.912.DP.1.2:	Interpret data distributions represented in various ways. State whether the data is numerical or categorical, whether it is univariate or bivariate and interpret the different components and quantities in the display. **Clarifications:** *Clarification 1*: Within the Probability and Statistics course, instruction includes the use of spreadsheets and technology.
MA.912.DP.2.1:	For two or more sets of numerical univariate data, calculate and compare the appropriate measures of center and measures of variability, accounting for possible effects of outliers. Interpret any notable features of the shape of the data distribution. **Clarifications:** *Clarification 1*: The measure of center is limited to mean and median. The measure of variation is limited to range, interquartile range, and standard deviation. *Clarification 2*: Shape features include symmetry or skewness and clustering. *Clarification 3*: Within the Probability and Statistics course, instruction includes the use of spreadsheets and technology.

MA.912.DP.2.4:	Fit a linear function to bivariate numerical data that suggests a linear association and interpret the slope and y-intercept of the model. Use the model to solve real-world problems in terms of the context of the data. **Clarifications:** *Clarification 1*: Instruction includes fitting a linear function both informally and formally with the use of technology. *Clarification 2*: Problems include making a prediction or extrapolation, inside and outside the range of the data, based on the equation of the line of fit.
MA.912.DP.2.9:	Fit an exponential function to bivariate numerical data that suggests an exponential association. Use the model to solve real-world problems in terms of the context of the data. **Clarifications:** *Clarification 1*: Instruction focuses on determining whether an exponential model is appropriate by taking the logarithm of the dependent variable using spreadsheets and other technology. *Clarification 2*: Instruction includes determining whether the transformed scatterplot has an appropriate line of best fit, and interpreting the y-intercept and slope of the line of best fit. *Clarification 3*: Problems include making a prediction or extrapolation, inside and outside the range of the data, based on the equation of the line of fit.
MA.912.DP.4.1:	Describe events as subsets of a sample space using characteristics, or categories, of the outcomes, or as unions, intersections or complements of other events.
MA.912.DP.4.2:	Determine if events A and B are independent by calculating the product of their probabilities.
MA.912.DP.4.3:	Calculate the conditional probability of two events and interpret the result in terms of its context.
MA.912.DP.4.4:	Interpret the independence of two events using conditional probability.
MA.912.DP.4.5:	Given a two-way table containing data from a population, interpret the joint and marginal relative frequencies as empirical probabilities and the conditional relative frequencies as empirical conditional probabilities. Use those probabilities to determine whether characteristics in the population are approximately independent. **Clarifications:** *Clarification 1*: Instruction includes the connection between mathematical probability and applied statistics.
MA.912.DP.4.6:	Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations.
MA.912.DP.4.7:	Apply the addition rule for probability, taking into consideration whether the events are mutually exclusive, and interpret the result in terms of the model and its context.
MA.912.DP.4.8:	Apply the general multiplication rule for probability, taking into consideration whether the events are independent, and interpret the result in terms of the context.
MA.912.DP.4.9:	Apply the addition and multiplication rules for counting to solve mathematical and real-world problems, including problems involving probability.
MA.912.DP.4.10:	Given a mathematical or real-world situation, calculate the appropriate permutation or combination.
MA.912.F.1.6:	Compare key features of linear and nonlinear functions each represented algebraically, graphically, in tables or written descriptions. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior and asymptotes. *Clarification 2*: Within the Algebra 1 course, functions other than linear, quadratic or exponential must be represented graphically. *Clarification 3*: Within the Algebra 1 course, instruction includes verifying that a quantity increasing exponentially eventually exceeds a quantity increasing linearly or quadratically.
MA.912.F.1.8:	Determine whether a linear, quadratic or exponential function best models a given real-world situation. **Clarifications:** *Clarification 1*: Instruction includes recognizing that linear functions model situations in which a quantity changes by a constant amount per unit interval; that quadratic functions model situations in which a quantity increases to a maximum, then begins to decrease or a quantity decreases to a minimum, then begins to increase; and that exponential functions model situations in which a quantity grows or decays by a constant percent per unit interval. *Clarification 2*: Within this benchmark, the expectation is to identify the type of function from a written description or table.
MA.912.FL.3.1:	Compare simple, compound and continuously compounded interest over time. **Clarifications:** *Clarification 1*: Instruction includes taking into consideration the annual percentage rate (APR) when comparing simple and compound interest.
MA.912.FL.3.2:	Solve real-world problems involving simple, compound and continuously compounded interest. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, interest is limited to simple and compound.
MA.912.FL.3.4:	Explain the relationship between simple interest and linear growth. Explain the relationship between compound interest and exponential growth and the relationship between continuously compounded interest and exponential growth. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, exponential growth is limited to compound interest.
MA.912.GR.1.6:	Solve mathematical and real-world problems involving congruence or similarity in two-dimensional figures. **Clarifications:** *Clarification 1:* Instruction includes demonstrating that two-dimensional figures are congruent or similar based on given information.
MA.912.GR.2.4:	Determine symmetries of reflection, symmetries of rotation and symmetries of translation of a geometric figure. **Clarifications:** *Clarification 1*: Instruction includes determining the order of each symmetry. *Clarification 2*: Instruction includes the connection between tessellations of the plane and symmetries of translations.

MA.912.GR.4.3:	Extend previous understanding of scale drawings and scale factors to determine how dilations affect the area of two-dimensional figures and the surface area or volume of three-dimensional figures.
MA.912.GR.4.4:	Solve mathematical and real-world problems involving the area of two-dimensional figures. **Clarifications:** *Clarification 1*: Instruction includes concepts of population density based on area.
MA.912.GR.4.5:	Solve mathematical and real-world problems involving the volume of three-dimensional figures limited to cylinders, pyramids, prisms, cones and spheres. **Clarifications:** *Clarification 1:* Instruction includes concepts of density based on volume. *Clarification 2:* Instruction includes using Cavalieri's Principle to give informal arguments about the formulas for the volumes of right and non-right cylinders, pyramids, prisms and cones.
MA.912.GR.4.6:	Solve mathematical and real-world problems involving the surface area of three-dimensional figures limited to cylinders, pyramids, prisms, cones and spheres.
MA.912.LT.4.1:	Translate propositional statements into logical arguments using propositional variables and logical connectives.
MA.912.LT.4.2:	Determine truth values of simple and compound statements using truth tables.
MA.912.LT.4.3:	Identify and accurately interpret "if...then," "if and only if," "all" and "not" statements. Find the converse, inverse and contrapositive of a statement. **Clarifications:** *Clarification 1:* Instruction focuses on recognizing the relationships between an "if...then" statement and the converse, inverse and contrapositive of that statement. *Clarification 2:* Within the Geometry course, instruction focuses on the connection to proofs within the course.
MA.912.LT.4.4:	Represent logic operations, such as AND, OR, NOT, NOR, and XOR, using logical symbolism to solve problems.
MA.912.LT.4.5:	Determine whether two propositions are logically equivalent.
MA.912.LT.4.9:	Construct logical arguments using laws of detachment, syllogism, tautology, contradiction and Euler Diagrams.
MA.912.LT.4.10:	Judge the validity of arguments and give counterexamples to disprove statements. **Clarifications:** *Clarification 1:* Within the Geometry course, instruction focuses on the connection to proofs within the course.
MA.912.LT.5.1:	Given two sets, determine whether the two sets are equivalent and whether one set is a subset of another. Given one set, determine its power set.
MA.912.LT.5.4:	Perform the set operations of taking the complement of a set and the union, intersection, difference and product of two sets. **Clarifications:** *Clarification 1*: Instruction includes the connection to probability and the words AND, OR and NOT.
MA.912.LT.5.5:	Explore relationships and patterns and make arguments about relationships between sets using Venn Diagrams.
MA.912.LT.5.6:	Prove set relations, including DeMorgan's Laws and equivalence relations.
MA.912.T.1.2:	Solve mathematical and real-world problems involving right triangles using trigonometric ratios and the Pythagorean Theorem. **Clarifications:** *Clarification 1*: Instruction includes procedural fluency with the relationships of side lengths in special right triangles having angle measures of 30°-60°-90° and 45°-45°-90°.
MA.K12.MTR.1.1:	**Actively participate in effortful learning both individually and collectively.** Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task. • Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach. **Clarifications:** Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging. • Develop students' ability to analyze and problem solve. • Recognize students' effort when solving challenging problems.
MA.K12.MTR.2.1:	**Demonstrate understanding by representing problems in multiple ways.** Mathematicians who demonstrate understanding by representing problems in multiple ways: • Build understanding through modeling and using manipulatives. • Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. • Progress from modeling problems with objects and drawings to using algorithms and equations. • Express connections between concepts and representations. • Choose a representation based on the given context or purpose. **Clarifications:** Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: • Help students make connections between concepts and representations. • Provide opportunities for students to use manipulatives when investigating concepts. • Guide students from concrete to pictorial to abstract representations as understanding progresses. • Show students that various representations can have different purposes and can be useful in different situations.
	Complete tasks with mathematical fluency.

MA.K12.MTR.3.1:	Mathematicians who complete tasks with mathematical fluency: • Select efficient and appropriate methods for solving problems within the given context. • Maintain flexibility and accuracy while performing procedures and mental calculations. • Complete tasks accurately and with confidence. • Adapt procedures to apply them to a new context. • Use feedback to improve efficiency when performing calculations. **Clarifications:** Teachers who encourage students to complete tasks with mathematical fluency: • Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately. • Offer multiple opportunities for students to practice efficient and generalizable methods. • Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.
MA.K12.MTR.4.1:	**Engage in discussions that reflect on the mathematical thinking of self and others.** Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others: • Communicate mathematical ideas, vocabulary and methods effectively. • Analyze the mathematical thinking of others. • Compare the efficiency of a method to those expressed by others. • Recognize errors and suggest how to correctly solve the task. • Justify results by explaining methods and processes. • Construct possible arguments based on evidence. **Clarifications:** Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: • Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning. • Create opportunities for students to discuss their thinking with peers. • Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. • Develop students’ ability to justify methods and compare their responses to the responses of their peers.
MA.K12.MTR.5.1:	**Use patterns and structure to help understand and connect mathematical concepts.** Mathematicians who use patterns and structure to help understand and connect mathematical concepts: • Focus on relevant details within a problem. • Create plans and procedures to logically order events, steps or ideas to solve problems. • Decompose a complex problem into manageable parts. • Relate previously learned concepts to new concepts. • Look for similarities among problems. • Connect solutions of problems to more complicated large-scale situations. **Clarifications:** Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts: • Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts. • Support students to develop generalizations based on the similarities found among problems. • Provide opportunities for students to create plans and procedures to solve problems. • Develop students’ ability to construct relationships between their current understanding and more sophisticated ways of thinking.
MA.K12.MTR.6.1:	**Assess the reasonableness of solutions.** Mathematicians who assess the reasonableness of solutions: • Estimate to discover possible solutions. • Use benchmark quantities to determine if a solution makes sense. • Check calculations when solving problems. • Verify possible solutions by explaining the methods used. • Evaluate results based on the given context. **Clarifications:** Teachers who encourage students to assess the reasonableness of solutions: • Have students estimate or predict solutions prior to solving. • Prompt students to continually ask, “Does this solution make sense? How do you know?” • Reinforce that students check their work as they progress within and after a task. • Strengthen students’ ability to verify solutions through justifications.
MA.K12.MTR.7.1:	**Apply mathematics to real-world contexts.** Mathematicians who apply mathematics to real-world contexts: • Connect mathematical concepts to everyday experiences. • Use models and methods to understand, represent and solve problems. • Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency. **Clarifications:** Teachers who encourage students to apply mathematics to real-world contexts: • Provide opportunities for students to create models, both concrete and abstract, and perform investigations. • Challenge students to question the accuracy of their models and methods. • Support students as they validate conclusions by comparing them to the given situation. • Indicate how various concepts can be applied to other disciplines.
	Cite evidence to explain and justify reasoning.

ELA.K12.EE.1.1:	**Clarifications:** K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing. 2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations. 4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they've directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor. 6-8 Students continue with previous skills and use a style guide to create a proper citation. 9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.
ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.
ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like "Why is the girl smiling?" or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
ELA.K12.EE.4.1:	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully. In grades 1-2, students build upon these skills by justifying what they are thinking. For example: "I think ________ because _______." The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
ELA.K12.EE.5.1:	Use the accepted rules governing a specific format to create quality work. **Clarifications:** Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.
ELA.K12.EE.6.1:	Use appropriate voice and tone when speaking or writing. **Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.
ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.

General Course Information and Notes

VERSION DESCRIPTION

In Mathematics for College Liberal Arts, instructional time will emphasize five areas: (1) analyzing and applying linear and exponential functions within a real-world context; (2) utilizing geometric concepts to solve real-world problems; (3) extending understanding of probability theory; (4) representing and interpreting univariate and bivariate data and (5) developing understanding of logic and set theory.

All clarifications stated, whether general or specific to Mathematics for College Liberal Arts, are expectations for instruction of that benchmark.

Curricular content for all subjects must integrate critical-thinking, problem-solving, and workforce-literacy skills; communication, reading, and writing skills; mathematics skills; collaboration skills; contextual and applied-learning skills; technology-literacy skills; information and media-literacy skills; and civic-engagement skills.

General Notes

Florida's Benchmarks for Excellent Student Thinking (B.E.S.T.) Standards

This course includes Florida's B.E.S.T. ELA Expectations (EE) and Mathematical Thinking and Reasoning Standards (MTRs) for students. Florida educators should intentionally embed these standards within the content and their instruction as applicable. For guidance on the implementation of the EEs and MTRs, please visit https://www.cpalms.org/Standards/BEST_Standards.aspx and select the appropriate B.E.S.T. Standards package.

English Language Development ELD Standards Special Notes Section:

Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link: https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf

General Information

Course Number: 1207350

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Liberal Arts Mathematics >

Abbreviated Title: MATH FOR COLL LIB ARTS

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Type: Core Academic Course

Course Level: 2

Course Status: State Board Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Mathematics

Educator Certifications

Mathematics (Grades 6-12)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

International Baccalaureate Mathematics: Applications and Interpretation 1 (#1209300) 2024 - And Beyond (current)

General Course Information and Notes

VERSION DESCRIPTION

The curriculum description for this IB course is provided at http://www.ibo.org/en/programmes/.

General Information

Course Number: 1209300

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Mathematical Studies/Applications >

Abbreviated Title: IB MATH: APPS/INT 1

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Attributes:

- International Baccalaureate (IB)

Course Type: Core Academic Course

Course Level: 3

Course Status: Course Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Mathematics

Educator Certifications

Mathematics (Grades 6-12)

Classical Education - Restricted (Elementary and Secondary Grades K-12)
Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

International Baccalaureate Mathematics: Applications and Interpretation 2 (#1209305) 2024 - And Beyond (current)

General Course Information and Notes

VERSION DESCRIPTION

The curriculum description for this IB course is provided at http://www.ibo.org/en/programmes/.

General Information

Course Number: 1209305

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Mathematical Studies/Applications >

Abbreviated Title: IB MATH: APPS/INT 2

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Attributes:

- International Baccalaureate (IB)

Course Type: Core Academic Course

Course Level: 3

Course Status: Course Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Mathematics

Educator Certifications

Mathematics (Grades 6-12)

Classical Education - Restricted (Elementary and Secondary Grades K-12)
Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

International Baccalaureate Mathematics: Applications and Interpretation 3 (#1209310) 2024 - And Beyond (current)

General Course Information and Notes

VERSION DESCRIPTION

The curriculum description for this IB course is provided at http://www.ibo.org/en/programmes/.

General Information

Course Number: 1209310

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Mathematical Studies/Applications >

Abbreviated Title: IB MATH: APPS/INT 3

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Attributes:

- International Baccalaureate (IB)

Course Type: Core Academic Course

Course Level: 3

Course Status: Course Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Mathematics

Educator Certifications

Mathematics (Grades 6-12)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Mathematics for ACT and SAT (#1209315) 2024 - And Beyond (current)

Course Standards

Name	Description
MA.912.AR.2.1:	Given a real-world context, write and solve one-variable multi-step linear equations.
MA.912.AR.2.4:	Given a table, equation or written description of a linear function, graph that function, and determine and interpret its key features. **Clarifications:** *Clarification 1*: Key features are limited to domain, range, intercepts and rate of change. *Clarification 2*: Instruction includes the use of standard form, slope-intercept form and point-slope form. *Clarification 3*: Instruction includes cases where one variable has a coefficient of zero. *Clarification 4*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 5*: Within the Algebra 1 course, notations for domain and range are limited to inequality and set-builder notations.
MA.912.AR.2.6:	Given a mathematical or real-world context, write and solve one-variable linear inequalities, including compound inequalities. Represent solutions algebraically or graphically.
MA.912.AR.2.8:	Given a mathematical or real-world context, graph the solution set to a two-variable linear inequality. **Clarifications:** *Clarification 1:* Instruction includes the use of standard form, slope-intercept form and point-slope form and any inequality symbol can be represented. *Clarification 2:* Instruction includes cases where one variable has a coefficient of zero.
MA.912.AR.3.1:	Given a mathematical or real-world context, write and solve one-variable quadratic equations over the real number system. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, instruction includes the concept of non-real answers, without determining non-real solutions. *Clarification 2:* Within this benchmark, the expectation is to solve by factoring techniques, taking square roots, the quadratic formula and completing the square.
MA.912.AR.3.2:	Given a mathematical or real-world context, write and solve one-variable quadratic equations over the real and complex number systems. **Clarifications:** *Clarification 1*: Within this benchmark, the expectation is to solve by factoring techniques, taking square roots, the quadratic formula and completing the square.
MA.912.AR.3.3:	Given a mathematical or real-world context, write and solve one-variable quadratic inequalities over the real number system. Represent solutions algebraically or graphically.
MA.912.AR.3.7:	Given a table, equation or written description of a quadratic function, graph that function, and determine and interpret its key features. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; vertex; and symmetry. *Clarification 2*: Instruction includes the use of standard form, factored form and vertex form, and sketching a graph using the zeros and vertex. *Clarification 3*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation. *Clarification 4*: Within the Algebra 1 course, notations for domain and range are limited to inequality and set-builder.
MA.912.AR.3.8:	Solve and graph mathematical and real-world problems that are modeled with quadratic functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; vertex; and symmetry. *Clarification 2*: Instruction includes the use of standard form, factored form and vertex form. *Clarification 3*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation. *Clarification 4*: Within the Algebra 1 course, notations for domain, range and constraints are limited to inequality and set-builder.
MA.912.AR.3.9:	Given a mathematical or real-world context, write two-variable quadratic inequalities to represent relationships between quantities from a graph or a written description. **Clarifications:** *Clarification 1:* Instruction includes the use of standard form, factored form and vertex form where any inequality symbol can be represented.
MA.912.AR.3.10:	Given a mathematical or real-world context, graph the solution set to a two-variable quadratic inequality. **Clarifications:** *Clarification 1*: Instruction includes the use of standard form, factored form and vertex form where any inequality symbol can be represented.
MA.912.AR.4.2:	Given a mathematical or real-world context, write and solve one-variable absolute value inequalities. Represent solutions algebraically or graphically.
	Solve and graph mathematical and real-world problems that are modeled with absolute value functions. Interpret key features and determine constraints in terms of the context.

MA.912.AR.4.4:	**Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; vertex; end behavior and symmetry. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation.
MA.912.AR.5.7:	Solve and graph mathematical and real-world problems that are modeled with exponential functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; constant percent rate of change; end behavior and asymptotes. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation. *Clarification 3*: Instruction includes understanding that when the logarithm of the dependent variable is taken and graphed, the exponential function will be transformed into a linear function. *Clarification 4*: Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.5.9:	Solve and graph mathematical and real-world problems that are modeled with logarithmic functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; and asymptotes. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation.
MA.912.AR.6.1:	Given a mathematical or real-world context, when suitable factorization is possible, solve one-variable polynomial equations of degree 3 or higher over the real and complex number systems.
MA.912.AR.6.5:	Sketch a rough graph of a polynomial function of degree 3 or higher using zeros, multiplicity and knowledge of end behavior.
MA.912.AR.6.6:	Solve and graph mathematical and real-world problems that are modeled with polynomial functions of degree 3 or higher. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; relative maximums and minimums; symmetry; and end behavior. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation.
MA.912.AR.7.2:	Given a table, equation or written description of a square root or cube root function, graph that function and determine its key features. **Clarifications:** *Clarification 1:* Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; and relative maximums and minimums. *Clarification 2:* Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation.
MA.912.AR.7.3:	Solve and graph mathematical and real-world problems that are modeled with square root or cube root functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; and relative maximums and minimums. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation.
MA.912.AR.7.4:	Solve and graph mathematical and real-world problems that are modeled with radical functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior; and relative maximums and minimums. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation.
MA.912.AR.9.2:	Given a mathematical or real-world context, solve a system consisting of a two-variable linear equation and a non-linear equation algebraically or graphically.
MA.912.AR.9.3:	Given a mathematical or real-world context, solve a system consisting of two-variable linear or non-linear equations algebraically or graphically. **Clarifications:** *Clarification 1*: Within the Algebra 2 course, non-linear equations are limited to quadratic equations.
MA.912.AR.9.5:	Graph the solution set of a system of two-variable inequalities. **Clarifications:** *Clarification 1:* Within the Algebra 2 course, two-variable inequalities are limited to linear and quadratic.
MA.912.AR.9.10:	Solve and graph mathematical and real-world problems that are modeled with piecewise functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain, range, intercepts, asymptotes and end behavior. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation.

MA.912.AR.10.1:	Given a mathematical or real-world context, write and solve problems involving arithmetic sequences.
MA.912.AR.10.2:	Given a mathematical or real-world context, write and solve problems involving geometric sequences.
MA.912.DP.2.1:	For two or more sets of numerical univariate data, calculate and compare the appropriate measures of center and measures of variability, accounting for possible effects of outliers. Interpret any notable features of the shape of the data distribution. **Clarifications:** *Clarification 1*: The measure of center is limited to mean and median. The measure of variation is limited to range, interquartile range, and standard deviation. *Clarification 2*: Shape features include symmetry or skewness and clustering. *Clarification 3*: Within the Probability and Statistics course, instruction includes the use of spreadsheets and technology.
MA.912.DP.2.5:	Given a scatter plot that represents bivariate numerical data, assess the fit of a given linear function by plotting and analyzing residuals. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, instruction includes determining the number of positive and negative residuals; the largest and smallest residuals; and the connection between outliers in the data set and the corresponding residuals.
MA.912.DP.5.2:	Explain how random sampling produces data that is representative of a population.
MA.912.DP.5.3:	Compare and contrast sampling methods. **Clarifications:** *Clarification 1*: Instruction includes understanding the connection between probability and sampling methods. *Clarification 2*: Sampling methods include simple random, stratified, cluster, systematic, judgement, quota and convenience.
MA.912.DP.5.5:	Determine if a specific model is consistent within a given process by analyzing the data distribution from a data-generating process.
MA.912.DP.5.6:	Determine the appropriate design, survey, experiment or observational study, based on the purpose. Articulate the types of questions appropriate for each type of design.
MA.912.DP.5.8:	Draw inferences about two populations using data and statistical analysis from two random samples.
MA.912.DP.5.11:	Evaluate reports based on data from diverse media, print and digital resources by interpreting graphs and tables; evaluating data-based arguments; determining whether a valid sampling method was used; or interpreting provided statistics. **Clarifications:** *Clarification 1*: Instruction includes determining whether or not data displays could be misleading.
MA.912.F.1.3:	Calculate and interpret the average rate of change of a real-world situation represented graphically, algebraically or in a table over a specified interval. **Clarifications:** *Clarification 1*: Instruction includes making the connection to determining the slope of a particular line segment.
MA.912.F.1.7:	Compare key features of two functions each represented algebraically, graphically, in tables or written descriptions. **Clarifications:** *Clarification 1*: Key features include domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; end behavior and asymptotes.
MA.912.F.2.2:	Identify the effect on the graph of a given function of two or more transformations defined by adding a real number to the x- or y- values or multiplying the x- or y- values by a real number.
MA.912.F.2.3:	Given the graph or table of f(x) and the graph or table of f(x)+k,kf(x), f(kx) and f(x+k), state the type of transformation and find the value of the real number k. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, functions are limited to linear, quadratic and absolute value.
MA.912.FL.1.1:	Extend previous knowledge of operations of fractions, percentages and decimals to solve real-world problems involving money and business. **Clarifications:** *Clarification 1*: Problems include discounts, markups, simple interest, tax, tips, fees, percent increase, percent decrease and percent error.
MA.912.FL.1.2:	Extend previous knowledge of ratios and proportional relationships to solve real-world problems involving money and business.
MA.912.GR.1.1:	Prove relationships and theorems about lines and angles. Solve mathematical and real-world problems involving postulates, relationships and theorems of lines and angles. **Clarifications:** *Clarification 1*: Postulates, relationships and theorems include vertical angles are congruent; when a transversal crosses parallel lines, the consecutive angles are supplementary and alternate (interior and exterior) angles and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints. *Clarification 2*: Instruction includes constructing two-column proofs, pictorial proofs, paragraph and narrative proofs, flow chart proofs or informal proofs. *Clarification 3*: Instruction focuses on helping a student choose a method they can use reliably.
MA.912.GR.3.2:	Given a mathematical context, use coordinate geometry to classify or justify definitions, properties and theorems involving circles, triangles or quadrilaterals. **Clarifications:** *Clarification 1*: Instruction includes using the distance or midpoint formulas and knowledge of slope to classify or justify definitions, properties and theorems.
MA.912.GR.7.1:	Given a conic section, describe how it can result from the slicing of two cones.
MA.912.GR.7.4:	Given a mathematical or real-world context, derive and create the equation of a parabola using key features.
MA.912.NSO.2.1:	Extend previous understanding of the real number system to include the complex number system. Add, subtract, multiply and divide complex numbers.
MA.912.NSO.4.1:	Given a mathematical or real-world context, represent and manipulate data using matrices.
	Solve mathematical and real-world problems involving addition, subtraction and multiplication of matrices.

MA.912.NSO.4.3:	**Clarifications:** *Clarification 1:* Instruction includes identifying and using the additive and multiplicative identities for matrices.
MA.912.T.1.7:	Simplify expressions using trigonometric identities. **Clarifications:** *Clarification 1:* Identities are limited to Double-Angle, Half-Angle, Angle Sum and Difference, Pythagorean Identities, Sum Identities and Product Identities.
MA.912.T.3.1:	Given a mathematical or real-world context, choose sine, cosine or tangent trigonometric functions to model periodic phenomena with specified amplitude, frequency, horizontal shift and midline.
MA.912.T.3.2:	Given a table, equation or written description of a trigonometric function, graph that function and determine key features. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; relative maximums and minimums; symmetry; end behavior; periodicity; midline; amplitude; shift(s) and asymptotes. *Clarification 2*: Instruction includes representing the domain and range with inequality notation, interval notation or set-builder notation.
MA.912.T.3.3:	Solve and graph mathematical and real-world problems that are modeled with trigonometric functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; relative maximums and minimums; symmetry; end behavior; periodicity; midline; amplitude; shift(s) and asymptotes. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation. *Clarification 3*: Instruction includes using technology when appropriate.
MA.K12.MTR.1.1:	**Actively participate in effortful learning both individually and collectively.** Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task. • Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach. **Clarifications:** Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging. • Develop students' ability to analyze and problem solve. • Recognize students' effort when solving challenging problems.
MA.K12.MTR.2.1:	**Demonstrate understanding by representing problems in multiple ways.** Mathematicians who demonstrate understanding by representing problems in multiple ways: • Build understanding through modeling and using manipulatives. • Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. • Progress from modeling problems with objects and drawings to using algorithms and equations. • Express connections between concepts and representations. • Choose a representation based on the given context or purpose. **Clarifications:** Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: • Help students make connections between concepts and representations. • Provide opportunities for students to use manipulatives when investigating concepts. • Guide students from concrete to pictorial to abstract representations as understanding progresses. • Show students that various representations can have different purposes and can be useful in different situations.
MA.K12.MTR.3.1:	**Complete tasks with mathematical fluency.** Mathematicians who complete tasks with mathematical fluency: • Select efficient and appropriate methods for solving problems within the given context. • Maintain flexibility and accuracy while performing procedures and mental calculations. • Complete tasks accurately and with confidence. • Adapt procedures to apply them to a new context. • Use feedback to improve efficiency when performing calculations. **Clarifications:** Teachers who encourage students to complete tasks with mathematical fluency: • Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately. • Offer multiple opportunities for students to practice efficient and generalizable methods. • Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.
	Engage in discussions that reflect on the mathematical thinking of self and others. Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others: • Communicate mathematical ideas, vocabulary and methods effectively.

MA.K12.MTR.4.1:	• Analyze the mathematical thinking of others. • Compare the efficiency of a method to those expressed by others. • Recognize errors and suggest how to correctly solve the task. • Justify results by explaining methods and processes. • Construct possible arguments based on evidence. **Clarifications:** Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: • Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning. • Create opportunities for students to discuss their thinking with peers. • Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. • Develop students' ability to justify methods and compare their responses to the responses of their peers.
MA.K12.MTR.5.1:	**Use patterns and structure to help understand and connect mathematical concepts.** Mathematicians who use patterns and structure to help understand and connect mathematical concepts: • Focus on relevant details within a problem. • Create plans and procedures to logically order events, steps or ideas to solve problems. • Decompose a complex problem into manageable parts. • Relate previously learned concepts to new concepts. • Look for similarities among problems. • Connect solutions of problems to more complicated large-scale situations. **Clarifications:** Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts: • Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts. • Support students to develop generalizations based on the similarities found among problems. • Provide opportunities for students to create plans and procedures to solve problems. • Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.
MA.K12.MTR.6.1:	**Assess the reasonableness of solutions.** Mathematicians who assess the reasonableness of solutions: • Estimate to discover possible solutions. • Use benchmark quantities to determine if a solution makes sense. • Check calculations when solving problems. • Verify possible solutions by explaining the methods used. • Evaluate results based on the given context. **Clarifications:** Teachers who encourage students to assess the reasonableness of solutions: • Have students estimate or predict solutions prior to solving. • Prompt students to continually ask, "Does this solution make sense? How do you know?" • Reinforce that students check their work as they progress within and after a task. • Strengthen students' ability to verify solutions through justifications.
MA.K12.MTR.7.1:	**Apply mathematics to real-world contexts.** Mathematicians who apply mathematics to real-world contexts: • Connect mathematical concepts to everyday experiences. • Use models and methods to understand, represent and solve problems. • Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency. **Clarifications:** Teachers who encourage students to apply mathematics to real-world contexts: • Provide opportunities for students to create models, both concrete and abstract, and perform investigations. • Challenge students to question the accuracy of their models and methods. • Support students as they validate conclusions by comparing them to the given situation. • Indicate how various concepts can be applied to other disciplines.
ELA.K12.EE.1.1:	Cite evidence to explain and justify reasoning. **Clarifications:** K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing. 2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations. 4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they've directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor. 6-8 Students continue with previous skills and use a style guide to create a proper citation. 9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.
ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.

ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like “Why is the girl smiling?” or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
ELA.K12.EE.4.1:	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully. In grades 1-2, students build upon these skills by justifying what they are thinking. For example: “I think _______ because ______.” The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
ELA.K12.EE.5.1:	Use the accepted rules governing a specific format to create quality work. **Clarifications:** Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.
ELA.K12.EE.6.1:	Use appropriate voice and tone when speaking or writing. **Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.
ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.
ELD.K12.ELL.SI.1:	English language learners communicate for social and instructional purposes within the school setting.

General Course Information and Notes

VERSION DESCRIPTION

In Mathematics for ACT and SAT, instructional time will emphasize six areas:

(1) extending understanding of functions to linear, quadratic and exponential functions and using them to model and analyze real-worldrelationships;

(2) developing understanding of the complex number system, including complex numbers as roots of polynomial equations;

(3) extending knowledge of ratios, proportions and functions to data and financial contexts;

(4) solve problems involving univariate and bivariate data and make inferences from collected data;

(5) relationships and theorems involving two-dimensional figures using Euclidean geometry and coordinate geometry;

(6) graph and apply trigonometric relations and functions.

Curricular content for all subjects must integrate critical-thinking, problem-solving, and workforce-literacy skills; communication, reading, and writing skills; mathematics skills; collaboration skills; contextual and applied-learning skills; technology-literacy skills; information and media-literacy skills; and civic-engagement skills.

All clarifications stated, whether general or specific to Mathematics for ACT and SAT, are expectations for instruction of that benchmark.

General Notes

Florida’s Benchmarks for Excellent Student Thinking (B.E.S.T.) Standards: This course includes Florida’s B.E.S.T. ELA Expectations (EE) and Mathematical Thinking and Reasoning Standards (MTRs) for students. Florida educators should intentionally embed these standards within the content and their instruction as applicable. For guidance on the implementation of the EEs and MTRs, please visit https://www.cpalms.org/Standards/BEST_Standards.aspxand select the appropriate B.E.S.T. Standards package.

English Language Development ELD Standards Special Notes Section: Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL’s need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link: https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf.

General Information

Course Number: 1209315

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Mathematical Studies/Applications >

Abbreviated Title: Math for ACT SAT

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Type: Elective Course

Course Level: 2

Course Status: Course Approved

Graduation Requirement: Electives

Educator Certifications

Mathematics (Grades 6-12)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Cambridge Pre-AICE Mathematics 1 IGCSE Level (#1209810) 2024 - And Beyond (current)

General Course Information and Notes

General Notes

For more information about this Cambridge course, visit Cambridge IGCSE subjects.

General Information

Course Number: 1209810

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Algebra >

Abbreviated Title: PRE-AICE MATH 1 IG

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Attributes:

- Advanced International Certificate of Education (AICE)
- External Course Description

Course Type: Core Academic Course

Course Level: 3

Course Status: Course Approved

Grade Level(s): 9,10,11,12

Educator Certifications

Mathematics (Grades 6-12)
Middle Grades Mathematics (Middle Grades 5-9)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Equivalent Courses

1200310-Algebra 1 Equivalency start year: 2014
1200386-Pre-Advanced Placement Algebra 1 Equivalency start year: 2018

Cambridge Pre-AICE Mathematics 2 IGCSE Level (#1209820) 2024 - And Beyond (current)

General Course Information and Notes

General Notes

For more information about this Cambridge course, visit Cambridge IGCSE subjects.

General Information

Course Number: 1209820

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Geometry >

Abbreviated Title: PRE-AICE MATH 2 IG

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Attributes:

- Advanced International Certificate of Education (AICE)
- External Course Description

Course Type: Core Academic Course

Course Level: 3

Course Status: Course Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Geometry

Educator Certifications

Mathematics (Grades 6-12)

Classical Education - Restricted (Elementary and Secondary Grades K-12)
Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Cambridge Pre-AICE Mathematics 3 IGCSE Level (#1209825) 2024 - And Beyond (current)

General Course Information and Notes

General Notes

For more information about this Cambridge course, visit Cambridge IGCSE subjects.

General Information

Course Number: 1209825

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Algebra >

Abbreviated Title: PRE-AICE MATH 3 IG

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Attributes:

- Advanced International Certificate of Education (AICE)
- External Course Description

Course Type: Core Academic Course

Course Level: 3

Course Status: Course Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Mathematics

Educator Certifications

Mathematics (Grades 6-12)

Middle Grades Mathematics (Middle Grades 5-9)

Classical Education - Restricted (Elementary and Secondary Grades K-12)
Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Probability and Statistics Honors (#1210300) 2024 - And Beyond (current)

Course Standards

Name	Description
MA.912.DP.1.1:	Given a set of data, select an appropriate method to represent the data, depending on whether it is numerical or categorical data and on whether it is univariate or bivariate. **Clarifications:** *Clarification 1:* Instruction includes discussions regarding the strengths and weaknesses of each data display. *Clarification 2:* Numerical univariate includes histograms, stem-and-leaf plots, box plots and line plots; numerical bivariate includes scatter plots and line graphs; categorical univariate includes bar charts, circle graphs, line plots, frequency tables and relative frequency tables; and categorical bivariate includes segmented bar charts, joint frequency tables and joint relative frequency tables. *Clarification 3:* Instruction includes the use of appropriate units and labels and, where appropriate, using technology to create data displays.
MA.912.DP.1.2:	Interpret data distributions represented in various ways. State whether the data is numerical or categorical, whether it is univariate or bivariate and interpret the different components and quantities in the display. **Clarifications:** *Clarification 1*: Within the Probability and Statistics course, instruction includes the use of spreadsheets and technology.
MA.912.DP.1.3:	Explain the difference between correlation and causation in the contexts of both numerical and categorical data.
MA.912.DP.1.4:	Estimate a population total, mean or percentage using data from a sample survey; develop a margin of error through the use of simulation. **Clarifications:** *Clarification 1:* Within the Algebra 1 course, the margin of error will be given.
MA.912.DP.1.5:	Interpret the margin of error of a mean or percentage from a data set. Interpret the confidence level corresponding to the margin of error.
MA.912.DP.2.1:	For two or more sets of numerical univariate data, calculate and compare the appropriate measures of center and measures of variability, accounting for possible effects of outliers. Interpret any notable features of the shape of the data distribution. **Clarifications:** *Clarification 1*: The measure of center is limited to mean and median. The measure of variation is limited to range, interquartile range, and standard deviation. *Clarification 2*: Shape features include symmetry or skewness and clustering. *Clarification 3*: Within the Probability and Statistics course, instruction includes the use of spreadsheets and technology.
MA.912.DP.2.2:	Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. **Clarifications:** *Clarification 1*: Instruction includes the connection to the binomial distribution and surveys.
MA.912.DP.2.3:	Estimate population percentages from data that has been fit to the normal distribution. **Clarifications:** *Clarification 1*: Instruction includes using technology, empirical rules or tables to estimate areas under the normal curve.
MA.912.DP.2.4:	Fit a linear function to bivariate numerical data that suggests a linear association and interpret the slope and y-intercept of the model. Use the model to solve real-world problems in terms of the context of the data. **Clarifications:** *Clarification 1*: Instruction includes fitting a linear function both informally and formally with the use of technology. *Clarification 2*: Problems include making a prediction or extrapolation, inside and outside the range of the data, based on the equation of the line of fit.
MA.912.DP.2.5:	Given a scatter plot that represents bivariate numerical data, assess the fit of a given linear function by plotting and analyzing residuals. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, instruction includes determining the number of positive and negative residuals; the largest and smallest residuals; and the connection between outliers in the data set and the corresponding residuals.
MA.912.DP.2.6:	Given a scatter plot with a line of fit and residuals, determine the strength and direction of the correlation. Interpret strength and direction within a real-world context. **Clarifications:** *Clarification 1*: Instruction focuses on determining the direction by analyzing the slope and informally determining the strength by analyzing the residuals.
MA.912.DP.2.7:	Compute the correlation coefficient of a linear model using technology. Interpret the strength and direction of the correlation coefficient.
MA.912.DP.2.9:	Fit an exponential function to bivariate numerical data that suggests an exponential association. Use the model to solve real-world problems in terms of the context of the data. **Clarifications:** *Clarification 1*: Instruction focuses on determining whether an exponential model is appropriate by taking the logarithm of the dependent variable using spreadsheets and other technology. *Clarification 2*: Instruction includes determining whether the transformed scatterplot has an appropriate line of best fit, and interpreting the y-intercept and slope of the line of best fit.

	Clarification 3: Problems include making a prediction or extrapolation, inside and outside the range of the data, based on the equation of the line of fit.
MA.912.DP.3.1:	Construct a two-way frequency table summarizing bivariate categorical data. Interpret joint and marginal frequencies and determine possible associations in terms of a real-world context.
MA.912.DP.3.2:	Given marginal and conditional relative frequencies, construct a two-way relative frequency table summarizing categorical bivariate data. **Clarifications:** *Clarification 1:* Construction includes cases where not all frequencies are given but enough are provided to be able to construct a two-way relative frequency table. *Clarification 2:* Instruction includes the use of a tree diagram when calculating relative frequencies to construct tables.
MA.912.DP.3.3:	Given a two-way relative frequency table or segmented bar graph summarizing categorical bivariate data, interpret joint, marginal and conditional relative frequencies in terms of a real-world context. **Clarifications:** *Clarification 1:* Instruction includes problems involving false positive and false negatives.
MA.912.DP.3.4:	Given a relative frequency table, construct and interpret a segmented bar graph.
MA.912.DP.3.5:	Solve real-world problems involving univariate and bivariate categorical data. **Clarifications:** *Clarification 1:* Instruction focuses on the connection to probability. *Clarification 2:* Instruction includes calculating joint relative frequencies or conditional relative frequencies using tree diagrams. Clarification 3: Graphical representations include frequency tables, relative frequency tables, circle graphs and segmented bar graphs.
MA.912.DP.4.1:	Describe events as subsets of a sample space using characteristics, or categories, of the outcomes, or as unions, intersections or complements of other events.
MA.912.DP.4.2:	Determine if events A and B are independent by calculating the product of their probabilities.
MA.912.DP.4.3:	Calculate the conditional probability of two events and interpret the result in terms of its context.
MA.912.DP.4.4:	Interpret the independence of two events using conditional probability.
MA.912.DP.4.5:	Given a two-way table containing data from a population, interpret the joint and marginal relative frequencies as empirical probabilities and the conditional relative frequencies as empirical conditional probabilities. Use those probabilities to determine whether characteristics in the population are approximately independent. **Clarifications:** *Clarification 1*: Instruction includes the connection between mathematical probability and applied statistics.
MA.912.DP.4.6:	Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations.
MA.912.DP.4.7:	Apply the addition rule for probability, taking into consideration whether the events are mutually exclusive, and interpret the result in terms of the model and its context.
MA.912.DP.4.8:	Apply the general multiplication rule for probability, taking into consideration whether the events are independent, and interpret the result in terms of the context.
MA.912.DP.4.9:	Apply the addition and multiplication rules for counting to solve mathematical and real-world problems, including problems involving probability.
MA.912.DP.4.10:	Given a mathematical or real-world situation, calculate the appropriate permutation or combination.
MA.912.DP.5.1:	Distinguish between a population parameter and a sample statistic.
MA.912.DP.5.2:	Explain how random sampling produces data that is representative of a population.
MA.912.DP.5.3:	Compare and contrast sampling methods. **Clarifications:** *Clarification 1*: Instruction includes understanding the connection between probability and sampling methods. *Clarification 2*: Sampling methods include simple random, stratified, cluster, systematic, judgement, quota and convenience.
MA.912.DP.5.4:	Generate multiple samples or simulated samples of the same size to measure the variation in estimates or predictions.
MA.912.DP.5.5:	Determine if a specific model is consistent within a given process by analyzing the data distribution from a data-generating process.
MA.912.DP.5.6:	Determine the appropriate design, survey, experiment or observational study, based on the purpose. Articulate the types of questions appropriate for each type of design.
MA.912.DP.5.7:	Compare and contrast surveys, experiments and observational studies. **Clarifications:** *Clarification 1*: Instruction includes understanding how randomization relates to sample surveys, experiments and observational studies.
MA.912.DP.5.8:	Draw inferences about two populations using data and statistical analysis from two random samples.
MA.912.DP.5.9:	Compare two treatments using data from an experiment in which the treatments are assigned randomly. **Clarifications:** *Clarification 1*: Instruction includes the understanding that if one wants to validate a causal relationship, then randomized assignment of treatment groups must occur.
MA.912.DP.5.10:	Determine whether differences between parameters are significant using simulations.
MA.912.DP.5.11:	Evaluate reports based on data from diverse media, print and digital resources by interpreting graphs and tables; evaluating data-based arguments; determining whether a valid sampling method was used; or interpreting provided statistics. **Clarifications:** *Clarification 1*: Instruction includes determining whether or not data displays could be misleading.
MA.912.DP.6.1:	Define a random variable for a quantity of interest by assigning a numerical value to each individual outcome in a sample space; graph the corresponding probability distribution using the same graphical displays as for data distributions.
MA.912.DP.6.2:	Develop a probability distribution for a discrete random variable using theoretical probabilities. Find the expected value and interpret it as the mean of the discrete distribution.
MA.912.DP.6.3:	Develop a probability distribution for a discrete random variable using empirical probabilities. Find the expected value and interpret it as the mean of the discrete distribution.
	Given a binomial distribution, calculate and interpret the expected value. Solve real-world problems involving binomial distributions.

MA.912.DP.6.4:	**Clarifications:** *Clarification 1*: Instruction focuses on the connection between binomial distributions and coin tossing and the connection to one-question surveys in which the question has two possible responses.
MA.912.DP.6.5:	Solve real-world problems involving geometric distributions. **Clarifications:** *Clarification 1*: Instruction focuses on the connection between geometric distributions and tossing a coin until the first heads appears and the connection to making repeated attempts at a task until it is successfully completed.
MA.912.DP.6.7:	Weigh the possible outcomes of a decision by assigning probabilities to payoff values and finding expected values and standard deviations. Evaluate and compare strategies on the basis of the calculated expected values and standard deviations. **Clarifications:** *Clarification 1*: Instruction includes the relationship between expected values and standard deviations on one hand and the rewards and risks on the other hand. *Clarification 2*: Instruction includes reducing risk through diversification.
MA.912.DP.6.8:	Apply probabilities to make fair decisions, such as drawing from lots or using a random number generator.
MA.K12.MTR.1.1:	**Actively participate in effortful learning both individually and collectively.** Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task. • Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach. **Clarifications:** Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging. • Develop students' ability to analyze and problem solve. • Recognize students' effort when solving challenging problems.
MA.K12.MTR.2.1:	**Demonstrate understanding by representing problems in multiple ways.** Mathematicians who demonstrate understanding by representing problems in multiple ways: • Build understanding through modeling and using manipulatives. • Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. • Progress from modeling problems with objects and drawings to using algorithms and equations. • Express connections between concepts and representations. • Choose a representation based on the given context or purpose. **Clarifications:** Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: • Help students make connections between concepts and representations. • Provide opportunities for students to use manipulatives when investigating concepts. • Guide students from concrete to pictorial to abstract representations as understanding progresses. • Show students that various representations can have different purposes and can be useful in different situations.
MA.K12.MTR.3.1:	**Complete tasks with mathematical fluency.** Mathematicians who complete tasks with mathematical fluency: • Select efficient and appropriate methods for solving problems within the given context. • Maintain flexibility and accuracy while performing procedures and mental calculations. • Complete tasks accurately and with confidence. • Adapt procedures to apply them to a new context. • Use feedback to improve efficiency when performing calculations. **Clarifications:** Teachers who encourage students to complete tasks with mathematical fluency: • Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately. • Offer multiple opportunities for students to practice efficient and generalizable methods. • Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.
MA.K12.MTR.4.1:	**Engage in discussions that reflect on the mathematical thinking of self and others.** Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others: • Communicate mathematical ideas, vocabulary and methods effectively. • Analyze the mathematical thinking of others. • Compare the efficiency of a method to those expressed by others. • Recognize errors and suggest how to correctly solve the task. • Justify results by explaining methods and processes. • Construct possible arguments based on evidence. **Clarifications:** Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: • Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning.

	• Create opportunities for students to discuss their thinking with peers. • Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. • Develop students' ability to justify methods and compare their responses to the responses of their peers.
MA.K12.MTR.5.1:	**Use patterns and structure to help understand and connect mathematical concepts.** Mathematicians who use patterns and structure to help understand and connect mathematical concepts: • Focus on relevant details within a problem. • Create plans and procedures to logically order events, steps or ideas to solve problems. • Decompose a complex problem into manageable parts. • Relate previously learned concepts to new concepts. • Look for similarities among problems. • Connect solutions of problems to more complicated large-scale situations. **Clarifications:** Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts: • Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts. • Support students to develop generalizations based on the similarities found among problems. • Provide opportunities for students to create plans and procedures to solve problems. • Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.
MA.K12.MTR.6.1:	**Assess the reasonableness of solutions.** Mathematicians who assess the reasonableness of solutions: • Estimate to discover possible solutions. • Use benchmark quantities to determine if a solution makes sense. • Check calculations when solving problems. • Verify possible solutions by explaining the methods used. • Evaluate results based on the given context. **Clarifications:** Teachers who encourage students to assess the reasonableness of solutions: • Have students estimate or predict solutions prior to solving. • Prompt students to continually ask, "Does this solution make sense? How do you know?" • Reinforce that students check their work as they progress within and after a task. • Strengthen students' ability to verify solutions through justifications.
MA.K12.MTR.7.1:	**Apply mathematics to real-world contexts.** Mathematicians who apply mathematics to real-world contexts: • Connect mathematical concepts to everyday experiences. • Use models and methods to understand, represent and solve problems. • Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency. **Clarifications:** Teachers who encourage students to apply mathematics to real-world contexts: • Provide opportunities for students to create models, both concrete and abstract, and perform investigations. • Challenge students to question the accuracy of their models and methods. • Support students as they validate conclusions by comparing them to the given situation. • Indicate how various concepts can be applied to other disciplines.
ELA.K12.EE.1.1:	Cite evidence to explain and justify reasoning. **Clarifications:** K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing. 2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations. 4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they've directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor. 6-8 Students continue with previous skills and use a style guide to create a proper citation. 9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.
ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.
ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like "Why is the girl smiling?" or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully.

ELA.K12.EE.4.1:	In grades 1-2, students build upon these skills by justifying what they are thinking. For example: "I think _______ because ______." The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
ELA.K12.EE.5.1:	Use the accepted rules governing a specific format to create quality work. **Clarifications:** Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.
ELA.K12.EE.6.1:	Use appropriate voice and tone when speaking or writing. **Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.
ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.

General Course Information and Notes

VERSION DESCRIPTION

In Probability and Statistics Honors, instructional time will emphasize four areas: (1) creating and interpreting data displays for univariate and bivariate categorical and numerical data; (2) comparing and making observations about populations using statistical data, including confidence intervals and hypothesis testing; (3) extending understanding of probability and probability distributions and (4) developing an understanding of methods for collecting statistical data, including randomized trials.

All clarifications stated, whether general or specific to Probability and Statistics Honors, are expectations for instruction of that benchmark.

Curricular content for all subjects must integrate critical-thinking, problem-solving, and workforce-literacy skills; communication, reading, and writing skills; mathematics skills; collaboration skills; contextual and applied-learning skills; technology-literacy skills; information and media-literacy skills; and civic-engagement skills.

General Notes

Honors and Accelerated Level Course Note: Accelerated courses require a greater demand on students through increased academic rigor. Academic rigor is obtained through the application, analysis, evaluation, and creation of complex ideas that are often abstract and multi-faceted. Students are challenged to think and collaborate critically on the content they are learning. Honors level rigor will be achieved by increasing text complexity through text selection, focus on high-level qualitative measures, and complexity of task. Instruction will be structured to give students a deeper understanding of conceptual themes and organization within and across disciplines. Academic rigor is more than simply assigning to students a greater quantity of work.

Florida's Benchmarks for Excellent Student Thinking (B.E.S.T.) Standards

This course includes Florida's B.E.S.T. ELA Expectations (EE) and Mathematical Thinking and Reasoning Standards (MTRs) for students. Florida educators should intentionally embed these standards within the content and their instruction as applicable. For guidance on the implementation of the EEs and MTRs, please visit https://www.cpalms.org/Standards/BEST_Standards.aspx and select the appropriate B.E.S.T. Standards package.

English Language Development ELD Standards Special Notes Section:

Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link: https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf

General Information

Course Number: 1210300

Course Path: **Section:** Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Probablility and Statistics >

Abbreviated Title: PROB & STATS HONORS

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Attributes:

- Honors

Course Type: Core Academic Course

Course Level: 3

Course Status: State Board Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Mathematics

Educator Certifications

Mathematics (Grades 6-12)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Mathematics for College Statistics (#1210305) 2024 - And Beyond (current)

Course Standards

Name	Description
MA.912.AR.1.1:	Identify and interpret parts of an equation or expression that represent a quantity in terms of a mathematical or real-world context, including viewing one or more of its parts as a single entity. **Clarifications:** *Clarification 1:* Parts of an expression include factors, terms, constants, coefficients and variables. *Clarification 2:* Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.1.2:	Rearrange equations or formulas to isolate a quantity of interest. **Clarifications:** *Clarification 1*: Instruction includes using formulas for temperature, perimeter, area and volume; using equations for linear (standard, slope-intercept and point-slope forms) and quadratic (standard, factored and vertex forms) functions. *Clarification 2*: Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.2.5:	Solve and graph mathematical and real-world problems that are modeled with linear functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain, range, intercepts and rate of change. *Clarification 2*: Instruction includes the use of standard form, slope-intercept form and point-slope form. *Clarification 3*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation. *Clarification 4*: Within the Algebra 1 course, notations for domain, range and constraints are limited to inequality and set-builder. *Clarification 5*: Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.AR.5.7:	Solve and graph mathematical and real-world problems that are modeled with exponential functions. Interpret key features and determine constraints in terms of the context. **Clarifications:** *Clarification 1*: Key features are limited to domain; range; intercepts; intervals where the function is increasing, decreasing, positive or negative; constant percent rate of change; end behavior and asymptotes. *Clarification 2*: Instruction includes representing the domain, range and constraints with inequality notation, interval notation or set-builder notation. *Clarification 3*: Instruction includes understanding that when the logarithm of the dependent variable is taken and graphed, the exponential function will be transformed into a linear function. *Clarification 4*: Within the Mathematics for Data and Financial Literacy course, problem types focus on money and business.
MA.912.DP.1.1:	Given a set of data, select an appropriate method to represent the data, depending on whether it is numerical or categorical data and on whether it is univariate or bivariate. **Clarifications:** *Clarification 1:* Instruction includes discussions regarding the strengths and weaknesses of each data display. *Clarification 2:* Numerical univariate includes histograms, stem-and-leaf plots, box plots and line plots; numerical bivariate includes scatter plots and line graphs; categorical univariate includes bar charts, circle graphs, line plots, frequency tables and relative frequency tables; and categorical bivariate includes segmented bar charts, joint frequency tables and joint relative frequency tables. *Clarification 3:* Instruction includes the use of appropriate units and labels and, where appropriate, using technology to create data displays.
MA.912.DP.1.2:	Interpret data distributions represented in various ways. State whether the data is numerical or categorical, whether it is univariate or bivariate and interpret the different components and quantities in the display. **Clarifications:** *Clarification 1*: Within the Probability and Statistics course, instruction includes the use of spreadsheets and technology.
MA.912.DP.1.3:	Explain the difference between correlation and causation in the contexts of both numerical and categorical data.
MA.912.DP.2.1:	For two or more sets of numerical univariate data, calculate and compare the appropriate measures of center and measures of variability, accounting for possible effects of outliers. Interpret any notable features of the shape of the data distribution. **Clarifications:** *Clarification 1*: The measure of center is limited to mean and median. The measure of variation is limited to range, interquartile range, and standard deviation. *Clarification 2*: Shape features include symmetry or skewness and clustering. *Clarification 3*: Within the Probability and Statistics course, instruction includes the use of spreadsheets and technology.

MA.912.DP.2.4:	Fit a linear function to bivariate numerical data that suggests a linear association and interpret the slope and y-intercept of the model. Use the model to solve real-world problems in terms of the context of the data. **Clarifications:** *Clarification 1*: Instruction includes fitting a linear function both informally and formally with the use of technology. *Clarification 2*: Problems include making a prediction or extrapolation, inside and outside the range of the data, based on the equation of the line of fit.
MA.912.DP.2.5:	Given a scatter plot that represents bivariate numerical data, assess the fit of a given linear function by plotting and analyzing residuals. **Clarifications:** *Clarification 1*: Within the Algebra 1 course, instruction includes determining the number of positive and negative residuals; the largest and smallest residuals; and the connection between outliers in the data set and the corresponding residuals.
MA.912.DP.2.6:	Given a scatter plot with a line of fit and residuals, determine the strength and direction of the correlation. Interpret strength and direction within a real-world context. **Clarifications:** *Clarification 1*: Instruction focuses on determining the direction by analyzing the slope and informally determining the strength by analyzing the residuals.
MA.912.DP.2.7:	Compute the correlation coefficient of a linear model using technology. Interpret the strength and direction of the correlation coefficient.
MA.912.DP.2.9:	Fit an exponential function to bivariate numerical data that suggests an exponential association. Use the model to solve real-world problems in terms of the context of the data. **Clarifications:** *Clarification 1*: Instruction focuses on determining whether an exponential model is appropriate by taking the logarithm of the dependent variable using spreadsheets and other technology. *Clarification 2*: Instruction includes determining whether the transformed scatterplot has an appropriate line of best fit, and interpreting the y-intercept and slope of the line of best fit. *Clarification 3*: Problems include making a prediction or extrapolation, inside and outside the range of the data, based on the equation of the line of fit.
MA.912.DP.3.1:	Construct a two-way frequency table summarizing bivariate categorical data. Interpret joint and marginal frequencies and determine possible associations in terms of a real-world context.
MA.912.DP.3.2:	Given marginal and conditional relative frequencies, construct a two-way relative frequency table summarizing categorical bivariate data. **Clarifications:** *Clarification 1:* Construction includes cases where not all frequencies are given but enough are provided to be able to construct a two-way relative frequency table. *Clarification 2:* Instruction includes the use of a tree diagram when calculating relative frequencies to construct tables.
MA.912.DP.3.5:	Solve real-world problems involving univariate and bivariate categorical data. **Clarifications:** *Clarification 1:* Instruction focuses on the connection to probability. *Clarification 2:* Instruction includes calculating joint relative frequencies or conditional relative frequencies using tree diagrams. Clarification 3: Graphical representations include frequency tables, relative frequency tables, circle graphs and segmented bar graphs.
MA.912.DP.4.1:	Describe events as subsets of a sample space using characteristics, or categories, of the outcomes, or as unions, intersections or complements of other events.
MA.912.DP.4.2:	Determine if events A and B are independent by calculating the product of their probabilities.
MA.912.DP.4.3:	Calculate the conditional probability of two events and interpret the result in terms of its context.
MA.912.DP.4.4:	Interpret the independence of two events using conditional probability.
MA.912.DP.4.5:	Given a two-way table containing data from a population, interpret the joint and marginal relative frequencies as empirical probabilities and the conditional relative frequencies as empirical conditional probabilities. Use those probabilities to determine whether characteristics in the population are approximately independent. **Clarifications:** *Clarification 1*: Instruction includes the connection between mathematical probability and applied statistics.
MA.912.DP.4.6:	Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations.
MA.912.DP.4.7:	Apply the addition rule for probability, taking into consideration whether the events are mutually exclusive, and interpret the result in terms of the model and its context.
MA.912.DP.4.8:	Apply the general multiplication rule for probability, taking into consideration whether the events are independent, and interpret the result in terms of the context.
MA.912.DP.4.9:	Apply the addition and multiplication rules for counting to solve mathematical and real-world problems, including problems involving probability.
MA.912.DP.4.10:	Given a mathematical or real-world situation, calculate the appropriate permutation or combination.
MA.912.DP.5.1:	Distinguish between a population parameter and a sample statistic.
MA.912.DP.5.2:	Explain how random sampling produces data that is representative of a population.
MA.912.DP.5.3:	Compare and contrast sampling methods. **Clarifications:** *Clarification 1*: Instruction includes understanding the connection between probability and sampling methods. *Clarification 2*: Sampling methods include simple random, stratified, cluster, systematic, judgement, quota and convenience.
MA.912.DP.5.4:	Generate multiple samples or simulated samples of the same size to measure the variation in estimates or predictions.
MA.912.DP.5.5:	Determine if a specific model is consistent within a given process by analyzing the data distribution from a data-generating process.
MA.912.DP.5.6:	Determine the appropriate design, survey, experiment or observational study, based on the purpose. Articulate the types of questions appropriate for each type of design.
	Compare and contrast surveys, experiments and observational studies.

MA.912.DP.5.7:	**Clarifications:** *Clarification 1*: Instruction includes understanding how randomization relates to sample surveys, experiments and observational studies.
MA.912.DP.5.11:	Evaluate reports based on data from diverse media, print and digital resources by interpreting graphs and tables; evaluating data-based arguments; determining whether a valid sampling method was used; or interpreting provided statistics. **Clarifications:** *Clarification 1*: Instruction includes determining whether or not data displays could be misleading.
MA.912.F.1.2:	Given a function represented in function notation, evaluate the function for an input in its domain. For a real-world context, interpret the output. **Clarifications:** *Clarification 1*: Problems include simple functions in two-variables, such as f(x,y)=3x-2y. *Clarification 2*: Within the Algebra 1 course, functions are limited to one-variable such as f(x)=3x.
MA.912.F.1.8:	Determine whether a linear, quadratic or exponential function best models a given real-world situation. **Clarifications:** *Clarification 1*: Instruction includes recognizing that linear functions model situations in which a quantity changes by a constant amount per unit interval; that quadratic functions model situations in which a quantity increases to a maximum, then begins to decrease or a quantity decreases to a minimum, then begins to increase; and that exponential functions model situations in which a quantity grows or decays by a constant percent per unit interval. *Clarification 2*: Within this benchmark, the expectation is to identify the type of function from a written description or table.
MA.912.FL.1.1:	Extend previous knowledge of operations of fractions, percentages and decimals to solve real-world problems involving money and business. **Clarifications:** *Clarification 1*: Problems include discounts, markups, simple interest, tax, tips, fees, percent increase, percent decrease and percent error.
MA.912.FL.1.3:	Solve real-world problems involving weighted averages using spreadsheets and other technology.
MA.912.LT.5.4:	Perform the set operations of taking the complement of a set and the union, intersection, difference and product of two sets. **Clarifications:** *Clarification 1*: Instruction includes the connection to probability and the words AND, OR and NOT.
MA.912.LT.5.5:	Explore relationships and patterns and make arguments about relationships between sets using Venn Diagrams.
MA.K12.MTR.1.1:	**Actively participate in effortful learning both individually and collectively.** Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task. • Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach. **Clarifications:** Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging. • Develop students' ability to analyze and problem solve. • Recognize students' effort when solving challenging problems.
MA.K12.MTR.2.1:	**Demonstrate understanding by representing problems in multiple ways.** Mathematicians who demonstrate understanding by representing problems in multiple ways: • Build understanding through modeling and using manipulatives. • Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. • Progress from modeling problems with objects and drawings to using algorithms and equations. • Express connections between concepts and representations. • Choose a representation based on the given context or purpose. **Clarifications:** Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: • Help students make connections between concepts and representations. • Provide opportunities for students to use manipulatives when investigating concepts. • Guide students from concrete to pictorial to abstract representations as understanding progresses. • Show students that various representations can have different purposes and can be useful in different situations.
MA.K12.MTR.3.1:	**Complete tasks with mathematical fluency.** Mathematicians who complete tasks with mathematical fluency: • Select efficient and appropriate methods for solving problems within the given context. • Maintain flexibility and accuracy while performing procedures and mental calculations. • Complete tasks accurately and with confidence. • Adapt procedures to apply them to a new context. • Use feedback to improve efficiency when performing calculations. **Clarifications:** Teachers who encourage students to complete tasks with mathematical fluency: • Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately. • Offer multiple opportunities for students to practice efficient and generalizable methods.

	• Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.
MA.K12.MTR.4.1:	**Engage in discussions that reflect on the mathematical thinking of self and others.** Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others: • Communicate mathematical ideas, vocabulary and methods effectively. • Analyze the mathematical thinking of others. • Compare the efficiency of a method to those expressed by others. • Recognize errors and suggest how to correctly solve the task. • Justify results by explaining methods and processes. • Construct possible arguments based on evidence. **Clarifications:** Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: • Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning. • Create opportunities for students to discuss their thinking with peers. • Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. • Develop students' ability to justify methods and compare their responses to the responses of their peers.
MA.K12.MTR.5.1:	**Use patterns and structure to help understand and connect mathematical concepts.** Mathematicians who use patterns and structure to help understand and connect mathematical concepts: • Focus on relevant details within a problem. • Create plans and procedures to logically order events, steps or ideas to solve problems. • Decompose a complex problem into manageable parts. • Relate previously learned concepts to new concepts. • Look for similarities among problems. • Connect solutions of problems to more complicated large-scale situations. **Clarifications:** Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts: • Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts. • Support students to develop generalizations based on the similarities found among problems. • Provide opportunities for students to create plans and procedures to solve problems. • Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.
MA.K12.MTR.6.1:	**Assess the reasonableness of solutions.** Mathematicians who assess the reasonableness of solutions: • Estimate to discover possible solutions. • Use benchmark quantities to determine if a solution makes sense. • Check calculations when solving problems. • Verify possible solutions by explaining the methods used. • Evaluate results based on the given context. **Clarifications:** Teachers who encourage students to assess the reasonableness of solutions: • Have students estimate or predict solutions prior to solving. • Prompt students to continually ask, "Does this solution make sense? How do you know?" • Reinforce that students check their work as they progress within and after a task. • Strengthen students' ability to verify solutions through justifications.
MA.K12.MTR.7.1:	**Apply mathematics to real-world contexts.** Mathematicians who apply mathematics to real-world contexts: • Connect mathematical concepts to everyday experiences. • Use models and methods to understand, represent and solve problems. • Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency. **Clarifications:** Teachers who encourage students to apply mathematics to real-world contexts: • Provide opportunities for students to create models, both concrete and abstract, and perform investigations. • Challenge students to question the accuracy of their models and methods. • Support students as they validate conclusions by comparing them to the given situation. • Indicate how various concepts can be applied to other disciplines.
ELA.K12.EE.1.1:	Cite evidence to explain and justify reasoning. **Clarifications:** K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing. 2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations. 4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they've directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor. 6-8 Students continue with previous skills and use a style guide to create a proper citation. 9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.

ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.
ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like "Why is the girl smiling?" or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
ELA.K12.EE.4.1:	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully. In grades 1-2, students build upon these skills by justifying what they are thinking. For example: "I think _______ because ______." The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
ELA.K12.EE.5.1:	Use the accepted rules governing a specific format to create quality work. **Clarifications:** Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.
ELA.K12.EE.6.1:	Use appropriate voice and tone when speaking or writing. **Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.
ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.

General Course Information and Notes

VERSION DESCRIPTION

In Mathematics for College Statistics, instructional time will emphasize four areas: (1) analyzing and applying linear and exponential functions within the context of statistics; (2) extending understanding of probability using data and various representations, including two-way tables and Venn Diagrams; (3) representing and interpreting univariate and bivariate categorical and numerical data and (4) determining the appropriateness of different types of statistical studies.

All clarifications stated, whether general or specific to Mathematics for College Statistics, are expectations for instruction of that benchmark.

Curricular content for all subjects must integrate critical-thinking, problem-solving, and workforce-literacy skills; communication, reading, and writing skills; mathematics skills; collaboration skills; contextual and applied-learning skills; technology-literacy skills; information and media-literacy skills; and civic-engagement skills.

General Notes

Florida's Benchmarks for Excellent Student Thinking (B.E.S.T.) Standards
This course includes Florida's B.E.S.T. ELA Expectations (EE) and Mathematical Thinking and Reasoning Standards (MTRs) for students. Florida educators should intentionally embed these standards within the content and their instruction as applicable. For guidance on the implementation of the EEs and MTRs, please visit https://www.cpalms.org/Standards/BEST_Standards.aspx and select the appropriate B.E.S.T. Standards package.

English Language Development ELD Standards Special Notes Section:

Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link: https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf

General Information

Course Number: 1210305

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Probablility and Statistics >

Abbreviated Title: MATH FOR COLL STATS

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Type: Core Academic Course

Course Level: 2

Course Status: State Board Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Mathematics

Educator Certifications

Mathematics (Grades 6-12)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Advanced Placement Statistics (#1210320) 2024 - And Beyond (current)

General Course Information and Notes

General Notes

The course description for this Advanced Placement courses is located on the College Board site at http://apcentral.collegeboard.com/apc/public/courses/teachers_corner/index.html.

General Information

Course Number: 1210320

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Probablility and Statistics >

Abbreviated Title: AP STAT

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Attributes:

- Advanced Placement (AP)

Course Type: Core Academic Course

Course Level: 3

Course Status: Course Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Mathematics

Educator Certifications

Mathematics (Grades 6-12)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Equivalent Courses

1210330-Cambridge AICE Mathematics Statistics AS Level

Cambridge AICE Mathematics Statistics AS Level (#1210330) 2024 - And Beyond (current)

General Course Information and Notes

General Notes

For more information about this Cambridge course, visit Cambridge International AS & A Level subjects.

General Information

Course Number: 1210330

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Probablility and Statistics >

Abbreviated Title: AICE MATH STAT AS

Number of Credits: Half credit (.5)

Course Length: Semester (S)

Course Attributes:

- Advanced International Certificate of Education (AICE)
- External Course Description

Course Type: Core Academic Course

Course Level: 3

Course Status: Course Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Mathematics

Educator Certifications

Mathematics (Grades 6-12)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.

Equivalent Courses

1210320-Advanced Placement Statistics

Discrete Mathematics Honors (#1212300) 2024 - And Beyond (current)

Course Standards

Name	Description
MA.912.AR.9.6:	Given a real-world context, represent constraints as systems of linear equations or inequalities. Interpret solutions to problems as viable or non-viable options. **Clarifications:** *Clarification 1*: Instruction focuses on analyzing a given function that models a real-world situation and writing constraints that are represented as linear equations or linear inequalities.
MA.912.AR.9.8:	Solve real-world problems involving linear programming in two variables.
MA.912.AR.10.1:	Given a mathematical or real-world context, write and solve problems involving arithmetic sequences.
MA.912.AR.10.2:	Given a mathematical or real-world context, write and solve problems involving geometric sequences.
MA.912.AR.10.5:	Given a mathematical or real-world context, write a sequence using function notation, defined explicitly or recursively, to represent relationships between quantities from a written description.
MA.912.AR.10.6:	Given a mathematical or real-world context, find the domain of a given sequence defined recursively or explicitly.
MA.912.DP.4.1:	Describe events as subsets of a sample space using characteristics, or categories, of the outcomes, or as unions, intersections or complements of other events.
MA.912.DP.4.9:	Apply the addition and multiplication rules for counting to solve mathematical and real-world problems, including problems involving probability.
MA.912.DP.4.10:	Given a mathematical or real-world situation, calculate the appropriate permutation or combination.
MA.912.GR.2.4:	Determine symmetries of reflection, symmetries of rotation and symmetries of translation of a geometric figure. **Clarifications:** *Clarification 1*: Instruction includes determining the order of each symmetry. *Clarification 2*: Instruction includes the connection between tessellations of the plane and symmetries of translations.
MA.912.LT.1.1:	Apply recursive and iterative thinking to solve problems.
MA.912.LT.1.2:	Solve problems involving recurrence relations. **Clarifications:** *Clarification 1*: Instruction includes finding explicit or recursive equations for recursively defined sequences. *Clarification 2*: Problems include fractals, the Fibonacci sequence, growth models and finite difference.
MA.912.LT.2.1:	Define and explain the basic concepts of Graph Theory. **Clarifications:** *Clarification 1*: Basic concepts include vertex, edge, directed edge, undirected edge, path, vertex degree, directed graph, undirected graph, tree, bipartite graph, circuit, connectedness and planarity.
MA.912.LT.2.2:	Solve problems involving paths in graphs. **Clarifications:** *Clarification 1*: Instruction includes simple paths and circuits; Hamiltonian paths and circuits; and Eulerian paths and circuits.
MA.912.LT.2.3:	Solve scheduling problems using critical path analysis and Gantt charts. Create a schedule using critical path analysis.
MA.912.LT.2.4:	Apply graph coloring techniques to solve problems. **Clarifications:** *Clarification 1*: Problems include map coloring and committee assignments.
MA.912.LT.2.5:	Apply spanning trees, rooted trees, binary trees and decision trees to solve problems. **Clarifications:** *Clarification 1*: Instruction includes the use of technology to determine the number of possible solutions and generating solutions when a feasible number of possible solutions exists.
MA.912.LT.3.1:	Define and explain the basic concepts of Election Theory and voting. **Clarifications:** *Clarification 1*: Basic concepts include approval and preference voting, plurality, majority, runoff, sequential runoff, Borda count, Condorcet and other fairness criteria, dummy voters and coalition.
MA.912.LT.3.2:	Analyze election data using election theory techniques. Explain how Arrow's Impossibility Theorem may be related to the fairness of the outcome of the election.
MA.912.LT.3.3:	Decide voting power within a group using weighted voting techniques. Provide real-world examples of weighted voting and its pros and cons.
MA.912.LT.3.4:	Solve problems using fair division and apportionment techniques. **Clarifications:** *Clarification 1*: Problems include fair division among people with different preferences, fairly dividing an inheritance that includes indivisible goods, salary caps in sports and allocation of representatives to Congress.
MA.912.LT.4.1:	Translate propositional statements into logical arguments using propositional variables and logical connectives.
MA.912.LT.4.2:	Determine truth values of simple and compound statements using truth tables.
MA.912.LT.4.3:	Identify and accurately interpret "if...then," "if and only if," "all" and "not" statements. Find the converse, inverse and contrapositive of a statement. **Clarifications:** *Clarification 1:* Instruction focuses on recognizing the relationships between an "if...then" statement and the converse, inverse and contrapositive of that statement.

	Clarification 2: Within the Geometry course, instruction focuses on the connection to proofs within the course.
MA.912.LT.4.4:	Represent logic operations, such as AND, OR, NOT, NOR, and XOR, using logical symbolism to solve problems.
MA.912.LT.4.5:	Determine whether two propositions are logically equivalent.
MA.912.LT.4.6:	Apply methods of direct and indirect proof and determine whether a logical argument is valid.
MA.912.LT.4.7:	Identify and give examples of undefined terms; axioms; theorems; proofs, including proofs using mathematical induction; and inductive and deductive reasoning.
MA.912.LT.4.8:	Construct proofs, including proofs by contradiction. **Clarifications:** *Clarification 1*: Within the Geometry course, proofs are limited to geometric statements within the course.
MA.912.LT.4.9:	Construct logical arguments using laws of detachment, syllogism, tautology, contradiction and Euler Diagrams.
MA.912.LT.4.10:	Judge the validity of arguments and give counterexamples to disprove statements. **Clarifications:** *Clarification 1:* Within the Geometry course, instruction focuses on the connection to proofs within the course.
MA.912.LT.5.1:	Given two sets, determine whether the two sets are equivalent and whether one set is a subset of another. Given one set, determine its power set.
MA.912.LT.5.2:	Given a relation on two sets, determine whether the relation is a function, determine the inverse of the relation if it exists and identify if the relation is bijective.
MA.912.LT.5.3:	Partition a set into disjoint subsets and determine an equivalence class given the equivalence relation on a set.
MA.912.LT.5.4:	Perform the set operations of taking the complement of a set and the union, intersection, difference and product of two sets. **Clarifications:** *Clarification 1*: Instruction includes the connection to probability and the words AND, OR and NOT.
MA.912.LT.5.5:	Explore relationships and patterns and make arguments about relationships between sets using Venn Diagrams.
MA.912.LT.5.6:	Prove set relations, including DeMorgan's Laws and equivalence relations.
MA.K12.MTR.1.1:	**Actively participate in effortful learning both individually and collectively.** Mathematicians who participate in effortful learning both individually and with others: • Analyze the problem in a way that makes sense given the task. • Ask questions that will help with solving the task. • Build perseverance by modifying methods as needed while solving a challenging task. • Stay engaged and maintain a positive mindset when working to solve tasks. • Help and support each other when attempting a new method or approach. **Clarifications:** Teachers who encourage students to participate actively in effortful learning both individually and with others: • Cultivate a community of growth mindset learners. • Foster perseverance in students by choosing tasks that are challenging. • Develop students' ability to analyze and problem solve. • Recognize students' effort when solving challenging problems.
MA.K12.MTR.2.1:	**Demonstrate understanding by representing problems in multiple ways.** Mathematicians who demonstrate understanding by representing problems in multiple ways: • Build understanding through modeling and using manipulatives. • Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations. • Progress from modeling problems with objects and drawings to using algorithms and equations. • Express connections between concepts and representations. • Choose a representation based on the given context or purpose. **Clarifications:** Teachers who encourage students to demonstrate understanding by representing problems in multiple ways: • Help students make connections between concepts and representations. • Provide opportunities for students to use manipulatives when investigating concepts. • Guide students from concrete to pictorial to abstract representations as understanding progresses. • Show students that various representations can have different purposes and can be useful in different situations.
MA.K12.MTR.3.1:	**Complete tasks with mathematical fluency.** Mathematicians who complete tasks with mathematical fluency: • Select efficient and appropriate methods for solving problems within the given context. • Maintain flexibility and accuracy while performing procedures and mental calculations. • Complete tasks accurately and with confidence. • Adapt procedures to apply them to a new context. • Use feedback to improve efficiency when performing calculations. **Clarifications:** Teachers who encourage students to complete tasks with mathematical fluency: • Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately. • Offer multiple opportunities for students to practice efficient and generalizable methods. • Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.
	Engage in discussions that reflect on the mathematical thinking of self and others. Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others:

MA.K12.MTR.4.1:	- Communicate mathematical ideas, vocabulary and methods effectively. - Analyze the mathematical thinking of others. - Compare the efficiency of a method to those expressed by others. - Recognize errors and suggest how to correctly solve the task. - Justify results by explaining methods and processes. - Construct possible arguments based on evidence. **Clarifications:** Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others: - Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning. - Create opportunities for students to discuss their thinking with peers. - Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods. - Develop students' ability to justify methods and compare their responses to the responses of their peers.
MA.K12.MTR.5.1:	**Use patterns and structure to help understand and connect mathematical concepts.** Mathematicians who use patterns and structure to help understand and connect mathematical concepts: - Focus on relevant details within a problem. - Create plans and procedures to logically order events, steps or ideas to solve problems. - Decompose a complex problem into manageable parts. - Relate previously learned concepts to new concepts. - Look for similarities among problems. - Connect solutions of problems to more complicated large-scale situations. **Clarifications:** Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts: - Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts. - Support students to develop generalizations based on the similarities found among problems. - Provide opportunities for students to create plans and procedures to solve problems. - Develop students' ability to construct relationships between their current understanding and more sophisticated ways of thinking.
MA.K12.MTR.6.1:	**Assess the reasonableness of solutions.** Mathematicians who assess the reasonableness of solutions: - Estimate to discover possible solutions. - Use benchmark quantities to determine if a solution makes sense. - Check calculations when solving problems. - Verify possible solutions by explaining the methods used. - Evaluate results based on the given context. **Clarifications:** Teachers who encourage students to assess the reasonableness of solutions: - Have students estimate or predict solutions prior to solving. - Prompt students to continually ask, "Does this solution make sense? How do you know?" - Reinforce that students check their work as they progress within and after a task. - Strengthen students' ability to verify solutions through justifications.
MA.K12.MTR.7.1:	**Apply mathematics to real-world contexts.** Mathematicians who apply mathematics to real-world contexts: - Connect mathematical concepts to everyday experiences. - Use models and methods to understand, represent and solve problems. - Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency. **Clarifications:** Teachers who encourage students to apply mathematics to real-world contexts: - Provide opportunities for students to create models, both concrete and abstract, and perform investigations. - Challenge students to question the accuracy of their models and methods. - Support students as they validate conclusions by comparing them to the given situation. - Indicate how various concepts can be applied to other disciplines.
ELA.K12.EE.1.1:	Cite evidence to explain and justify reasoning. **Clarifications:** K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing. 2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations. 4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they've directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor. 6-8 Students continue with previous skills and use a style guide to create a proper citation. 9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.
ELA.K12.EE.2.1:	Read and comprehend grade-level complex texts proficiently. **Clarifications:** See Text Complexity for grade-level complexity bands and a text complexity rubric.

ELA.K12.EE.3.1:	Make inferences to support comprehension. **Clarifications:** Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like “Why is the girl smiling?” or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.
ELA.K12.EE.4.1:	Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations. **Clarifications:** In kindergarten, students learn to listen to one another respectfully. In grades 1-2, students build upon these skills by justifying what they are thinking. For example: “I think _______ because ______.” The collaborative conversations are becoming academic conversations. In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.
ELA.K12.EE.5.1:	Use the accepted rules governing a specific format to create quality work. **Clarifications:** Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.
ELA.K12.EE.6.1:	Use appropriate voice and tone when speaking or writing. **Clarifications:** In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.
ELD.K12.ELL.MA.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.

General Course Information and Notes

VERSION DESCRIPTION

In Discrete Mathematics Honors, instructional time will emphasize five areas: (1) extending understanding of sequences and patterns to include Fibonacci sequences and tessellations; (2) applying probability and combinatorics; (3) extending understanding of systems of equations and inequalities to solve linear programming problems; (4) developing an understanding of Graph Theory, Election Theory and Set Theory and (5) developing an understanding of propositional logic, arguments and methods of proof.

All clarifications stated, whether general or specific to Discrete Mathematics Honors, are expectations for instruction of that benchmark.

Curricular content for all subjects must integrate critical-thinking, problem-solving, and workforce-literacy skills; communication, reading, and writing skills; mathematics skills; collaboration skills; contextual and applied-learning skills; technology-literacy skills; information and media-literacy skills; and civic-engagement skills.

General Notes

Honors and Accelerated Level Course Note: Accelerated courses require a greater demand on students through increased academic rigor. Academic rigor is obtained through the application, analysis, evaluation, and creation of complex ideas that are often abstract and multi-faceted. Students are challenged to think and collaborate critically on the content they are learning. Honors level rigor will be achieved by increasing text complexity through text selection, focus on high-level qualitative measures, and complexity of task. Instruction will be structured to give students a deeper understanding of conceptual themes and organization within and across disciplines. Academic rigor is more than simply assigning to students a greater quantity of work.

English Language Development ELD Standards Special Notes Section:

Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Mathematics. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL’s need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link: https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/eld/ma.pdf

General Information

Course Number: 1212300

Course Path: Section: Grades PreK to 12 Education Courses > **Grade Group:** Grades 9 to 12 and Adult Education Courses > **Subject:** Mathematics > **SubSubject:** Discrete Mathematics >

Abbreviated Title: DISCRETE MATH HONORS

Number of Credits: One (1) credit

Course Length: Year (Y)

Course Attributes:

- Honors

Course Type: Core Academic Course

Course Level: 3

Course Status: State Board Approved

Grade Level(s): 9,10,11,12

Graduation Requirement: Mathematics

Educator Certifications

Mathematics (Grades 6-12)
Classical Education - Restricted (Elementary and Secondary Grades K-12) Section 1012.55(5), F.S., authorizes the issuance of a classical education teaching certificate, upon the request of a classical school, to any applicant who fulfills the requirements of s. 1012.56(2)(a)-(f) and (11), F.S., and Rule 6A-4.004, F.A.C. Classical schools must meet the requirements outlined in s. 1012.55(5), F.S., and be listed in the FLDOE Master School ID database, to request a restricted classical education teaching certificate on behalf of an applicant.