



# Mathletics

## Mathematics Florida Standards (MAFS)

Grades K - High School

## Mathletics Curriculum Alignment

## Introduction

At Mathletics, we are committed to providing students, teachers and schools with high-quality learning resources that align with the most up-to-date curricula.

As you would know, the Mathematics Florida Standards (2014) incorporate the content of the Common Core State Standards with variations to the standards, content descriptions and some additional standards.

Our team of educational publishers has created a course that specifically follows the Mathematics Florida Standards (2014). You can be assured that students have access to relevant and targeted content.

Mathletics courses consist of topics based on domains, clusters and standards. The courses also include 'review' topics to provide additional learning support through targeted revision of topics from the previous grade level.

Standards are generally covered by Mathletics online practice and fluency activities. However, when a standard is best addressed by teacher directed activities, it is indicated in this document. Such activities may be explored using the Mathletics online eBooks, videos and interactives or through our engaging rich learning tasks.

This document outlines the curriculum alignment and acts as a useful guide when using Mathletics in your school.

### **3P Learning USA**

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# Kindergarten

Domain	Cluster	Standard	Description	Activities
Counting and Cardinality	1: Know number names and the count sequence.	MAFS.K.CC.1.1	Count to 100 by ones and tens.	Count to 5 Order Numbers to 10 Order Numbers to 20 Count by Tens Reading Numbers to 30 1 to 30 Before, After and Between to 20 Counting Up to 20
Counting and Cardinality	1: Know number names and the count sequence.	MAFS.K.CC.1.2	Count forward beginning from a given number within the known sequence (instead of having to begin at 1).	Counting Forwards Going Up
Counting and Cardinality	1: Know number names and the count sequence.	MAFS.K.CC.1.3	Read and write numerals from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).	Concept of Zero Matching Numbers to 10 Matching Numbers to 20
Counting and Cardinality	2: Count to tell the number of objects.	MAFS.K.CC.2.4	Understand the relationship between numbers and quantities; connect counting to cardinality. a. When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object. b. Understand that the last number name said tells the number of objects counted. The number of object is the same regardless of their arrangement or the order in which they were counted. c. Understand that each successive number name refers to a quantity that is one larger.	How Many? How Many Dots?
Counting and Cardinality	2: Count to tell the number of objects.	MAFS.K.CC.2.5	Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects.	How Many? How Many Dots?
Counting and Cardinality	3: Compare numbers.	MAFS.K.CC.3.6	Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group.	More or Less? Balancing Act Same and Different Who has the Goods? Arranging Numbers More, less or the same to 10 More, less or the same to 20
Counting and Cardinality	3: Compare numbers.	MAFS.K.CC.3.7	Compare two numbers between 1 and 10 presented as written numerals.	Teacher directed

# Kindergarten

Domain	Cluster	Standard	Description	 Activities
Operations and Algebraic Thinking	1: Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.	MAFS.K.OA.1.1	Represent addition and subtraction with objects, fingers, mental images drawings, sounds, acting out situations, verbal explanations, expressions, or equations.	Teacher directed
Operations and Algebraic Thinking	1: Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.	MAFS.K.OA.1.2	Solve addition and subtraction word problems, and add and subtract within 10. (Students are not required to independently read the word problems.)	Adding to 5 Subtracting from 5 Adding to Ten All about Ten Subtracting from Ten Adding to make 5 and 10 Doubles and Halves to 10 Adding to 10 Word Problems
Operations and Algebraic Thinking	1: Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.	MAFS.K.OA.1.4	For any number from 1 to 9, find the number that makes 10 when added to the given number and record the answer with a drawing or equation.	Balance Numbers to 10 Adding to 5 Adding to make 5 and 10 Adding to Ten Subtracting from Ten
Operations and Algebraic Thinking	1: Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.	MAFS.K.OA.1.5	Fluently add and subtract within 5	Adding to 5 Subtracting from 5
Operations and Algebraic Thinking	1: Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.	MAFS.K.OA.1.1.a	Use addition and subtraction within 10 to solve word problems involving both addends unknown.	Adding to 10 Word Problems
Number and Operations in Base Ten	1: Work with numbers 11-19 to gain foundations for place value.	MAFS.K.NBT.1.1	Compose and decompose numbers from 11 to 19 into ten ones and some further ones and record each composition or decomposition by a drawing or equation; understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight or nine ones.	Making Teen Numbers Making Numbers Count
Measurement and Data	1: Describe and compare measurable attributes.	MAFS.K.MD.1.1	Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.	Everyday Length Everyday Mass Balancing Act How Full?
Measurement and Data	1: Describe and compare measurable attributes	MAFS.K.MD.1.2	Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference.	Compare Length Which Holds More?

# Kindergarten

Domain	Cluster	Standard	Description	Activities
Measurement and Data	1: Describe and compare measurable attributes.	MAFS.K.MD.1.a	Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.	Measuring Length with Blocks
Measurement and Data	2: Classify objects and count the number of objects in each category.	MAFS.K.MD.2.3	Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.	Sort It Same and Different
Geometry	1: Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).	MAFS.K.G.1.1	Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as <i>above</i> , <i>below</i> , <i>inside</i> , <i>in front of</i> , <i>behind</i> and <i>next to</i> .	Where is it? Left or Right?
Geometry	1: Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).	MAFS.K.G.1.2	Correctly name shapes regardless of their orientations or overall size.	Collect the Shapes Collect Simple Shapes Match the Solid 1
Geometry	1: Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).	MAFS.K.G.1.3	Identify shapes such as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").	Teacher directed
Geometry	2: Analyze, compare, create, and compose shapes.	MAFS.K.G.2.4	Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts and other attributes.	Count Sides and Corners How Many Edges?
Geometry	2: Analyze, compare, create, and compose shapes.	MAFS.K.G.2.5	Model shapes in the world by building shapes from components and drawing shapes.	Teacher directed
Geometry	2: Analyze, compare, create, and compose shapes.	MAFS.K.G.2.6	Compose simple shapes to form larger shapes.	Teacher directed

# Grade 1

Domain	Cluster	Standard	Description	Activities
Operations and Algebraic Thinking	1: Represent and solve problems involving addition and subtraction.	MAFS.1.OA.1.1	Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing with unknowns in all positions.	Add and Subtract Using Graphs Add and Subtract Problems Adding to 10 Word Problems Problems: Add and Subtract
Operations and Algebraic Thinking	1: Represent and solve problems involving addition and subtraction.	MAFS.1.OA.1.2	Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20.	Add Three 1-Digit Numbers Add 3 Numbers Using Bonds to 10
Operations and Algebraic Thinking	2: Understand and apply properties of operations and the relationship between addition and subtraction.	MAFS.1.OA.2.3	Apply properties of operations as strategies to add and subtract.	Commutative Property of Addition Adding in Any Order Add 3 Numbers Using Bonds to 10
Operations and Algebraic Thinking	2: Understand and apply properties of operations and the relationship between addition and subtraction.	MAFS.1.OA.2.4	Understand subtraction as an unknown-addend problem.	Related Facts 1
Operations and Algebraic Thinking	3: Add and subtract within 20.	MAFS.1.OA.3.5	Relate counting to addition and subtraction.	Addition Facts
Operations and Algebraic Thinking	3: Add and subtract within 20.	MAFS.1.OA.3.6	Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten; decomposing a number leading to a ten; using the relationship between addition and subtraction; and creating equivalent but easier or known sums.	Fact Families: Add and Subtract Adding to Ten Subtracting from Ten Subtracting from 20 Composing Additions to 20 Add 3 Numbers using bonds to 10 Doubles and Near Doubles
Operations and Algebraic Thinking	4: Work with addition and subtraction equations.	MAFS.1.OA.4.7	Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false.	Composing Numbers to 10 Balance Numbers to 20 Composing Additions to 20
Operations and Algebraic Thinking	4: Work with addition and subtraction equations.	MAFS.1.OA.4.8	Determine the unknown whole number in an addition or subtraction equation relating to three whole numbers.	Related Facts 1 Missing Numbers
Number and Operations in Base Ten	1: Extend the counting sequence.	MAFS.1.NBT.1.1	Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.	Counting on a 100 grid Make Big Numbers Count Before, After & Between to 100 Count by 2s, 5s and 10s
Number and Operations in Base Ten	2: Understand place value.	MAFS.1.NBT.2.2	Understand that the two digits of a two-digit number represent amounts of tens and ones. a. 10 can be thought of as a bundle of ten ones — called a “ten.” b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones. c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones). d. Decompose two-digit numbers in multiple ways.	Place Value 1 Making Teen Numbers Groups of Ten Complements to 10, 20, 50 Repartition Two-digit Numbers

# Grade 1

Domain	Cluster	Standard	Description	Activities
Number and Operations in Base Ten	2: Understand place value.	MAFS.1.NBT.2.3	Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols $>$ , $=$ , and $<$ .	Greater or Less to 100 Compare Numbers to 50 Compare Numbers to 100
Number and Operations in Base Ten	3: Use place value understanding and properties of operations to add and subtract.	MAFS.1.NBT.3.4	Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.	Complements to 10, 20, 50 Columns that Add Additive Addition
Number and Operations in Base Ten	3: Use place value understanding and properties of operations to add and subtract.	MAFS.1.NBT.3.5	Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.	10 More, 10 Less 1 More, 10 Less
Number and Operations in Base Ten	3: Use place value understanding and properties of operations to add and subtract.	MAFS.1.NBT.3.6	Subtract multiples of 10 in the range 10–90 from multiples of 10 in the range 10–90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.	Subtract Tens
Measurement and Data	1: Measure lengths indirectly and by iterating length units.	MAFS.1.MD.1.1	Order three objects by length; compare the lengths of two objects indirectly by using a third object.	Compare Length 1 Comparing Length Everyday Length
Measurement and Data	1: Measure lengths indirectly and by iterating length units.	MAFS.1.MD.1.1.a	Understand how to use a ruler to measure length to the nearest inch. a. Recognize that the ruler is a tool that can be used to measure the attribute of length. b. Understand the importance of the zero point and end point and that the length measure is the span between two points. c. Recognize that the units marked on a ruler have equal length intervals and fit together with no gaps or overlaps. These equal interval distances can be counted to determine the overall length of an object.	How Long Is That? (Customary)
Measurement and Data	2: Work with time and money.	MAFS.1.MD.2.3	Tell and write time in hours and half-hours using analog and digital clocks.	Hour Times Half Hour Times Tell Time to the Half Hour

# Grade 1

Domain	Cluster	Standard	Description	Activities
Measurement and Data	2: Work with time and money.	MAFS.1.MD.2.a	<p>Identify and combine values of money in cents up to one dollar working with a single unit of currency.</p> <ol style="list-style-type: none"> <li>Identify the value of coins (pennies, nickels, dimes, quarters).</li> <li>Compute the value of combinations of coins (pennies and/or dimes).</li> <li>Relate the value of pennies, dimes, and quarters to the dollar.</li> </ol>	Pennies, Nickels and Dimes Money Count Money
Measurement and Data	3: Represent and interpret data.	MAFS.1.MD.3.4	<p>Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.</p>	Who has the Goods? Pictographs Sorting Data 1
Geometry	1: Reason with shapes and their attributes.	MAFS.1.G.1.1	<p>Distinguish between defining attributes versus non-defining attributes; build and draw shapes to possess defining attributes.</p>	Teacher directed
Geometry	1: Reason with shapes and their attributes.	MAFS.1.G.1.2	<p>Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.</p>	Collect Simple Shapes Collect the Objects 2 Match the Solid 2
Geometry	1: Reason with shapes and their attributes.	MAFS.1.G.1.3	<p>Partition circles and rectangles into two and four equal shares, describe the shares using the words <i>halves</i>, <i>fourths</i>, and <i>quarters</i>, and use the phrases <i>half of</i>, <i>fourth of</i>, and <i>quarter of</i>. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.</p>	Halves Halves and Quarters

## Grade 2

Domain	Cluster	Standard	Description	Activities
Operations and Algebraic Thinking	1: Represent and solve problems involving addition and subtraction.	MAFS.2.OA.1.1	Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions.	Bar model problems 1
Operations and Algebraic Thinking	1: Represent and solve problems involving addition and subtraction.	MAFS.2.OA.1.a	Determine the unknown whole number in an equation relating four or more whole numbers.	Bar Model Problems 1 Problems: Add and Subtract Missing Values
Operations and Algebraic Thinking	2: Add and subtract within 20.	MAFS.2.OA.2.2	Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.	Add to 18 Addition Facts to 18 Subtraction Facts to 18 Simple Subtraction Additive Addition Fact Families: Add and Subtract
Operations and Algebraic Thinking	3: Work with equal groups of objects to gain foundations for multiplication.	MAFS.2.OA.3.3	Determine whether a group of objects (up to 20) has an odd or even number of members; write an equation to express an even number as a sum of two equal addends.	Odd or Even Count by Twos Counting by Twos
Operations and Algebraic Thinking	3: Work with equal groups of objects to gain foundations for multiplication.	MAFS.2.OA.3.4	Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.	Groups of Two Groups of Three Groups of Four Groups of Five
Number and Operations in Base Ten	1: Understand place value.	MAFS.2.NBT.1.1	Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones. Understand the following as special cases: a. 100 can be thought of as a bundle of ten tens — called a “hundred.” b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).	Place Value Partitioning Model Numbers Understanding Place Value 1 Place value 1 Place value 2 Repartition Two-digit Numbers
Number and Operations in Base Ten	1: Understand place value.	MAFS.2.NBT.1.2	Count within 1000; skip-count by 5s, 10s, and 100s.	Skip Counting with coins Counting by Fives Counting by Tens Count by 2s, 5s and 10s Counting on a 100 grid
Number and Operations in Base Ten	1: Understand place value.	MAFS.2.NBT.1.3	Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.	Model Numbers Repartition Two-digit Numbers Place value 1 Place value 2 Understanding Place Value 1
Number and Operations in Base Ten	1: Understand place value.	MAFS.2.NBT.1.4	Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using $>$ , $=$ , and $<$ symbols to record the results of comparisons.	Which is Bigger? Which is Smaller?

## Grade 2

Domain	Cluster	Standard	Description	 Activities
Number and Operations in Base Ten	2: Use place value understanding and properties of operations to add and subtract.	MAFS.2.NBT.2.5	Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.	Complements to 10, 20, 50 Adding to 2-digit numbers Subtract Tens Complements to 50 and 100 Strategies for Column Addition Decompose Numbers to Subtract Add and Subtract Using Graphs
Number and Operations in Base Ten	2: Use place value understanding and properties of operations to add and subtract.	MAFS.2.NBT.2.6	Add up to four two-digit numbers using strategies based on place value and properties of operations.	Add 3 Numbers: Bonds to 100 Add 3 Numbers: Bonds to Multiples of 10 Columns that Add Columns that Subtract
Number and Operations in Base Ten	2: Use place value understanding and properties of operations to add and subtract.	MAFS.2.NBT.2.7	Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.	Add Two 2-Digit Numbers Add Two 2-Digit Numbers: Regroup Add Three 2-Digit Numbers Add Three 2-Digit Numbers: Regroup Add 3-Digit Numbers Add 3-Digit Numbers: Regroup 2-Digit Differences 2-Digit Differences: Regroup 3-Digit Differences 3-Digit Differences with Zeros 3-Digit Differences: 1 Regrouping 3-Digit Differences: 2 Regroupings
Number and Operations in Base Ten	2: Use place value understanding and properties of operations to add and subtract.	MAFS.2.NBT.2.8	Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.	Magic Mental Addition Magic Mental Subtraction
Number and Operations in Base Ten	2: Use place value understanding and properties of operations to add and subtract.	MAFS.2.NBT.2.9	Explain why addition and subtraction strategies work, using place value and the properties of operations.	Teacher directed
Measurement and Data	1: Measure and estimate lengths in standard units.	MAFS.2.MD.1.1	Measure the length of an object to the nearest inch, foot, centimeter, or meter by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.	Measuring Length Comparing Length How Long is That? How Long Is That (Customary)?
Measurement and Data	1: Measure and estimate lengths in standard units.	MAFS.2.MD.1.2	Describe the inverse relationship between the size of a unit and number of units needed to measure a given object.	Teacher directed
Measurement and Data	1: Measure and estimate lengths in standard units.	MAFS.2.MD.1.3	Estimate lengths using units of inches, feet, yards, centimeters, and meters.	Inches, Feet, Yards
Measurement and Data	1: Measure and estimate lengths in standard units.	MAFS.2.MD.1.4	Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit	Teacher directed
Measurement and Data	2: Relate addition and subtraction to length.	MAFS.2.MD.2.5	Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units.	Teacher directed

## Grade 2

Domain	Cluster	Standard	Description	Activities
Measurement and Data	2: Relate addition and subtraction to length.	MAFS.2.MD.2.6	Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.	Number Lines
Measurement and Data	3: Work with time and money.	MAFS.2.MD.3.7	Tell and write time from analog and digital clocks to the nearest five minutes.	Five Minute Times Quarter to and Quarter Past
Measurement and Data	3: Work with time and money.	MAFS.2.MD.3.8	Solve one- and two-step word problems involving dollar bills (singles, fives, tens, twenties, and hundreds) or coins (quarters, dimes, nickels, and pennies) using \$ and ¢ symbols appropriately. Word problems may involve addition, subtraction, and equal groups situations. a. Identify the value of coins and paper currency. b. Compute the value of any combination of coins within one dollar. c. Compute the value of any combinations of dollars d. Relate the value of pennies, nickels, dimes, and quarters to other coins and to the dollar.	Using Fewest Coins to Make an Amount Who's got the Money? Count Money How Much Money? Skip Counting with Coins
Measurement and Data	4: Represent and interpret data.	MAFS.2.MD.4.10	Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.	Making Graphs Bar Graphs 1 Picture Graphs: single-unit scale
Measurement and Data	4: Represent and interpret data.	MAFS.2.MD.4.9	Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.	Teacher directed
Geometry	1: Reason with shapes and their attributes.	MAFS.2.G.1.1	Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.	Collect the Polygons How Many Faces? How Many Edges? How Many Corners? Count Sides and Corners?
Geometry	1: Reason with shapes and their attributes.	MAFS.2.G.1.2	Partition a rectangle into rows and columns of same-size squares and count to find the total number of them	Teacher directed
Geometry	1: Reason with shapes and their attributes.	MAFS.2.G.1.3	Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words <i>halves</i> , <i>thirds</i> , <i>half of</i> , <i>a third of</i> , etc., and describe the whole as <i>two halves</i> , <i>three thirds</i> , <i>four fourths</i> . Recognize that equal shares of identical wholes need not have the same shape.	Shape Fractions Halves and Quarters

## Grade 3

Domain	Cluster	Standard	Description	Activities
Operations and Algebraic Thinking	1: Represent and solve problems involving multiplication and division.	MAFS.3.OA.1.1	Interpret products of whole numbers.	 Groups of Two Groups of Three Groups of Four Groups of Five Groups of Six Groups of Seven Groups of Eight Groups of Nine Groups of Ten Times Tables Multiplication Arrays Multiplication Arrays Frog Jump Multiplication Multiplication Arrays Model Multiplication to 5 x 5
Operations and Algebraic Thinking	1: Represent and solve problems involving multiplication and division.	MAFS.3.OA.1.2	Interpret whole-number quotients of whole numbers.	Divide Into Equal Groups Dividing Threes Dividing Fours Dividing Fives Dividing Sixes Dividing Sevens Dividing Eights Dividing Nines Dividing Tens Division Facts
Operations and Algebraic Thinking	1: Represent and solve problems involving multiplication and division.	MAFS.3.OA.1.3	Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities.	Problems: Times and Divide I am Thinking of a Number! Word Problems with Letters
Operations and Algebraic Thinking	1: Represent and solve problems involving multiplication and division.	MAFS.3.OA.1.4	Determine the unknown whole number in a multiplication or division equation relating three whole numbers.	Related Facts 2
Operations and Algebraic Thinking	2: Understand properties of multiplication and the relationship between multiplication and division.	MAFS.3.OA.2.5	Apply properties of operations as strategies to multiply and divide.	Multiplication Turn-Abouts Fact Families: Multiply and Divide
Operations and Algebraic Thinking	2: Understand properties of multiplication and the relationship between multiplication and division.	MAFS.3.OA.2.6	Understand division as an unknown-factor problem.	Related Facts 2 Division Facts Multiplication Facts
Operations and Algebraic Thinking	3: Multiply and divide within 100.	MAFS.3.OA.3.7	Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division, or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.	Related Facts 2 Fact Families: Multiply and Divide Times Tables

## Grade 3

Domain	Cluster	Standard	Description	 Activities
Operations and Algebraic Thinking	4: Solve problems involving the four operations, and identify and explain patterns in arithmetic.	MAFS.3.OA.4.8	Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.	Problems: Times and Divide Word Problems with Letters I am Thinking of a Number!
Operations and Algebraic Thinking	4: Solve problems involving the four operations, and identify and explain patterns in arithmetic.	MAFS.3.OA.4.9	Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations.	Increasing Patterns Decreasing Patterns
Number and Operations in Base Ten	1: Use place value understanding and properties of operations to perform multi-digit arithmetic.	MAFS.3.NBT.1.1	Use place value understanding to round whole numbers to the nearest 10 or 100.	Nearest Ten? Nearest Hundred?
Number and Operations in Base Ten	1: Use place value understanding and properties of operations to perform multi-digit arithmetic.	MAFS.3.NBT.1.2	Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.	Strategies for Column Addition Add 3-Digit Numbers Add 3-Digit Numbers: Regroup Add Multi-Digit Numbers 1 Add Three 1-Digit Numbers Add Three 2-Digit Numbers Addition Properties Estimate Differences Simple Subtraction Fact Families: Add and Subtract Bar Model Problems 2 Missing Numbers 1 3-Digit Differences 3-Digit Differences with Zeros 3-Digit Differences: 1 3-Digit Differences: 2
Number and Operations in Base Ten	1: Use place value understanding and properties of operations to perform multi-digit arithmetic.	MAFS.3.NBT.1.3	Multiply one-digit whole numbers by multiples of 10 in the range 10–90 using strategies based on place value and properties of operations.	Multiply Multiples of 10 Multiply More Multiples of 10 Equivalent Facts: Multiply Multiplication Grids Short Multiplication Multiply: 1-Digit Number Multiply: 1-Digit Number, Regroup Multiply: 2-Digit by 1-Digit
Number and Operations – Fractions	1: Develop understanding of fractions as numbers.	MAFS.3.NF.1.1	Understand a fraction $\frac{1}{b}$ as the quantity formed by 1 part when $a$ whole is partitioned into $b$ equal parts; understand a fraction $\frac{a}{b}$ as the quantity formed by $a$ parts of size $\frac{1}{b}$ .	Fractions Model Fractions What Fraction Is Shaded? Halves and Quarters Thirds and Sixths

## Grade 3

Domain	Cluster	Standard	Description	Activities
Number and Operations – Fractions	1: Develop understanding of fractions as numbers.	MAFS.3.NF.1.2	<p>Understand a fraction as a number on the number line; represent fractions on a number line diagram.</p> <ol style="list-style-type: none"> <li>Represent a fraction <math>\frac{1}{b}</math> on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into <math>b</math> equal parts. Recognize that each part has size <math>\frac{1}{b}</math> and that the endpoint of the part based at 0 locates the number <math>\frac{1}{b}</math> on the number line.</li> <li>Represent a fraction <math>\frac{a}{b}</math> on a number line diagram by marking off a lengths <math>\frac{1}{b}</math> from 0. Recognize that the resulting interval has size <math>\frac{a}{b}</math> and that its endpoint locates the number <math>\frac{a}{b}</math> on the number line.</li> </ol>	Counting with Fractions on a Number Line
Number and Operations – Fractions	1: Develop understanding of fractions as numbers.	MAFS.3.NF.1.3	<p>Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.</p> <ol style="list-style-type: none"> <li>Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.</li> <li>Recognize and generate simple equivalent fractions. Explain why the fractions are equivalent.</li> <li>Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers.</li> <li>Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols <math>&gt;</math>, <math>=</math>, or <math>&lt;</math>, and justify the conclusions.</li> </ol>	Comparing Fractions 1 Part-whole rods 1 Part-whole rods 2 Uneven partitioned shapes 1
Measurement and Data	1: Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.	MAFS.3.MD.1.1	Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes.	What is the Time? Five Minute Times Time Mentals Elapsed Times
Measurement and Data	1: Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.	MAFS.3.MD.1.2	Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units.	Mass Word Problems Cups, Pints, Quarts, Gallons

## Grade 3

Domain	Cluster	Standard	Description	Activities
Measurement and Data	2: Represent and interpret data.	MAFS.3.MD.2.3	Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs.	Making Graphs Pictographs Bar Graphs 1 Bar Graphs 2 Add and Subtract Using Graphs Picture Graphs: with scale & half symbols
Measurement and Data	2: Represent and interpret data.	MAFS.3.MD.2.4	Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units – whole numbers, halves, or quarters.	Teacher directed
Measurement and Data	3: Geometric measurement: understand concepts of area and relate area to multiplication and to addition.	MAFS.3.MD.3.5	Recognize area as an attribute of plane figures and understand concepts of area measurement. a. A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area. b. A plane figure which can be covered without gaps or overlaps by $n$ unit squares is said to have an area of $n$ square units.	Equal Areas Biggest Shape
Measurement and Data	3: Geometric measurement: understand concepts of area and relate area to multiplication and to addition.	MAFS.3.MD.3.6	Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).	Area of Shapes Area of Shapes (inches, feet, yards)

## Grade 3

Domain	Cluster	Standard	Description	Activities
Measurement and Data	3: Geometric measurement: understand concepts of area and relate area to multiplication and to addition.	MAFS.3.MD.3.7	<p>Relate area to the operations of multiplication and addition.</p> <ol style="list-style-type: none"> <li>Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.</li> <li>Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.</li> <li>Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths <math>a</math> and <math>b + c</math> is the sum of <math>a \times b</math> and <math>a \times c</math>. Use area models to represent the distributive property in mathematical reasoning.</li> <li>Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.</li> </ol>	<ul style="list-style-type: none"> <li>Area of Shapes</li> <li>Area of Squares and Rectangles</li> <li>Area of Shapes (inches, feet, yards)</li> <li>Area of Compound Figures</li> </ul>
Measurement and Data	4: Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.	MAFS.3.MD.4.8	Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.	<ul style="list-style-type: none"> <li>Area of Shapes (inches, feet, yards)</li> <li>Perimeter</li> <li>Perimeter: Squares and Rectangles</li> <li>Perimeter Detectives 1</li> <li>Perimeter of Shapes</li> </ul>
Geometry	1: Reason with shapes and their attributes.	MAFS.3.G.1.1	Understand that shapes in different categories may share attributes, and that the shared attributes can define a larger category. Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.	<ul style="list-style-type: none"> <li>Shapes</li> <li>Collect the Shapes 1</li> <li>Collect the Shapes 2</li> <li>Collect More Shapes</li> <li>Collect the Polygons</li> <li>Relate Shapes and Solids</li> <li>Count Sides and Corners</li> </ul>
Geometry	1: Reason with shapes and their attributes.	MAFS.3.G.1.2	Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole.	<ul style="list-style-type: none"> <li>Shape Fractions</li> </ul>

## Grade 4

Domain	Cluster	Standard	Description	Activities
Operations and Algebraic Thinking	1: Use the four operations with whole numbers to solve problems.	MAFS.4.OA.1.1	Interpret a multiplication equation as a comparison. Represent verbal statements of multiplicative comparisons as multiplication equations.	Multiply and Divide Problems 1
Operations and Algebraic Thinking	1: Use the four operations with whole numbers to solve problems.	MAFS.4.OA.1.2	Multiply or divide to solve word problems involving multiplicative comparison.	Find the Missing Number 1 Find the Missing Number 2
Operations and Algebraic Thinking	1: Use the four operations with whole numbers to solve problems.	MAFS.4.OA.1.3	Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.	Problems: Multiply and Divide Word problems with letters Multiply and Divide Problems 1
Operations and Algebraic Thinking	1: Use the four operations with whole numbers to solve problems.	MAFS.4.OA.1.a	Determine whether an equation is true or false by using comparative relational thinking.	Teacher directed
Operations and Algebraic Thinking	1: Use the four operations with whole numbers to solve problems.	MAFS.4.OA.1.b	Determine the unknown whole number in an equation relating four whole numbers using comparative relational thinking.	Word Problems with Letters Problems: Add and Subtract Find the Missing Number 1 Pyramid Puzzles 1 Pyramid Puzzles 2
Operations and Algebraic Thinking	2: Gain familiarity with factors and multiples.	MAFS.4.OA.2.4	Investigate factors and multiples. a. Find all factor pairs for a whole number in the range 1–100. b. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. c. Determine whether a given whole number in the range 1–100 is prime or composite.	Multiples Factors Find the Factor Prime or Composite?
Operations and Algebraic Thinking	3: Generate and analyze patterns.	MAFS.4.OA.3.5	Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself.	Increasing Patterns Decreasing Patterns
Number and Operations in Base Ten	1: Generalize place value understanding for multi-digit whole numbers.	MAFS.4.NBT.1.1	Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right.	Multiply Multiples of 10 Expanded Notation Place Value 1 ( $\times 10$ and $\div 10$ ) Place Value 2 ( $\times 10$ and $\div 10$ )
Number and Operations in Base Ten	1: Generalize place value understanding for multi-digit whole numbers.	MAFS.4.NBT.1.2	Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using $>$ , $=$ , and $<$ symbols to record the results of comparisons.	Numbers from Words to Digits 1 Numbers from Words to Digits 2 Greater Than or Less Than? Expanded Notation Expanding Numbers Place Value to Millions Place Value 3 Comparing Numbers

## Grade 4

Domain	Cluster	Standard	Description	Activities
Number and Operations in Base Ten	1: Generalize place value understanding for multi-digit whole numbers.	MAFS.4.NBT.1.3	Use place value understanding to round multi-digit whole numbers to any place.	Rounding Numbers Nearest Thousand?
Number and Operations in Base Ten	2: Use place value understanding and properties of operations to perform multi-digit arithmetic.	MAFS.4.NBT.2.4	Fluently add and subtract multi-digit whole numbers using the standard algorithm.	Add Two 2-Digit Numbers: Regroup Add 3-Digit Numbers: Regroup Add Multi-Digit Numbers 1 Add Multi-Digit Numbers 2 Adding Colossal Columns Subtracting Colossal Columns 2-Digit Differences: Regroup 3-Digit Differences: 1 Regrouping 3-Digit Differences with Zeros
Number and Operations in Base Ten	2: Use place value understanding and properties of operations to perform multi-digit arithmetic.	MAFS.4.NBT.2.5	Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	Multiply by 10, 100, 1000 Multiply Multiples of 10 Multiply 2 Digits Area Model Bar Model $\times$ ÷ Contracted Multiplication Estimate Products Double and Halve to Multiply
Number and Operations in Base Ten	2: Use place value understanding and properties of operations to perform multi-digit arithmetic.	MAFS.4.NBT.2.6	Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	Multiply 2 Digits Area Model Bar Model $\times$ ÷ Dividing by 10, 100, 1000 Remainders by Arrays Remainders by Tables Estimate Quotients Divide: 1-Digit Divisor 1 Divide: 1-Digit Divisor 2
Number and Operations – Fractions	1: Extend understanding of fraction equivalence and ordering.	MAFS.4.NF.1.1	Explain why a fraction $a/b$ is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.	The Equivalent Fraction Equivalent Fraction Wall 1 Simplifying Fractions
Number and Operations – Fractions	1: Extend understanding of fraction equivalence and ordering.	MAFS.4.NF.1.2	Compare two fractions with different numerators and different denominators. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols $>$ , $=$ , or $<$ , and justify the conclusions.	Compare Fractions 1a Compare Fractions 1b

## Grade 4

Domain	Cluster	Standard	Description	Activities
Number and Operations – Fractions	2: Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.	MAFS.4.NF.2.3	<p>Understand a fraction <math>a/b</math> with <math>a &gt; 1</math> as a sum of fractions <math>1/b</math>.</p> <ol style="list-style-type: none"> <li>Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.</li> <li>Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions.</li> <li>Add and subtract mixed numbers with like denominators.</li> <li>Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators.</li> </ol>	Add subtract fractions 1 Add Like Mixed Numbers Subtract Like Mixed Numbers
Number and Operations – Fractions	2: Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.	MAFS.4.NF.2.4	<p>Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.</p> <ol style="list-style-type: none"> <li>Understand a fraction <math>a/b</math> as a multiple of <math>1/b</math>.</li> <li>Understand a multiple of <math>a/b</math> as a multiple of <math>1/b</math>, and use this understanding to multiply a fraction by a whole number.</li> <li>Solve word problems involving multiplication of a fraction by a whole number.</li> </ol>	Unit Fractions Fraction by Whole Number Model Fractions to Multiply Fraction Fruit Sets 2
Number and Operations – Fractions	3: Understand decimal notation for fractions, and compare decimal fractions.	MAFS.4.NF.3.5	Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.	Teacher directed
Number and Operations – Fractions	3: Understand decimal notation for fractions, and compare decimal fractions.	MAFS.4.NF.3.6	Use decimal notation for fractions with denominators 10 or 100.	Decimals on the Number Line Measuring Length
Number and Operations – Fractions	3: Understand decimal notation for fractions, and compare decimal fractions.	MAFS.4.NF.3.7	Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols $>$ , $=$ , or $<$ , and justify the conclusions.	Comparing Decimals 1 Decimal Order 1

## Grade 4

Domain	Cluster	Standard	Description	Activities
Measurement and Data	1: Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.	MAFS.4.MD.1.1	Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table.	 Inches, Feet, Yards Ounces and Pounds Cups, Pints, Quarts, Gallons Customary Units of Length Customary Units of Capacity Customary Units of Weight 1 Customary Units of Weight 2 Meters and Kilometers Centimeters and Millimeters Milliliters and Liters Converting cm and mm Grams and Kilograms Conversions Time Conversions: Whole Numbers 1
Measurement and Data	1: Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.	MAFS.4.MD.1.2	Use the four operations to solve word problems involving distances, intervals of time, and money, including problems involving simple fractions or decimals. Represent fractional quantities of distance and intervals of time using linear models.	Money Problems: Four Operations Making Change (USD) Fraction Length Models 1 Fraction Length Models 2 Mass Word Problems Using Timetables Time conversions: Whole Numbers 1 Time Conversions: Simple Fractions
Measurement and Data	1: Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.	MAFS.4.MD.1.3	Apply the area and perimeter formulas for rectangles in real world and mathematical problems.	Perimeter: Squares and Rectangles Perimeter Detectives 1 Area: Squares and Rectangles
Measurement and Data	2: Represent and interpret data.	MAFS.4.MD.2.4	Make a line plot to display a data set of measurements in fractions of a unit ( $\frac{1}{2}$ , $\frac{1}{4}$ , $\frac{1}{8}$ ). Solve problems involving addition and subtraction of fractions by using information presented in line plots.	Teacher directed
Measurement and Data	3: Geometric measurement: understand concepts of angle and measure angles.	MAFS.4.MD.3.5	Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement: <ol style="list-style-type: none"> <li>An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through <math>\frac{1}{360}</math> of a circle is called a "one-degree angle," and can be used to measure angles.</li> <li>An angle that turns through <math>n</math> one-degree angles is said to have an angle measure of <math>n</math> degrees.</li> </ol>	Comparing Angles Equal Angles Estimating Angles

## Grade 4

Domain	Cluster	Standard	Description	Activities
Measurement and Data	3: Geometric measurement: understand concepts of angle and measure angles.	MAFS.4.MD.3.6	Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.	Classifying Angles What Type of Angle? Measuring Angles
Measurement and Data	3: Geometric measurement: understand concepts of angle and measure angles.	MAFS.4.MD.3.7	Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems.	Angles of Revolution: Unknown Values Angles of Revolution: Value of x Angle Measures in a Triangle
Geometry	1: Draw and identify lines and angles, and classify shapes by properties of their lines and angles.	MAFS.4.G.1.1	Draw points, lines, line segments, rays, angles (right , acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.	Labelling Angles What Line Am I? Right Angle Relation Triangles; Acute, Right, Obtuse Sides, Angles and Diagonals
Geometry	1: Draw and identify lines and angles, and classify shapes by properties of their lines and angles.	MAFS.4.G.1.2	Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.	Classifying Angles Collect the Shapes 2 Shapes
Geometry	1: Draw and identify lines and angles, and classify shapes by properties of their lines and angles.	MAFS.4.G.1.3	Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.	Symmetry or Not?

## Grade 5

Domain	Cluster	Standard	Description	Activities
Operations and Algebraic Thinking	1: Write and interpret numerical expressions.	MAFS.5.OA.1.1	Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.	Order of Operations 1
Operations and Algebraic Thinking	1: Write and interpret numerical expressions.	MAFS.5.OA.1.2	Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them.	Multiply and Divide Problems 1 I am Thinking of a Number!
Operations and Algebraic Thinking	2: Analyze patterns and relationships.	MAFS.5.OA.2.3	Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane.	Fit the Conditions 1 Table of Values
Number and Operations in Base Ten	1: Understand the place value system.	MAFS.5.NBT.1.1	Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and $\frac{1}{10}$ of what it represents in the place to its left.	Place Value to Millions Place Value to Billions Place Value 2 ( $\times 10$ and $\div 10$ ) Multiplying by 10, 100, 1000 Dividing by 10, 100, 1000
Number and Operations in Base Ten	1: Understand the place value system.	MAFS.5.NBT.1.2	Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.	Multiply Decimals and Powers of 10 Divide by Powers of 10
Number and Operations in Base Ten	1: Understand the place value system.	MAFS.5.NBT.1.3	Read, write, and compare decimals to thousandths. <ol style="list-style-type: none"> <li>Read and write decimals to thousandths using base-ten numerals, number names, and expanded form.</li> <li>Compare two decimals to thousandths based on meanings of the digits in each place, using <math>&gt;</math>, <math>=</math>, and <math>&lt;</math> symbols to record the results of comparisons.</li> </ol>	Decimal from Words to Digits 1 Decimal from Words to Digits 2 Decimal Order Decimal Order 1 Decimal Order 2 Comparing Decimals 2
Number and Operations in Base Ten	1: Understand the place value system.	MAFS.5.NBT.1.4	Use place value understanding to round decimals to any place.	Rounding Decimals Rounding Decimals 1 Rounding Decimals 2
Number and Operations in Base Ten	2: Perform operations with multi-digit whole numbers and with decimals to hundredths.	MAFS.5.NBT.2.5	Fluently multiply multi-digit whole numbers using the standard algorithm.	Multiply: 2-Digit Number, Regroup Long Multiplication
Number and Operations in Base Ten	2: Perform operations with multi-digit whole numbers and with decimals to hundredths.	MAFS.5.NBT.2.6	Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	Divide: 2-Digit Divisor, Remainder Mental Methods Division Mental Methods Division 1 Mental Methods Division 2 Estimate Quotients

## Grade 5

Domain	Cluster	Standard	Description	Activities
Number and Operations in Base Ten	2: Perform operations with multi-digit whole numbers and with decimals to hundredths.	MAFS.5.NBT.2.7	Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.	Add Decimals 1 Subtract Decimals 1 Decimal by Whole Number Divide Decimal by Whole Number Estimate Decimal Operations Money Problems: Four Operations
Number and Operations – Fractions	1: Use equivalent fractions as a strategy to add and subtract fractions.	MAFS.5.NF.1.1	Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.	Add Unlike Fractions Add Unlike Mixed Numbers Add: No Common Denominator Subtract Unlike Fractions Subtract Unlike Mixed Numbers
Number and Operations – Fractions	1: Use equivalent fractions as a strategy to add and subtract fractions.	MAFS.5.NF.1.2	Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers.	Fraction Fruit Sets 2
Number and Operations – Fractions	2: Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	MAFS.5.NF.2.3	Interpret a fraction as division of the numerator by the denominator ( $a/b = a \div b$ ). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers.	Partition into Equal Parts
Number and Operations – Fractions	2: Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	MAFS.5.NF.2.4	Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. a. Interpret the product $(a/b) \times q$ as $a$ parts of a partition of $q$ into $b$ equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$ . b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.	Model fractions to multiply Multiply Fraction by Whole Number Multiply: Whole Number and Fraction Multiply Fraction by Fraction Multiply Two Fractions 1 Fraction Wall Labelling 2 Multiply Mixed Numbers

## Grade 5

Domain	Cluster	Standard	Description	Activities
Number and Operations – Fractions	2: Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	MAFS.5.NF.2.5	Interpret multiplication as scaling (resizing), by: <ol style="list-style-type: none"> <li>Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.</li> <li>Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence <math>a/b = (n \times a)/(n \times b)</math> to the effect of multiplying <math>a/b</math> by 1.</li> </ol>	Teacher directed
Number and Operations – Fractions	2: Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	MAFS.5.NF.2.6	Solve real world problems involving multiplication of fractions and mixed numbers.	Estimate Products with Fractions
Number and Operations – Fractions	2: Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	MAFS.5.NF.2.7	Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. <ol style="list-style-type: none"> <li>Interpret division of a unit fraction by a non-zero whole number, and compute such quotients.</li> <li>Interpret division of a whole number by a unit fraction, and compute such quotients.</li> <li>Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions.</li> </ol>	Divide Fractions Visual Model Divide by a Unit Fraction
Measurement and Data	1: Convert like measurement units within a given measurement system.	MAFS.5.MD.1.1	Convert among different-sized standard measurement units (i.e., km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec) within a given measurement system, and use these conversions in solving multi-step, real world problems.	Converting Units of Length Customary Units of Length Operations with Length Meters and Kilometers Converting Units of Mass Customary Units of Weight 1 Customary Units of Weight 2 Mass Additions Milliliters and Liters Customary Units of Capacity Capacity Addition Mass Word Problems

## Grade 5

Domain	Cluster	Standard	Description	Activities
Measurement and Data	2: Represent and interpret data.	MAFS.5.MD.2.2	Make a line plot to display a data set of measurements in fractions of a unit ( $\frac{1}{2}$ , $\frac{1}{4}$ , $\frac{1}{8}$ ). Use operations on fractions for this grade to solve problems involving information presented in line plots.	Teacher directed
Measurement and Data	3: Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.	MAFS.5.MD.3.3	Recognize volume as an attribute of solid figures and understand concepts of volume measurement. <ol style="list-style-type: none"> <li>A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume.</li> <li>A solid figure which can be packed without gaps or overlaps using <math>n</math> unit cubes is said to have a volume of <math>n</math> cubic units.</li> </ol>	Volume of Solids and Prisms – 1cm <sup>3</sup> blocks
Measurement and Data	3: Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.	MAFS.5.MD.3.4	Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.	Volume of Solids and Prisms – 1cm <sup>3</sup> blocks How many Blocks?
Measurement and Data	3: Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.	MAFS.5.MD.3.5	Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. <ol style="list-style-type: none"> <li>Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes.</li> <li>Apply the formulas <math>V = l \times w \times h</math> and <math>V = B \times h</math> for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.</li> <li>Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.</li> </ol>	Volume: Rectangular Prisms 1 Volume: Rectangular Prisms 2

## Grade 5

Domain	Cluster	Standard	Description	Activities
Geometry	1: Graph points on the coordinate plane to solve real-world and mathematical problems.	MAFS.5.G.1.1	Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond.	Coordinate Graphs: 1st Quadrant
Geometry	1: Graph points on the coordinate plane to solve real-world and mathematical problems.	MAFS.5.G.1.2	Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.	Coordinate Graphs: 1st Quadrant
Geometry	2: Classify two-dimensional figures into categories based on their properties.	MAFS.5.G.2.3	Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.	Sides, Angles and Diagonals Collect More Shapes Collect the Shapes 2 Collect the Polygons Properties of Quadrilaterals
Geometry	2: Classify two-dimensional figures into categories based on their properties.	MAFS.5.G.2.4	Classify and organize two-dimensional figures into Venn diagrams based on the attributes of the figures.	Teacher directed

## Grade 6

Domain	Cluster	Standard	Description	Activities
Ratios & Proportional Relationships	1: Understand ratio concepts and use ratio reasoning to solve problems.	MAFS.6.RP.1.1	Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.	Ratio Word Problems Solve Proportions Dividing a Quantity in a Ratio Simplify Ratios Equivalent Ratios
Ratios & Proportional Relationships	1: Understand ratio concepts and use ratio reasoning to solve problems.	MAFS.6.RP.1.2	Understand the concept of a unit rate $a/b$ associated with a ratio $a:b$ with $b \neq 0$ , and use rate language in the context of a ratio relationship.	Unitary Method Rates
Ratios & Proportional Relationships	1: Understand ratio concepts and use ratio reasoning to solve problems.	MAFS.6.RP.1.3	Use ratio and rate reasoning to solve real-world and mathematical problems. <ol style="list-style-type: none"> <li>Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.</li> <li>Solve unit rate problems including those involving unit pricing and constant speed.</li> <li>Find a percent of a quantity as a rate per 100; solve problems involving finding the whole, given a part and the percent.</li> <li>Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.</li> <li>Understand the concept of Pi as the ratio of the circumference of a circle to its diameter.</li> </ol>	Tables of Values Reading Values from a Line Graphing from a Table of Values Rate Word Problems Average Speed Best Buy Common Fractions as Percentages Mixed decimal, percentage and fraction conversions Percentage of a Quantity Percentage Word Problems Percentage of an amount using fractions (<100%) Solve Percent Equations Quantities to Percentages (with units) Centimeters and Millimeters Converting cm and mm Converting Units of Area Customary Units of Length Customary Units of Capacity Customary Units of Weight 1 Customary Units of Weight 2  Calculate Circumference of Circles Circumference: Circles
The Number System	1: Apply and extend previous understandings of multiplication and division to divide fractions by fractions.	MAFS.6.NS.1.1	Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions.	Divide by a unit fraction Divide fractions visual model Divide Whole Number by Fraction Dividing Fractions
The Number System	2: Compute fluently with multi-digit numbers and find common factors and multiples.	MAFS.6.NS.2.2	Fluently divide multi-digit numbers using the standard algorithm.	Divide: 1-Digit Divisor 2 Divide: 2-Digit Divisor, Remainder
The Number System	2: Compute fluently with multi-digit numbers and find common factors and multiples.	MAFS.6.NS.2.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.	Adding Decimals Subtracting Decimals Multiply Decimals 1 Decimal by Decimal Divide Decimal by Whole Number Divide Decimal by Decimal

## Grade 6

Domain	Cluster	Standard	Description	 Activities
The Number System	2: Compute fluently with multi-digit numbers and find common factors and multiples.	MAFS.6.NS.2.4	Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.	Greatest Common Factor Least Common Multiple
The Number System	3: Apply and extend previous understandings of numbers to the system of rational numbers.	MAFS.6.NS.3.5	Understand that positive and negative numbers are used together to describe quantities having opposite directions or values; use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.	Negative or Positive? Integers on a Number Line
The Number System	3: Apply and extend previous understandings of numbers to the system of rational numbers.	MAFS.6.NS.3.6	<p>Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.</p> <ol style="list-style-type: none"> <li>Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself and that 0 is its own opposite.</li> <li>Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.</li> <li>Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.</li> </ol>	Ordering Integers Integers on a Number Line Comparing Integers Number Plane Ordered Pairs Vertical and horizontal shift

## Grade 6

Domain	Cluster	Standard	Description	Activities
The Number System	3: Apply and extend previous understandings of numbers to the system of rational numbers.	MAFS.6.NS.3.7	Understand ordering and absolute value of rational numbers. a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. b. Write, interpret, and explain statements of order for rational numbers in real-world contexts. c. Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. d. Distinguish comparisons of absolute value from statements about order.	Absolute Value
The Number System	3: Apply and extend previous understandings of numbers to the system of rational numbers.	MAFS.6.NS.3.8	Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.	Number Plane Ordered Pairs Graphing from a Table of Values Graphing from a Table of Values 2 Vertical and horizontal shift
Expressions & Equations	1: Apply and extend previous understandings of arithmetic to algebraic expressions.	MAFS.6.EE.1.1	Write and evaluate numerical expressions involving whole-number exponents.	Exponent Notation Properties of Exponents Exponent Laws and Algebra
Expressions & Equations	1: Apply and extend previous understandings of arithmetic to algebraic expressions.	MAFS.6.EE.1.2	Write, read, and evaluate expressions in which letters stand for numbers. a. Write expressions that record operations with numbers and with letters standing for numbers. b. Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).	Writing Algebraic Expressions Simple Substitution 1 Simple Substitution 2 Substitution in Formulae Volume: Rectangular Prisms 2 Integers: Order of Operations Order of Operations 2 (PEDMAS)
Expressions & Equations	1: Apply and extend previous understandings of arithmetic to algebraic expressions.	MAFS.6.EE.1.3	Apply the properties of operations to generate equivalent expressions.	Recognizing Like Terms Like Terms: Add, Subtract

## Grade 6

Domain	Cluster	Standard	Description	Activities
Expressions & Equations	1: Apply and extend previous understandings of arithmetic to algebraic expressions.	MAFS.6.EE.1.4	Identify when two expressions are equivalent.	Recognizing Like Terms
Expressions & Equations	2: Reason about and solve one-variable equations and inequalities.	MAFS.6.EE.2.5	Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.	Simple Substitution 1 Simple Substitution 2
Expressions & Equations	2: Reason about and solve one-variable equations and inequalities.	MAFS.6.EE.2.6	Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.	Teacher directed
Expressions & Equations	2: Reason about and solve one-variable equations and inequalities.	MAFS.6.EE.2.7	Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which $p$ , $q$ and $x$ are all non-negative rational numbers.	Write an Equation: Word Problems Solve Equations: Add, Subtract 1 Solve Equations: Add, Subtract 2 Solve Equations: Multiply, Divide 1 Solve Equations: Multiply, Divide 2 Solve Multi-Step Equations Solve Two-Step Equations
Expressions & Equations	2: Reason about and solve one-variable equations and inequalities.	MAFS.6.EE.2.8	Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.	Solve One-Step Inequalities 1 Solve One-Step Inequalities 2 Solve Two-Step Inequalities
Expressions & Equations	3: Represent and analyze quantitative relationships between dependent and independent variables.	MAFS.6.EE.3.9	Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.	Teacher directed
Geometry	1: Solve real-world and mathematical problems involving area, surface area, and volume.	MAFS.6.G.1.1	Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.	Area: Parallelograms Area: Triangles Area: Squares and Rectangles Area: Quadrilaterals Area: Compound Figures

## Grade 6

Domain	Cluster	Standard	Description	Activities
Geometry	1: Solve real-world and mathematical problems involving area, surface area, and volume.	MAFS.6.G.1.2	Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = lwh$ and $V = bh$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.	Volume: Rectangular Prisms 2
Geometry	1: Solve real-world and mathematical problems involving area, surface area, and volume.	MAFS.6.G.1.3	Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.	Rotations: Coordinate Plane
Geometry	1: Solve real-world and mathematical problems involving area, surface area, and volume.	MAFS.6.G.1.4	Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.	Nets Surface Area: Rectangular Prisms Surface Area: Triangular Prisms Surface Area: Rectangular Pyramids
Statistics & Probability	1: Develop understanding of statistical variability.	MAFS.6.SP.1.1	Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.	Methods of Data Sampling
Statistics & Probability	1: Develop understanding of statistical variability.	MAFS.6.SP.1.2	Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.	Data Terms
Statistics & Probability	1: Develop understanding of statistical variability.	MAFS.6.SP.1.3	Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.	Data Terms
Statistics & Probability	2: Summarize and describe distributions.	MAFS.6.SP.2.4	Display numerical data in plots on a number line, including dot plots, histograms, and box plots	Dot Plots Histograms Histograms for Grouped Data

## Grade 6

Domain	Cluster	Standard	Description	Activities
Statistics & Probability	2: Summarize and describe distributions.	MAFS.6.SP.2.5	<p>Summarize numerical data sets in relation to their context, such as by:</p> <ol style="list-style-type: none"> <li>Reporting the number of observations.</li> <li>Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.</li> <li>Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.</li> <li>Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.</li> </ol>	 <ul style="list-style-type: none"> <li>Mode</li> <li>Median</li> <li>Mean</li> <li>Frequency Histograms</li> <li>Data Extremes and Range</li> <li>Mode from Frequency Table</li> <li>Median from Frequency</li> <li>Mean from Frequency Table</li> <li>Calculating Interquartile Range</li> </ul>

## Grade 7

Domain	Cluster	Standard	Description	Activities
Ratios & Proportional Relationships	1: Analyze proportional relationships and use them to solve real-world and mathematical problems.	MAFS.7.RP.1.1	Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.	<ul style="list-style-type: none"> <li>Proportional Relationships</li> <li>Rate Word Problems</li> <li>Rates Calculations</li> <li>Rates</li> <li>Solve Proportions</li> <li>Converting Rates</li> <li>Distance Travelled</li> <li>Average Speed</li> <li>Time Taken</li> </ul>
Ratios & Proportional Relationships	1: Analyze proportional relationships and use them to solve real-world and mathematical problems.	MAFS.7.RP.1.2	<p>Recognize and represent proportional relationships between quantities.</p> <ol style="list-style-type: none"> <li>Decide whether two quantities are in a proportional relationship.</li> <li>Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.</li> <li>Represent proportional relationships by equations.</li> <li>Explain what a point <math>(x, y)</math> on the graph of a proportional relationship means in terms of the situation, with special attention to the points <math>(0, 0)</math> and <math>(1, r)</math> where <math>r</math> is the unit rate.</li> </ol>	<ul style="list-style-type: none"> <li>Best Buy</li> <li>Travel Graphs</li> <li><math>y=ax</math></li> <li>Conversion Graphs</li> </ul>
Ratios & Proportional Relationships	1: Analyze proportional relationships and use them to solve real-world and mathematical problems.	MAFS.7.RP.1.3	Use proportional relationships to solve multistep ratio and percent problems.	<ul style="list-style-type: none"> <li>Word Problems: Ratio</li> <li>Scale Factor</li> <li>Ratio Word Problems</li> <li>Scale Measurement</li> <li>Ratio and Proportion</li> <li>Wages and Salaries</li> <li>Working Overtime</li> <li>Special Allowances</li> <li>Piecework and Royalties</li> <li>Commission</li> <li>What Percentage?</li> <li>Percentage Change: Increase and Decrease</li> <li>Percent Increase and Decrease</li> <li>Solve Percent Equations</li> <li>Percentage Word Problems</li> <li>Percentage Error</li> <li>Error in Measurement</li> <li>Successive Discounts</li> <li>Profit and Loss</li> <li>Simple Interest</li> </ul>

# Grade 7

Domain	Cluster	Standard	Description	 Activities
The Number System	1: Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	MAFS.7.NS.1.1	<p>Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.</p> <ol style="list-style-type: none"> <li>Describe situations in which opposite quantities combine to make 0.</li> <li>Understand <math>p + q</math> as the number located a distance <math> q </math> from <math>p</math>, in the positive or negative direction depending on whether <math>q</math> is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.</li> <li>Understand subtraction of rational numbers as adding the additive inverse, <math>p - q = p + (-q)</math>. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.</li> <li>Apply properties of operations as strategies to add and subtract rational numbers.</li> </ol>	Negative or Positive? Integers: Add and Subtract More with Integers Add Integers Subtract Integers Adding Integers: Positive, Negative or Zero Add Mixed Numbers: Same Sign Add Mixed Numbers: Signs Can Differ Subtract Mixed Numbers: Signs Differ Subtract Negative Mixed Numbers
The Number System	1: Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	MAFS.7.NS.1.2	<p>Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.</p> <ol style="list-style-type: none"> <li>Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as <math>(-1)(-1) = 1</math> and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.</li> <li>Understand 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 <math>p</math> and <math>q</math> are integers, then <math>-(p/q) = (-p)/q = p/(-q)</math>. Interpret quotients of rational numbers by describing real-world contexts.</li> <li>Apply properties of operations as strategies to multiply and divide rational numbers.</li> <li>Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.</li> </ol>	Integers: Multiplication and Division Multiplying and Dividing Integers Powers of Integers Multiply Two Fractions 2 Divide Fractions by Fractions 2 Operations with Fractions Divide Mixed Numbers with Signs Fractions to Decimals 2

## Grade 7

Domain	Cluster	Standard	Description	Activities
The Number System	1: Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	MAFS.7.NS.1.3	Solve real-world and mathematical problems involving the four operations with rational numbers.	Fraction Word Problems More Fraction Problems Integers: Order of Operations (PEMDAS) Exponent Form to Numbers Integers: Operations Order
Expressions & Equations	1: Use properties of operations to generate equivalent expressions.	MAFS.7.EE.1.1	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.	Algebraic Fractions 1 Using the Distributive Property Factoring
Expressions & Equations	1: Use properties of operations to generate equivalent expressions.	MAFS.7.EE.1.2	Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related.	Teacher directed
Expressions & Equations	2: Solve real-life and mathematical problems using numerical and algebraic expressions and equations.	MAFS.7.EE.2.3	Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.	Purchase Options Fraction Word Problems More Fraction Problems What Percentage? Percentage Change: Increase and Decrease Percent Increase and Decrease Solve Percent Equations Percentage Word Problems Successive Discounts Profit and Loss
Expressions & Equations	2: Solve real-life and mathematical problems using numerical and algebraic expressions and equations.	MAFS.7.EE.2.4	Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. a. Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$ , where $p$ , $q$ , and $r$ are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. b. Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$ , where $p$ , $q$ , and $r$ are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.	I am Thinking of a Number! Solve Equations: Add, Subtract 1 Solve Equations: Add, Subtract 2 Solve Equations: Multiply, Divide 2 Solving Simple Equations Solve Two-Step Equations Solve One-Step Inequalities 1 Solve One-Step Inequalities 2
Geometry	1: Draw, construct, and describe geometrical figures and describe the relationships between them.	MAFS.7.G.1.1	Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.	Scale Factor Scale Measurement Floor Plans Perimeter, Area, Dimension Change

## Grade 7

Domain	Cluster	Standard	Description	Activities
Geometry	1: Draw, construct, and describe geometrical figures and describe the relationships between them.	MAFS.7.G.1.2	Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.	Teacher directed
Geometry	1: Draw, construct, and describe geometrical figures and describe the relationships between them.	MAFS.7.G.1.3	Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.	Teacher directed
Geometry	2: Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.	MAFS.7.G.2.4	Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.	Calculate Circumference of Circles Area: Circles 1 Area: Circles 2 Area: Annulus
Geometry	2: Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.	MAFS.7.G.2.5	Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.	Equal, Complement, or Supplement? Vertically Opposite: Value of x
Geometry	2: Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.	MAFS.7.G.2.6	Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.	Area of Squares and Rectangles Area: Compound Figures Area of Triangles Area: Composite Shapes Area: Parallelograms Area of Quadrilaterals Surface Area: Rectangular Prisms Surface Area: Triangular Prisms 1 Volume of Rectangular Prisms 1 Volume of Triangular Prisms Volume: Prisms
Statistics & Probability	1: Use random sampling to draw inferences about a population.	MAFS.7.SP.1.1	Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.	Teacher directed
Statistics & Probability	1: Use random sampling to draw inferences about a population.	MAFS.7.SP.1.2	Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.	Teacher directed

## Grade 7

Domain	Cluster	Standard	Description	Activities
Statistics & Probability	2: Draw informal comparative inferences about two populations.	MAFS.7.SP.2.3	Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability.	Teacher directed
Statistics & Probability	2: Draw informal comparative inferences about two populations.	MAFS.7.SP.2.4	Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.	Teacher directed
Statistics & Probability	3: Investigate chance processes and develop, use, and evaluate probability models.	MAFS.7.SP.3.5	Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around $\frac{1}{2}$ indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.	Chance Dial Relative Frequency
Statistics & Probability	3: Investigate chance processes and develop, use, and evaluate probability models.	MAFS.7.SP.3.6	Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability.	Find the Probability Simple Probability
Statistics & Probability	3: Investigate chance processes and develop, use, and evaluate probability models.	MAFS.7.SP.3.7	Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy. <ol style="list-style-type: none"> <li>Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events.</li> <li>Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.</li> </ol>	Probability Tables

## Grade 7

Domain	Cluster	Standard	Description	 Activities
Statistics & Probability	3: Investigate chance processes and develop, use, and evaluate probability models.	MAFS.7.SP.3.8	Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. <ol style="list-style-type: none"> <li>Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.</li> <li>Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language, identify the outcomes in the sample space which compose the event.</li> <li>Design and use a simulation to generate frequencies for compound events.</li> </ol>	Tree Diagrams Probability Tables Two-Way Table Probability Complementary Events Probability with Replacement Probability without Replacement

## Grade 8

Domain	Cluster	Standard	Description	Activities
The Number System	1: Know that there are numbers that are not rational and approximate them by rational numbers.	MAFS.8.NS.1.1	Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.	Recurring Decimals Estimate Square Roots Simplifying Irrational Numbers Multiplying Irrational Numbers Dividing Irrational Numbers Adding and Subtracting Irrational Numbers
The Number System	1: Know that there are numbers that are not rational and approximate them by rational numbers.	MAFS.8.NS.1.2	Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., $\pi^2$ ).	Simplifying Irrational Numbers Ordering Scientific Notation
Expressions & Equations	1: Work with radicals and integer exponents.	MAFS.8.EE.1.1	Know and apply the properties of integer exponents to generate equivalent numerical expressions.	Algebraic Multiplication Zero Exponent and Algebra The Zero Exponent Simplifying with Exponential Laws 2 Multiplication with Exponents Fractional Exponents Properties of Exponents Exponents Exponent Notation and Algebra Powers of Integers Powers and Patterns Rationalising and Binomials
Expressions & Equations	1: Work with radicals and integer exponents.	MAFS.8.EE.1.2	Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$ , where $p$ is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.	Estimate Square Roots Square and Cube Roots Estimating Cube Roots Square Roots
Expressions & Equations	1: Work with radicals and integer exponents.	MAFS.8.EE.1.3	Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other.	Scientific Notation Scientific Notation 1 Scientific Notation 2 Scientific notation to decimal Ordering Scientific Notation
Expressions & Equations	1: Work with radicals and integer exponents.	MAFS.8.EE.1.4	Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities. Interpret scientific notation that has been generated by technology.	Ordering Scientific Notation
Expressions & Equations	2: Understand the connections between proportional relationships, lines, and linear equations.	MAFS.8.EE.2.5	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.	Direct Variation Indirect Variation Modeling Linear Relationships

## Grade 8

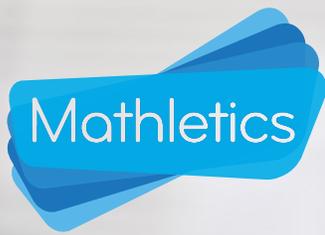
Domain	Cluster	Standard	Description	Activities
Expressions & Equations	2: Understand the connections between proportional relationships, lines, and linear equations.	MAFS.8.EE.2.6	Use similar triangles to explain why the slope $m$ is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at $b$ .	Teacher directed
Expressions & Equations	3: Analyze and solve linear equations and pairs of simultaneous linear equations.	MAFS.8.EE.3.7	Solve linear equations in one variable. a. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$ , $a = a$ , or $a = b$ results (where $a$ and $b$ are different numbers). b. Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.	Equations with Grouping Symbols Equations with Fractions Equations with Fractions 2 Equations to Solve Problems Modelling Linear Relationships Expanding Binomial Irrational Numbers Expanding Irrational Number Expressions Special Binomial Products
Expressions & Equations	3: Analyze and solve linear equations and pairs of simultaneous linear equations.	MAFS.8.EE.3.8	Analyze and solve pairs of simultaneous linear equations. a. Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously. b. Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. c. Solve real-world and mathematical problems leading to two linear equations in two variables.	Simultaneous Equations 1 Simultaneous Equations 2 Simultaneous Linear Equations Modelling Linear Relationships
Functions	1: Define, evaluate, and compare functions.	MAFS.8.F.1.1	Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.	Find the Function Rule Ordered Pairs Graphing from a Table of Values Determining a Rule for a Line Function Rules and Tables
Functions	1: Define, evaluate, and compare functions.	MAFS.8.F.1.2	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).	Ordered Pairs Graphing from a Table of Values Determining a Rule for a Line Function Rules and Tables
Functions	1: Define, evaluate, and compare functions.	MAFS.8.F.1.3	Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear.	Reading Values from a Line Gradient Slope of a Line Equation of a Line 1 Equation of a Line 2 $y = ax$ Which Straight Line?

## Grade 8

Domain	Cluster	Standard	Description	Activities
Functions	2: Use functions to model relationships between quantities.	MAFS.8.F.2.4	Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two $(x, y)$ values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.	Equation of a Line 1 Equation of a Line 2 $y=ax$ Equation of a Line 3 Equation from Point and Gradient
Functions	2: Use functions to model relationships between quantities.	MAFS.8.F.2.5	Describe qualitatively the functional relationship between two quantities by analyzing a graph. Sketch a graph that exhibits the qualitative features of a function that has been described verbally.	Conversion Graphs
Geometry	1: Understand congruence and similarity using physical models, transparencies, or geometry software.	MAFS.8.G.1.1	Verify experimentally the properties of rotations, reflections, and translations: <ul style="list-style-type: none"> <li>a. Lines are taken to lines, and line segments to line segments of the same length.</li> <li>b. Angles are taken to angles of the same measure.</li> <li>c. Parallel lines are taken to parallel lines.</li> </ul>	Angles and Parallel Lines Angles on Parallel Lines Introduction to Angles on Parallel Lines 1 Introduction to Angles on Parallel Lines 3 Are the Lines Parallel? Are they Parallel? Parallel Lines Vertically Opposite Angles: Unknown Values Vertically Opposite: Value of $x$
Geometry	1: Understand congruence and similarity using physical models, transparencies, or geometry software.	MAFS.8.G.1.2	Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.	Congruent Triangles Congruent Figures Congruent Figures: Find Values
Geometry	1: Understand congruence and similarity using physical models, transparencies, or geometry software.	MAFS.8.G.1.3	Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.	Flip, Slide, Turn Transformations Transformations: Coordinate Plane Rotations: Coordinate Plane
Geometry	1: Understand congruence and similarity using physical models, transparencies, or geometry software.	MAFS.8.G.1.4	Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.	Similar Figures Similarity Proofs Using Similar Triangles
Geometry	1: Understand congruence and similarity using physical models, transparencies, or geometry software.	MAFS.8.G.1.5	Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles.	Angle Measures in a Triangle Exterior Angles of a Triangle

## Grade 8

Domain	Cluster	Standard	Description	Activities
Geometry	2: Understand and apply the Pythagorean Theorem.	MAFS.8.G.2.6	Explain a proof of the Pythagorean Theorem and its converse.	Pythagorean Triads Pythagorean Theorem
Geometry	2: Understand and apply the Pythagorean Theorem.	MAFS.8.G.2.7	Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.	Pythagoras and Perimeter Pythagoras: Find a Short Side (decimal values) Pythagoras: Find a Short Side (integers only) Pythagoras: Find a Short Side (rounding needed) Find Slant Height
Geometry	2: Understand and apply the Pythagorean Theorem.	MAFS.8.G.2.8	Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	Distance Between Two Points
Geometry	3: Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.	MAFS.8.G.3.9	Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.	Volume: Cylinders Volume: Cones Volume: Spheres Volume: Composite Figures
Statistics & Probability	1: Investigate patterns of association in bivariate data.	MAFS.8.SP.1.1	Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.	Scatter Plots Correlation Probability Tables Relative Frequency Direct Variation Indirect Variation Data Analysis: Scatter Plots
Statistics & Probability	1: Investigate patterns of association in bivariate data.	MAFS.8.SP.1.2	Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.	Correlation Data Analysis: Scatter Plots
Statistics & Probability	1: Investigate patterns of association in bivariate data.	MAFS.8.SP.1.3	Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.	Direct Variation Indirect Variation
Statistics & Probability	1: Investigate patterns of association in bivariate data.	MAFS.8.SP.1.4	Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables.	Teacher directed

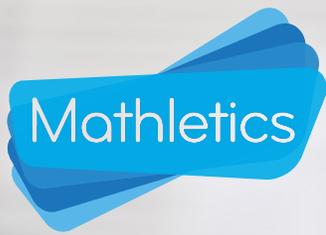


# Mathematics Florida Standards

## Alignment with Mathletics

### Algebra I

Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Number and Quantity</b>					
<b>Domain: The Real Number System</b>					
Extend the properties of exponents to rational exponents.	MAFS.912.N-RN.1.1	Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. <i>For example, we define <math>5^{1/3}</math> to be the cube root of 5 because we want <math>(5^{1/3})^3 = 5^{(1/3)3} = 5^1</math> to hold, so <math>(5^{1/3})^3</math> must equal 5.</i>	Exponents	Exponent Laws and Algebra Exponent Notation and Algebra Simplifying with Exponent Laws 2 Fractional Exponents Irrational Number to Exponent Form Zero Exponents and Algebra	Radicals and Exponents Exponents
Extend the properties of exponents to rational exponents.	MAFS.912.N-RN.1.2	Rewrite expressions involving radicals and rational exponents using the properties of exponents.	Exponents	Fractional Exponents Irrational Number to Exponent Form Zero Exponents and Algebra Simplifying with Exponent Laws 1 Simplifying with Exponent Laws 2 Multiplication with Exponents Exponent Laws and Algebra Exponent Laws with Brackets	Grade 8 Pythagoras' Theorem
Use properties of rational and irrational numbers.	MAFS.912.N-RN.2.3	Explain why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational.	Irrational Numbers	Adding and Subtracting Irrational Numbers Multiplying Irrational Numbers Expanding Binomial Irrational Numbers	Under review
<b>Domain: Quantities</b>					
Reason quantitatively and use units to solve problems.	MAFS.912.N-Q.1.1	Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.	Under review	Under review	Under review

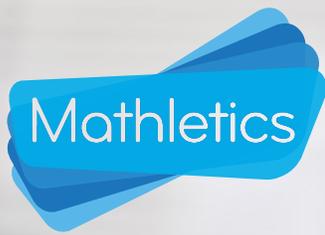


# Mathematics Florida Standards

## Alignment with Mathletics

### Algebra I

Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Number and Quantity					
Domain: Quantities					
Quantities Reason quantitatively and use units to solve problems.	MAFS.912.N-Q.1.2	Define appropriate quantities for the purpose of descriptive modeling.	Under review	Under review	Under review
Quantities Reason quantitatively and use units to solve problems.	MAFS.912.N-Q.1.2	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.	Quantities and Solving Linear Equations	Error in Measurement Percentage Error	Decimals
Conceptual Category: Algebra					
Domain: Seeing Structures in Expressions					
Interpret the structure of expressions.	MAFS.912.A-SSE.1.1	Interpret expressions that represent a quantity in terms of its context. a. Interpret parts of an expression, such as terms, factors, and coefficients. b. Interpret complicated expressions by viewing one or more of their parts as a single entity. <i>For example, interpret <math>P(1 + r)^t</math> as the product of <math>P</math> and a factor not depending on <math>P</math>.</i>	Linear Expressions and Equations	Gradients for Real Write an Equation: Word Problems	Depreciation Interest
			Quadratic Equations and Inequalities	Vertex of a Parabola The Discriminant Constructing Formulae	
			Exponents	Compound Interest Compound Interest by Formula Depreciation Declining Balance Depreciation	
Interpret the structure of expressions.	MAFS.912.A-SSE.1.2	Use the structure of an expression to identify ways to rewrite it. <i>For example, see <math>x^4 - y^4</math> as <math>(x^2)^2 - (y^2)^2</math>, thus recognizing it as a difference of squares that can be factored as <math>(x^2 - y^2)(x^2 + y^2)</math>.</i>	Quadratic Equations and Inequalities	Factoring Quadratics 1 Factoring Quadratics 2 Grouping in Pairs	Expanding and Factorizing

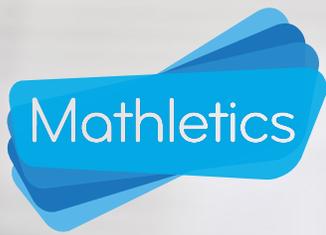


# Mathematics Florida Standards

## Alignment with Mathletics

### Algebra I

Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Algebra					
Domain: Seeing Structures in Expressions					
Write expressions in equivalent forms to solve problems.	MAFS.912.A-SSE.2.3	<p>Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.</p> <p>a. Factor a quadratic expression to reveal the zeros of the function it defines.</p> <p>b. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.</p> <p>c. Use the properties of exponents to transform expressions for exponential functions. For example, the expression <math>1.15^t</math> can be rewritten as <math>(1.15^{1/12})^{12t} \approx 1.012^{12t}</math> to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.</p>	Quadratic Equations and Inequalities	Highest Common Algebraic Factor Factoring Quadratics 1 Factoring Quadratics 2 Grouping in Pairs Completing the Square Completing the Square 2 Vertex of a Parabola	Factoring Quadratic Equations
Domain: Arithmetic with Polynomials and Rational Expressions					
Perform arithmetic operations on polynomials.	MAFS.912.A-APR.1.1	Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.	Add, Subtract, and Multiply Polynomials	Like Terms: Add and Subtract Simplifying Expressions Algebraic Fractions 1 Algebraic Fractions 2 Algebraic Multiplication Expand then Simplify Expanding Binomial Products Special Binomial Products	Expanding and Factorizing
Understand the relationship between zeroes and factors of polynomials.	MAFS.912.A-APR.2.3	Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.	Quadratic Equations and Inequalities	Factoring Quadratics 1 Factoring Quadratics 2 Quadratic Equations 1 Quadratic Equations 2	Factoring Parabolas

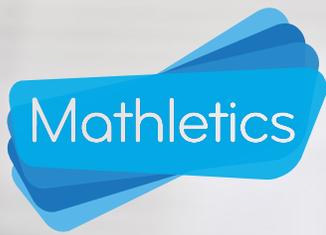


# Mathematics Florida Standards

## Alignment with Mathletics

### Algebra I

Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Algebra					
Domain: Creating Equations					
Create equations that describe numbers or relationships.	MAFS.912.A-CED.1.1	Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational, absolute, and exponential functions.	Linear Expressions and Equations	Writing Algebraic Expressions Equations to Solve Problems Writing Equations Write an Equation: Word Problems	Quadratic Equations
			Quadratic Equations and Inequalities	Constructing Formulae	Depreciation Interest
Create equations that describe numbers or relationships.	MAFS.912.A-CED.1.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	Linear Expressions and Equations	Equation from Point and Gradient Equation from Two Points Graphing from a Table of Values Graphing from a Table of Values 2 Which Straight Line? $y=ax$ Determining a Rule for a Line Equation of a Line 1 Modeling Linear Relationships	Linear Relationships Exponential and Power Graphs
			Exponents	Graphing Exponentials	
			Quadratic Equations and Inequalities	Vertex of a Parabola Graphing Parabolas	
Create equations that describe numbers or relationships.	MAFS.912.A-CED.1.3	Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. <i>For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.</i>	Under review	Under review	Under review

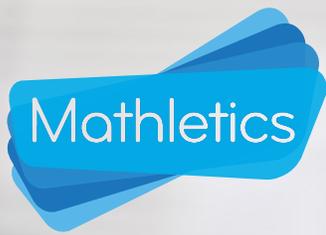


# Mathematics Florida Standards

## Alignment with Mathletics

### Algebra I

Cluster	Standard	Description	Topic	 Activities	 eBooks
<b>Conceptual Category: Algebra</b>					
<b>Domain: Creating Equations</b>					
Create equations that describe numbers or relationships.	MAFS.912.A-CED.1.3	Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. <i>For example, rearrange Ohm's law <math>V=IR</math> to highlight resistance <math>R</math>.</i>	Quantities and Solving Linear Equations	Changing the Subject	Linear Relationships Depreciation
<b>Domain: Reasoning with Equations and Inequalities</b>					
Understand solving equations as a process of reasoning and explain the reasoning.	MAFS.912.A-REI.1.1	Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.	Quantities and Solving Linear Equations	Find the Mistake Addition Properties Multiplication Properties Using the Distributive Property	Equations Quadratic Equations

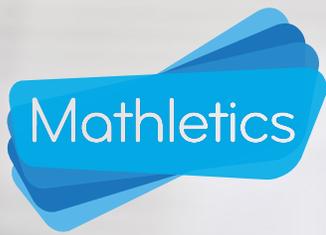


# Mathematics Florida Standards

## Alignment with Mathletics

### Algebra I

Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Algebra					
Domain: Reasoning with Equations and Inequalities					
Solve equations and inequalities in one variable.	MAFS.912.A-REI.2.3	Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	Quantities and Solving Linear Equations	Recognising Like Terms Checking Solutions Solving Simple Equations Solving More Equations Solve Two-Step Equations Equations with Grouping Symbols Solve Multi-Step Equations Equations: Variables, Both Sides Equations with Decimals Equations with Fractions Simple Substitution 3 Real Formulae	Equations Equations and Inequalities
			Linear Expressions and Equations	Equations to Solve Problems Writing Equations Write an Equation: Word Problems	Equations Equations and Inequalities
			Linear Inequalities	Solve One-Step Inequalities 1 Solve One-Step Inequalities 2 Solve Two-Step Inequalities Solving Inequalities 1 Solving Inequalities 2 Solving Inequalities 3 Graphing Inequalities 1 Graphing Inequalities 2 Graphing Inequalities 3	Inequalities Equations and Inequalities

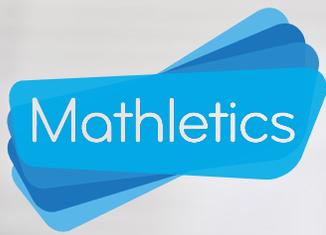


# Mathematics Florida Standards

## Alignment with Mathletics

### Algebra I

Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Algebra					
Domain: Reasoning with Equations and Inequalities					
Solve equations and inequalities in one variable.	MAFS.912.A-REI.2.4	<p>Solve quadratic equations in one variable.</p> <p>a. Use the method of completing the square to transform any quadratic equation in <math>x</math> into an equation of the form <math>(x - p)^2 = q</math> that has the same solutions. Derive the quadratic formula from this form.</p> <p>b. Solve quadratic equations by inspection (e.g., for <math>x^2 = 49</math>), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as <math>a \pm bi</math> for real numbers <math>a</math> and <math>b</math>.</p>	Quadratic Equations and Inequalities	Quadratic Equations 1 Quadratic Equations 2 Quadratic Formula The Discriminant Grouping in Pairs Quadratic Inequalities Roots of the Quadratic	Equations and Inequalities Factorizing Quadratic Equations
Solve systems of equations.	MAFS.912.A-REI.3.5	Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.	Under review	Under review	Equations and Inequalities
Solve systems of equations.	MAFS.912.A-REI.3.6	Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.	Systems of Linear Equations	Are they Parallel? Solve Systems by Graphing Simultaneous Linear Equations Breakeven Point Simultaneous Equations 1 Simultaneous Equations 2	Equations and Inequalities
Represent and solve equations and inequalities graphically.	MAFS.912.A-REI.4.10	Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).	Linear Expressions and Equations	Reading Values from a Line	Under review

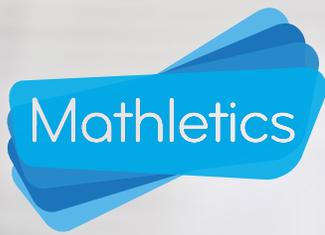


# Mathematics Florida Standards

## Alignment with Mathletics

### Algebra I

Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Algebra</b>					
<b>Domain: Reasoning with Equations and Inequalities</b>					
Represent and solve equations and inequalities graphically	MAFS.912.A-REI.4.11	Explain why the $x$ -coordinates of the points where the graphs of the equations $y=f(x)$ and $y=g(x)$ intersect are the solutions of the equation $f(x)=g(x)$ ; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.	Under review	Under review	Under review
Represent and solve equations and inequalities graphically	MAFS.912.A-REI.4.12	Graph the solutions to a linear inequality in two variables as a halfplane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.	Linear Inequalities	Linear Regions Intersecting Linear Regions	Under review
<b>Conceptual Category: Functions</b>					
<b>Domain: Interpreting Functions</b>					
Understand the concept of a function and use function notation.	MAFS.912.F-IF.1.1	Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If $f$ is a function and $x$ is an element of its domain, then $f(x)$ denotes the output of $f$ corresponding to the input $x$ . The graph of $f$ is the graph of the equation $y=f(x)$ .	Functions	Function Rules and Tables Horizontal and Vertical Lines	Functions
Understand the concept of a function and use function notation.	MAFS.912.F-IF.1.2	Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.	Functions	Function Notation 1 Function Notation 2 Function Notation 3	Functions

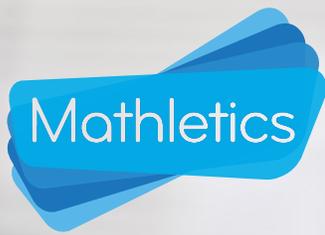


# Mathematics Florida Standards

## Alignment with Mathletics

### Algebra I

Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Functions					
Domain: Interpreting Functions					
Understand the concept of a function and use function notation.	MAFS.912.F-IF.1.3	Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. <i>For example, the Fibonacci sequence is defined recursively by <math>f(0)=f(1)=1</math>, <math>f(n+1)=f(n)+f(n-1)</math> for <math>n \geq 1</math>.</i>	Arithmetic and Geometric Sequences	Table of Values Terms: Arithmetic Progressions Terms: Geometric Progressions 1 Terms: Geometric Progressions 2	Sequences & Series: Arithmetic Sequences & Series: Geometric
Interpret functions that arise in applications in terms of the context.	MAFS.912.F-IF.2.4	For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. <i>Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.</i>	Linear Expressions and Equations	Intercepts Slope of a Line $y=ax$ Gradients for Real	Linear Relationships
			Quadratic Equations and Inequalities	Vertex of a Parabola Graphing Parabolas Parabolas and Rectangles Parabolas and Marbles	Parabolas
Interpret functions that arise in applications in terms of the context.	MAFS.912.F-IF.2.5	Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. <i>For example, if the function <math>h(n)</math> gives the number of person-hours it takes to assemble <math>n</math> engines in a factory, then the positive integers would be an appropriate domain for the function.</i>	Under review	Under review	Functions
Interpret functions that arise in applications in terms of the context.	MAFS.912.F-IF.2.6	Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.	Linear Expressions and Equations	Equation from Two Points	Under review

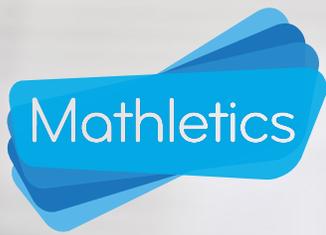


# Mathematics Florida Standards

## Alignment with Mathletics

### Algebra I

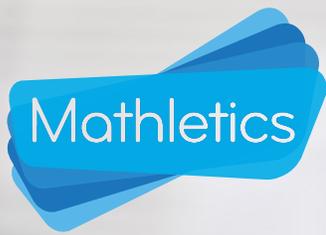
Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Functions					
Domain: Interpreting Functions					
Analyze functions using different representations.	MAFS.912.F-IF.3.7	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for complicated cases. a. Graph linear and quadratic functions and show intercepts, maxima, and minima. b. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions. c. Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior. e. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude, and using phase shift.	Linear Expressions and Equations	Graphing from a Table of Values Graphing from a Table of Values 2 Which Straight Line?	Linear Relationships
			Quadratic Equations and Inequalities	Graphing Parabolas	Parabolas
			Absolute Value, Step, and Piecewise	Absolute Value Expressions Absolute Value Equations Absolute Value Graphs Step Graphs Piecemeal Functions	Under review
			Exponents	Graphing Exponentials	Exponential and Power Graphs
Analyze functions using different representations.	MAFS.912.F-IF.3.8	Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. a. Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context. b. Use the properties of exponents to interpret expressions for exponential functions. <i>For example, identify percent rate of change in functions such as <math>y=(1.02)^x</math>, <math>y=(0.97)^x</math>, <math>y=(1.01)^{12t}</math>, <math>y=(1.2)^{t/10}</math>, and classify them as representing exponential growth or decay.</i>	Quadratic Equations and Inequalities	Factoring Quadratics 1 Factoring Quadratics 2 Grouping in Pairs Completing the Square Completing the Square 2 Vertex of a Parabola	Factorizing Parabolas Quadratic Equations
			Exponents	Multiplication with Exponents	Under review



# Mathematics Florida Standards Alignment with Mathletics

## Algebra I

Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Functions					
Domain: Interpreting Functions					
Understand the concept of a function and use function notation.	MAFS.912.F-IF.3.9	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). <i>For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.</i>	Under review	Under review	Linear Relationships Exponential and Power Graphs
Domain: Building Functions					
Build a function that models a relationship between two quantities.	MAFS.912.F-BF.1.1	Write a function that describes a relationship between two quantities. a. Determine an explicit expression, a recursive process, or steps for calculation from a context. b. Combine standard function types using arithmetic operations. For example, build a function that models the temperature of a cooling body by adding a constant function to a decaying exponential, and relate these functions to the model. c. Compose functions. <i>For example, if <math>T(y)</math> is the temperature in the atmosphere as a function of height, and <math>h(t)</math> is the height of a weather balloon as a function of time, then <math>T(h(t))</math> is the temperature at the location of the weather balloon as a function of time.</i>	Linear Expressions and Equations	Modeling Linear Relationships	Under review
			Exponents	Compound Interest Compound Interest by Formula Depreciation Declining Balance Depreciation	Depreciation Interest
			Quadratic Equations and Inequalities	Constructing Formulae	Parabolas
			Functions	Composition of Functions 1	Under review
Build new functions from existing functions.	MAFS.912.F-BF.2.3	Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$ , $kf(x)$ , $f(kx)$ , and $f(x + k)$ for specific values of $k$ (both positive and negative); find the value of $k$ given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.	Under review	Under review	Exponential and Power Graphs Functions Parabolas

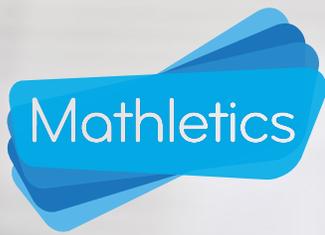


# Mathematics Florida Standards

## Alignment with Mathletics

### Algebra I

Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Functions					
Domain: Linear, Quadratic, and Exponential Models					
Construct and compare linear, quadratic, and exponential models and solve problems.	MAFS.912.F-LE.1.1	Distinguish between situations that can be modeled with linear functions and with exponential functions. a. Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals. b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. c. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.	Functions	What Type of Function?	Depreciation Interest Sequences & Series: Geometric Straight Lines Sequences & Series: Arithmetic
Construct and compare linear, quadratic, and exponential models and solve problems.	MAFS.912.F-LE.1.2	Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).	Functions	Find the Function Rule	Sequences & Series: Arithmetic
			Linear Expressions and Equations	Equations to Solve Problems Writing Equations Write an Equation: Word Problems Equation from Two Points Equation of a Line 1 Modeling Linear Relationships	Under review
			Arithmetic and Geometric Sequences	Terms: Geometric Progressions 2	Depreciation Interest Sequences & Series: Geometric
Construct and compare linear, quadratic, and exponential models and solve problems.	MAFS.912.F-LE.1.3	Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.	Under review	Under review	Under review
Interpret expressions for functions in terms of the situation they model.	MAFS.912.F-LE.2.5	Interpret the parameters in a linear or exponential function in terms of a context.	Linear Expressions and Equations	Gradients for Real	Under review

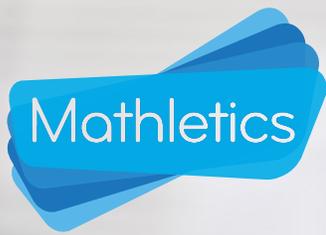


# Mathematics Florida Standards

## Alignment with Mathletics

### Algebra I

Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Statistics and Probability</b>					
<b>Domain: Interpreting Categorical and Quantitative Data</b>					
Summarize, represent, and interpret data on a single count or measurement variable.	MAFS.912.S-ID.1.1	Represent data with plots on the real number line (dot plots, histograms, and box plots).	Descriptive Statistics	Dot Plots Histograms Box-and-Whisker Plots 1 Box-and-Whisker Plots 2	Data Interpreting Data
Summarize, represent, and interpret data on a single count or measurement variable.	MAFS.912.S-ID.1.2	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.	Descriptive Statistics	Data Terms Mean Mean 1 Median Median 1 Mode Calculating Interquartile Range Calculating Standard Deviation Interpreting Standard Deviation	Data Interpreting Data
Summarize, represent, and interpret data on a single count or measurement variable.	MAFS.912.S-ID.1.3	Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).	Descriptive Statistics	Skewness of Data	Interpreting Data
Summarize, represent, and interpret data on a single count or measurement variable.	MAFS.912.S-ID.2.5	Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.	Under review	Under review	Under review

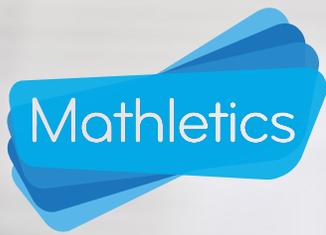


# Mathematics Florida Standards

## Alignment with Mathletics

### Algebra I

Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Statistics and Probability					
Domain: Interpreting Categorical and Quantitative Data					
Summarize, represent, and interpret data on two categorical and quantitative variables.	MAFS.912.S-ID.2.6	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. a. Fit a function to the data; use functions fitted to data to solve problems in the context of the data. <i>Use given functions or choose a function suggested by the context. Emphasize linear and exponential models</i>	Descriptive Statistics	Data Analysis: Scatter Plots Scatter Plots	Under review
Interpret linear models.	MAFS.912.S-ID.3.7	Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.	Under review	Under review	Under review
Interpret linear models.	MAFS.912.S-ID.3.8	Compute (using technology) and interpret the correlation coefficient of a linear fit.	Descriptive Statistics	Correlation	Under review
Interpret linear models.	MAFS.912.S-ID.3.9	Distinguish between correlation and causation.	Under review	Under review	Under review

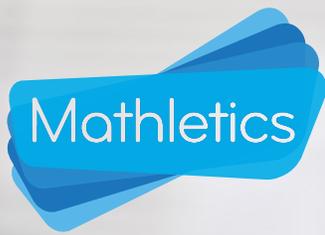


# Mathematics Florida Standards

## Alignment with Mathletics

### Geometry

Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Geometry</b>					
<b>Domain: Congruence</b>					
Experiment with transformations in the plane.	MAFS.912.G-CO.1.1	Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.	Line and Angle Basics	What Line Am I? Classifying Angles Labelling Angles Angles in a Revolution	Under review
Experiment with transformations in the plane.	MAFS.912.G-CO.1.2	Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch)	Rigid Transformations	Transformations Transformations: Coordinate Plane Rotations: Coordinate Plane	Under review
Experiment with transformations in the plane.	MAFS.912.G-CO.1.3	Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.	Rigid Transformations	Symmetry or Not 1 Symmetry or Not? Rotational Symmetry	Under review
Experiment with transformations in the plane.	MAFS.912.G-CO.1.4	Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.	Under review	Under review	Under review
Experiment with transformations in the plane.	MAFS.912.G-CO.1.5	Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.	Under review	Under review	Under review
Understand congruence in terms of rigid motions.	MAFS.912.G-CO.2.6	Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.	Rigid Transformations	Congruent Figures (Grid) Congruent Figures (Dots)	Under review



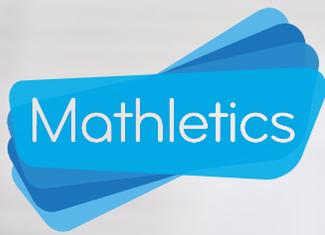
# Mathematics Florida Standards

## Alignment with Mathletics



### Geometry

Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Geometry					
Domain: Congruence					
Understand congruence in terms of rigid motions.	MAFS.912.G-CO.2.7	Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.	Rigid Transformations	Congruent Triangles	Similarity and Congruence
Understand congruence in terms of rigid motions.	MAFS.912.G-CO.2.8	Explain how the criteria for triangle congruence (ASA, SAS, SSS, and Hypotenuse-Leg) follow from the definition of congruence in terms of rigid motions.	Under review	Under review	Similarity and Congruence
Prove Geometric Theorems.	MAFS.912.G-CO.3.9	Prove theorems about lines and angles; use theorems about lines and angles to solve problems. <i>Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.</i>	Geometric Theorems	Parallel Lines Angles and Parallel Lines	Under review
Prove Geometric Theorems.	MAFS.912.G-CO.3.10	Prove theorems about triangles; use theorems about triangles to solve problems. <i>Theorems include: measures of interior angles of a triangle sum to 180°; 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.</i>	Geometric Theorems	Angle Measures in a Triangle Plane Figure Theorems Ratio of Intercepts	Polygons and Angles
Prove Geometric Theorems.	MAFS.912.G-CO.3.11	Prove theorems about parallelograms; use theorems about parallelograms to solve problems. <i>Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.</i>	Geometric Theorems	Plane Figure Theorems	Under review

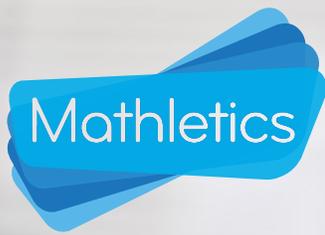


# Mathematics Florida Standards

## Alignment with Mathletics

### Geometry

Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Geometry</b>					
<b>Domain: Congruence</b>					
Make geometric constructions.	MAFS.912.G-CO.4.12	Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). <i>Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.</i>	Under review	Under review	Constructions
Make geometric constructions.	MAFS.912.G-CO.4.13	Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.	Under review	Under review	Constructions
<b>Domain: Similarity, Right Triangles, and Trigonometry</b>					
Understand similarity in terms of similarity transformations.	MAFS.912.G-SRT.1.1	Verify experimentally the properties of dilations given by a center and a scale factor. a. A dilation takes a line not passing through the center of the dilation to a parallel line, and leave a line passing through the center unchanged. b. The dilation of a line segment is longer or shorter in the ratio given by the scale factor.	Similarity	Scale Measurement Scale Factor	Under review
Understand similarity in terms of similarity transformations.	MAFS.912.G-SRT.1.2	Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.	Similarity	Similar Figures Similar Figures 1	Similarity and Congruence
Understand similarity in terms of similarity transformations.	MAFS.912.G-SRT.1.3	Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.	Similarity	Similarity Proofs	Similarity and Congruence

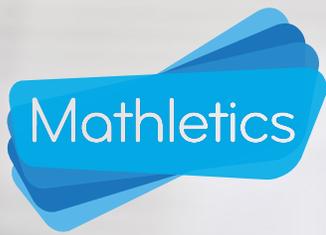


# Mathematics Florida Standards

## Alignment with Mathletics

### Geometry

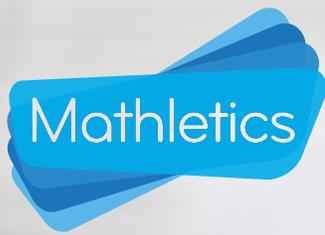
Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Geometry</b>					
<b>Domain: Similarity, Right Triangles, and Trigonometry</b>					
Prove theorems involving similarity.	MAFS.912.G-SRT.2.4	Prove theorems about triangles. <i>Theorems include: a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem proved using triangle similarity.</i>	Geometric Theorems	Ratio of Intercepts	Under review
Prove theorems involving similarity.	MAFS.912.G-SRT.2.5	Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.	Congruence	Congruent Figures: Find Values	Similarity and Congruence
			Similarity	Using Similar Triangles Using Similar Triangles 1	Similarity and Congruence
Define trigonometric ratios and solve problems involving right triangles.	MAFS.912.G-SRT.3.6	Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.	Trigonometry	Exact Trigonometric Ratios Sin A Cos A Tan A	Trigonometry
Define trigonometric ratios and solve problems involving right triangles.	MAFS.912.G-SRT.3.7	Explain and use the relationship between the sine and cosine of complementary angles.	Under review	Under review	Trigonometric Relationships
Define trigonometric ratios and solve problems involving right triangles.	MAFS.912.G-SRT.3.8	Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.	Trigonometry	Pythagorean Theorem Find Unknown Sides Find Unknown Angles Elevation and Depression Trigonometry Problems 2	Pythagorean Theorem Trigonometry
<b>Domain: Circles</b>					
Understand and apply theorems about circles.	MAFS.912.G-C.1.1	Prove that all circles are similar.	Under review	Under review	Under review



# Mathematics Florida Standards Alignment with Mathletics

## Geometry

Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Geometry</b>					
<b>Domain: Circles</b>					
Understand and apply theorems about circles.	MAFS.912.G-C.1.2	Identify and describe relationships among inscribed angles, radii, and chords. <i>Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.</i>	Circles	Circle Terms Circle Theorem Tangents and Secants	Tangents and Secants Chords and Angles
Understand and apply theorems about circles.	MAFS.912.G-C.1.3	Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.	Under review	Under review	Under review
Find arc lengths and areas of sectors of circles.	MAFS.912.G-C.2.5	Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.	Circles	Converting Radians and Degrees Perimeter and Circles Arc Length Length of an Arc Area of a Sector (degrees and radians)	Perimeter and Area
<b>Domain: Expressing Geometric Properties with Equations</b>					
Translate between the geometric description and the equation for a conic section.	MAFS.912.G-GPE.1.1	Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.	Circles	Centre and Radius 1 Centre and Radius 2 Graphing Circles	Circle Graphs
Use coordinates to prove simple geometric theorems algebraically.	MAFS.912.G-GPE.2.4	Use coordinates to prove simple geometric theorems algebraically. <i>For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point <math>(1, \sqrt{3})</math> lies on the circle centered at the origin and containing the point <math>(0, 2)</math>.</i>	Connecting Geometry and Algebra	Coordinate Methods in Geometry Perpendicular Distance 1 Perpendicular Distance 2	Coordinate Geometry Circle Graphs

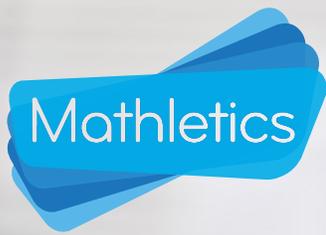


# Mathematics Florida Standards

## Alignment with Mathletics

### Geometry

Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Geometry</b>					
<b>Domain: Expressing Geometric Properties with Equations</b>					
Use coordinates to prove simple geometric theorems algebraically.	MAFS.912.G-GPE.2.5	Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).	Connecting Geometry and Algebra	Are they Parallel? Are they Perpendicular? Equation of a Line 3 Equation from Point and Gradient	Linear Relationships Straight Lines
Use coordinates to prove simple geometric theorems algebraically.	MAFS.912.G-GPE.2.6	Find the point on a directed line segment between two given points that partitions the segment in a given ratio.	Connecting Geometry and Algebra	Midpoint by Formula	Coordinate Geometry
Use coordinates to prove simple geometric theorems algebraically.	MAFS.912.G-GPE.2.7	Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.	Connecting Geometry and Algebra	Distance Between Two Points	Coordinate Geometry
<b>Domain: Geometric Measurement and Dimension</b>					
Explain volume formulas and use them to solve problems.	MAFS.912.G-GMD.1.1	Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. Use dissection arguments, Cavalieri's principle, and informal limit arguments.	Under review	Under review	Under review
Explain volume formulas and use them to solve problems.	MAFS.912.G-GMD.1.3	Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.	Three-Dimensional Figures	Volume: Triangular Prisms Volume: Prisms Volume: Cylinders Volume Pyramids Volume: Cones Volume: Spheres Volume Composite Figures Volume: Rearrange Formula	Measuring Solids

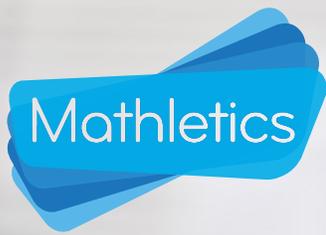


# Mathematics Florida Standards

## Alignment with Mathletics

### Geometry

Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Geometry</b>					
<b>Domain: Geometric Measurement and Dimension</b>					
Visualize relationships between two-dimensional and three-dimensional objects.	MAFS.912.G-GMD.2.4	Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.	Three-Dimensional Figures	What Pyramid am I? Relate Shapes and Solids Nets	Under review
<b>Domain: Modeling with Geometry</b>					
Apply geometric concepts in modeling situations.	MAFS.912.G-MG.1.1	Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).	Three-Dimensional Figures	Right and Oblique Objects Match the Solid 2	Measuring Solids
Apply geometric concepts in modeling situations.	MAFS.912.G-MG.1.2	Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).	Under review	Under review	Under review
Apply geometric concepts in modeling situations.	MAFS.912.G-MG.1.3	Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).	Trigonometry	Trigonometry Problems 2	Under review

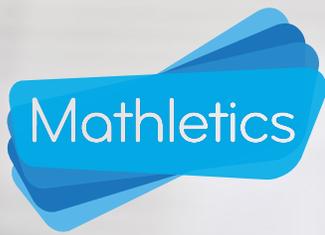


# Mathematics Florida Standards

## Alignment with Mathletics

### Algebra II

Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Number and Quantity</b>					
<b>Domain: The Complex Number System</b>					
Perform arithmetic operations with complex numbers.	MAFS.912.N-CN.1.1	Know there is a complex number $i$ such that $i^2=-1$ , and every complex number has the form $a + bi$ with $a$ and $b$ real.	Complex Numbers	Introduction to Complex Numbers	Under review
Perform arithmetic operations with complex numbers.	MAFS.912.N-CN.1.2	Use the relation $i^2=-1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.	Complex Numbers	Powers of $i$ Adding Complex Numbers Subtracting Complex Numbers Complex Multiplication	Under review
Use complex numbers in polynomial identities and equations.	MAFS.912.N-CN.3.7	Solve quadratic equations with real coefficients that have complex solutions.	Under review	Under review	Under review
<b>Conceptual Category: Algebra</b>					
<b>Domain: Seeing Structure in Expressions</b>					
Interpret the structure of expressions.	MAFS.912.A-SSE.1.1	Interpret expressions that represent a quantity in terms of its context. a. Interpret parts of an expression, such as terms, factors, and coefficients. b. Interpret complicated expressions by viewing one or more of their parts as a single entity. <i>For example, interpret <math>P(1 + r)^n</math> as the product of <math>P</math> and a factor not depending on <math>P</math>.</i>	Modeling with Functions	Gradients for Real Exponential Growth and Decay Constructing Formulae	Sketching Polynomials
			Solving Equations	Factoring Expressions Equations Reducible to Quadratics	Geometric Series in Finance
Interpret the structure of expressions.	MAFS.912.A-SSE.1.2	Use the structure of an expression to identify ways to rewrite it. For example, see $x^4 - y^4$ as $(x^2)^2 - (y^2)^2$ , thus recognizing it as a difference of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$ .	Solving Equations	Equations Reducible to Quadratics	Factorizing
			Polynomial Arithmetic	Polynomial Long Division Simplifying Binomial Expressions	Factorizing

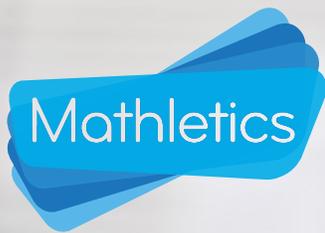


# Mathematics Florida Standards

## Alignment with Mathletics

### Algebra II

Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Algebra					
Domain: Seeing Structure in Expressions					
Write expressions in equivalent forms to solve problems.	MAFS.912.A-SSE.2.3	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. a. Factor a quadratic expression to reveal the zeros of the function it defines. b. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines. c. Use the properties of exponents to transform expressions for exponential functions. <i>For example, the expression <math>1.15^t</math> can be rewritten as <math>(1.15^{1/12})^{12t} \approx 1.012^{12t}</math> to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.</i>	Solving Equations	Factoring Quadratics 1 Factoring Quadratics 2 Completing the Square Completing the Square 2	Quadratic Equations
			Modeling with Functions	Vertex of a Parabola	Parabolas
			Exponents and Logarithms	Exponent Laws and Algebra Exponent Laws with Brackets Simplifying with Exponent Laws 1 Simplifying with Exponent Laws 2	Exponents
Write expressions in equivalent forms to solve problems.	MAFS.912.A-SSE.2.4	Derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems. <i>For example, calculate mortgage payments.</i>	Sequences and Series	Limiting Sum Terms: Geometric Progressions 1 Terms: Geometric Progressions 2 Sum: Geometric Progressions	Sequences & Series: Geometric Geometric Series and Loan Repayments Geometric Series in Finance
Domain: Arithmetic with Polynomials and Rational Expressions					
Perform arithmetic operations on polynomials.	MAFS.912.A-APR.1.1	Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.	Polynomial Arithmetic	Like Terms: Add, Subtract Algebraic Multiplication Multiplication with Exponents Special Binomial Products Expanding Brackets Expand then Simplify Expanding Binomial Products	Polynomials Equations Expanding and Factorizing Simplifying Algebra Binomials and Pascal's Triangle

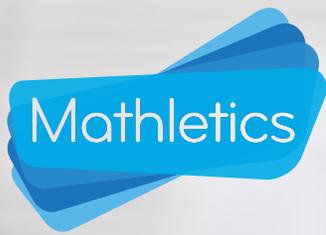


# Mathematics Florida Standards

## Alignment with Mathletics

### Algebra II

Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Algebra</b>					
<b>Domain: Arithmetic with Polynomials and Rational Expressions</b>					
Understand the relationship between zeros and factors of polynomials.	MAFS.912.A-APR.2.2	Know and apply the Remainder Theorem: For a polynomial $p(x)$ and a number $a$ , the remainder on division by $x - a$ is $p(a)$ , so $p(a)=0$ if and only if $(x - a)$ is a factor of $p(x)$ .	Solving Equations	Polynomial Factor Theorem More Substitution in Formulae Rationalising the Denominator Rationalising and Binomials	Polynomials
Understand the relationship between zeros and factors of polynomials.	MAFS.912.A-APR.2.3	Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.	Solving Equations	Factoring Expressions Equations Reducible to Quadratics Polynomial Factor Theorem Graphing Cubics	Factorizing Polynomials Sketching Polynomials
Use polynomial identities to solve problems.	MAFS.912.A-APR.3.4	Prove polynomial identities and use them to describe numerical relationships. <i>For example, the polynomial identity <math>(x^2 + y^2)^2 = (x^2 - y^2)^2 + (2xy)^2</math> can be used to generate Pythagorean triples.</i>	Solving Equations	Equations Reducible to Quadratics	Factorizing
Rewrite rational expressions.	MAFS.912.A-APR.4.6	Rewrite simple rational expressions in different forms; write $a(x)/b(x)$ in the form $q(x) + r(x)/b(x)$ , where $a(x)$ , $b(x)$ , $q(x)$ , and $r(x)$ are polynomials with the degree of $r(x)$ less than the degree of $b(x)$ , using inspection, long division, or, for the more complicated examples, a computer algebra system.	Polynomial Arithmetic	Polynomial Long Division Simplifying Binomial Expressions	Polynomials
<b>Domain: Creating Equations</b>					
Create equations that describe numbers or relationships.	MAFS.912.A-CED.1.1	Create equations and inequalities in one variable and use them to solve problems. <i>Include equations arising from linear and quadratic functions, and simple rational, absolute, and exponential functions.</i>	Modeling with Functions	Write an Equation: Word Problems Constructing Formulae	Under review

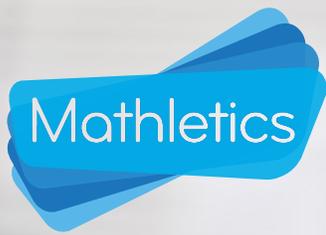


# Mathematics Florida Standards

## Alignment with Mathletics

### Algebra II

Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Algebra					
Domain: Creating Equations					
Create equations that describe numbers or relationships.	MAFS.912.A-CED.1.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	Modeling with Functions	$y=ax$ Find the Function Rule Modeling Linear Relationships Linear Modelling Parabolas and Marbles Parabolas and Rectangles	Under review
Create equations that describe numbers or relationships.	MAFS.912.A-CED.1.3	Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. <i>For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.</i>	Under review	Under review	Under review
Create equations that describe numbers or relationships.	MAFS.912.A-CED.1.4	Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. <i>For example, rearrange Ohm's law <math>V=IR</math> to highlight resistance <math>R</math>.</i>	Inverse Functions	Inverse Functions	Under review
			Exponents and Logarithms	Change of Base	Logarithms
			Rational and Radical Equations	Surface Area: Rearrange Formula Volume: Rearrange Formula Rearranging the Equation	Under review

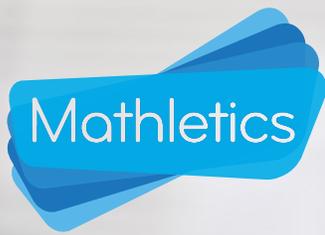


# Mathematics Florida Standards

## Alignment with Mathletics

### Algebra II

Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Algebra					
Domain: Reasoning with Equations and Inequalities					
Understand solving equations as a process of reasoning and explain the reasoning.	MAFS.912.A-REI.1.1	Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.	Solving Equations	Solving Simple Equations Solve Two-Step Equations Solve Multi-Step Equations Factoring Expressions Factoring Quadratics 1 Factoring Quadratics 2 Quadratic Equations 1 Quadratic Equations 2 Solve Quadratics: Coefficient of 1 Completing the Square Completing the Square 2 Quadratic Formula Equations Reducible to Quadratics Polynomial Factor Theorem	Equations and Inequalities Factoring Quadratic Equations Polynomials
Understand solving equations as a process of reasoning and explain the reasoning.	MAFS.912.A-REI.1.2	Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.	Rational and Radical Equations	Equations with Square Roots Equations with Cube Roots More Substitution in Formulae Rationalising the Denominator Rationalising and Binomials	Under review
Solve equations and inequalities in one variable.	MAFS.912.A-REI.2.4	Solve quadratic equations in one variable. a. Use the method of completing the square to transform any quadratic equation in $x$ into an equation of the form $(x - p)^2 = q$ that has the same solutions. Derive the quadratic formula from this form. b. Solve quadratic equations by inspection (e.g., $x^2 = 49$ ), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as $a \pm bi$ for real numbers $a$ and $b$ .	Solving Equations	Factoring Quadratics 1 Factoring Quadratics 2 Quadratic Equations 1 Quadratic Equations 2 Solve Quadratics: Coefficient of 1 Completing the Square Completing the Square 2 Quadratic Formula Equations Reducible to Quadratics	Equations and Inequalities Factoring Quadratic Equations Polynomials
			Complex Numbers	Introduction to Complex Numbers	Under review

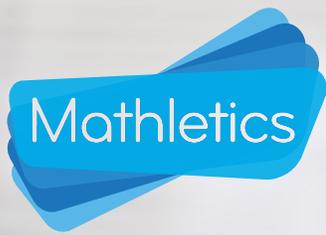


# Mathematics Florida Standards

## Alignment with Mathletics

### Algebra II

Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Algebra</b>					
<b>Domain: Reasoning with Equations and Inequalities</b>					
Solve systems of equations.	MAFS.912.A-REI.3.6	Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.	Systems of Equations	Simultaneous Equations 1 Simultaneous Equations 2 Simultaneous Linear Equations Breakeven Point	Equations and Inequalities Linear Relationships
Solve systems of equations.	MAFS.912.A-REI.3.7	Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. <i>For example, find the points of intersection between the line <math>y = -3x</math> and the circle <math>x^2 + y^2 = 3</math>.</i>	Systems of Equations	Simultaneous Equations 3 Intersection: Line & Parabola Intersection: Line & Circle	Under review
Represent and solve equations and inequalities graphically.	MAFS.912.A-REI.4.11	Explain why the x-coordinates of the points where the graphs of the equations $y=f(x)$ and $y=g(x)$ intersect are the solutions of the equation $f(x)=g(x)$ ; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.	Systems of Equations	Solve Systems by Graphing	Under review
			Rational and Radical Equations	Graphing Hyperbolas	Under review
<b>Conceptual Category: Functions</b>					
<b>Domain: Interpreting Functions</b>					
Interpret functions that arise in applications in terms of the context.	MAFS.912.F-IF.2.4	For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. <i>Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.</i>	Modeling with Functions	Gradients for Real Parabolas and Marbles Parabolas and Rectangles	Sketching Polynomials

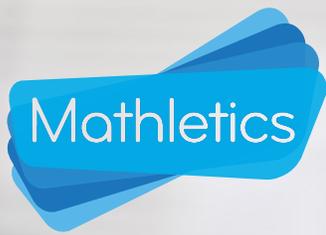


# Mathematics Florida Standards

## Alignment with Mathletics

### Algebra II

Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Functions					
Domain: Interpreting Functions					
Interpret functions that arise in applications in terms of the context.	MAFS.912.F-IF.2.5	Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. <i>For example, if the function <math>h(n)</math> gives the number of person hours it takes to assemble <math>n</math> engines in a factory, then the positive integers would be an appropriate domain for the function.</i>	Modeling with Functions	Domain Domain and Range	Functions
Interpret functions that arise in applications in terms of the context.	MAFS.912.F-IF.2.6	Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.	Under review	Under review	Under review
Analyze functions using different representations.	MAFS.912.F-IF.3.7	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. a. Graph linear and quadratic functions and show intercepts, maxima, and minima. b. Graph square root, cube root, and piece-wise defined functions, including step functions and absolute value functions. c. Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior. d. Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior. e. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude, and using phase shift.	Modeling with Functions	$y=ax$ Gradients for Real Which Straight Line? Graphing Parabolas Absolute Value Graphs Piecemeal Functions	Straight Lines Parabolas
			Inverse Functions	Graphing Inverse Functions	Functions
			Systems of Equations	Graphing Cubics	Exponential and Power Graphs Sketching Polynomials
			Trigonometric Functions	Sine and Cosine Curves Trig Graphs in Radians Graph Inverse Trig Functions	Trigonometric Relationships
			Exponents and Logarithms	Graphing Exponentials Exponential or Log Graph?	Logarithms Simple Nonlinear Graphs

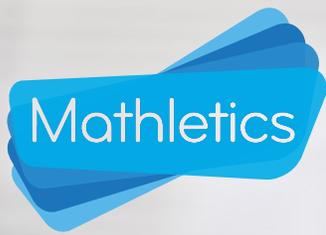


# Mathematics Florida Standards

## Alignment with Mathletics

### Algebra II

Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Functions					
Domain: Interpreting Functions					
Analyze functions using different representations.	MAFS.912.F-IF.3.8	<p>Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.</p> <p>a. Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.</p> <p>b. Use the properties of exponents to interpret expressions for exponential functions. <i>For example, identify percent rate of change in functions such as <math>y=(1.02)^x</math>, <math>y=(0.97)^x</math>, <math>y=(1.01)^{12x}</math>, <math>y=(1.2)^{x/10}</math>, and classify them as representing exponential growth and decay.</i></p>	Polynomial Arithmetic	Polynomial Long Division Simplifying Binomial Expressions	Sketching Polynomials
			Solving Equations	Factoring Expressions Factoring Quadratics 1 Factoring Quadratics 2 Quadratic Equations 2 Solve Quadratics: Coefficient of 1 Completing the Square Completing the Square 2	Factoring Quadratic Equations
			Modeling with Functions	Exponential Growth and Decay	Exponents Depreciation Interest
Analyze functions using different representations.	MAFS.912.F-IF.3.9	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). <i>For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.</i>	Under review	Under review	Under review

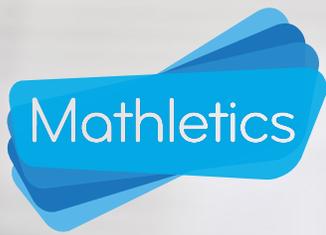


# Mathematics Florida Standards

## Alignment with Mathletics

### Algebra II

Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Functions					
Domain: Building Functions					
Build a function that models a relationship between two quantities.	MAFS.912.F-BF.1.1	<p>Write a function that describes a relationship between two quantities.</p> <p>a. Determine an explicit expression, a recursive process, or steps for calculation from a context.</p> <p>b. Combine standard function types using arithmetic operations. <i>For example, build a function that models the temperature of a cooling body by adding a constant function to a decaying exponential, and relate these functions to the model.</i></p> <p>c. Compose functions. <i>For example, if <math>T(y)</math> is the temperature in the atmosphere as a function of height, and <math>h(t)</math> is the height of a weather balloon as a function of time, then <math>T(h(t))</math> is the temperature at the location of the weather balloon as a function of time.</i></p>	Modeling with Functions	Gradients for Real Write an Equation: Word Problems Constructing Formulae	Under review
			Inverse Functions	Composition of Functions 1	Under review
Build a function that models a relationship between two quantities.	MAFS.912.F-BF.1.2	Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.	Sequences and Series	Terms: Arithmetic Progressions Terms: Geometric Progressions 1 Terms: Geometric Progressions 2 Sigma Notation 1 Sigma Notation 2	Sequences & Series: Arithmetic Sequences and Series: Geometric
Build new functions from existing functions.	MAFS.912.F-BF.2.3	Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$ , $k f(x)$ , $f(kx)$ , and $f(x + k)$ for specific values of $k$ (both positive and negative); find the value of $k$ given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. <i>Include recognizing even and odd functions from their graphs and algebraic expressions for them.</i>	Modeling with Functions	Odd and Even Functions	Exponential and Power Graphs Functions Sketching Polynomials

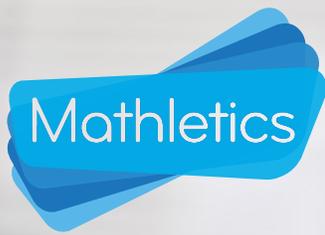


# Mathematics Florida Standards

## Alignment with Mathletics

### Algebra II

Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Functions</b>					
<b>Domain: Building Functions</b>					
Build new functions from existing functions.	MAFS.912.F-BF.2.4	Find inverse functions. a. Solve an equation of the form $f(x)=c$ for a simple function $f$ that has an inverse and write an expression for the inverse. For example, $f(x)=2x^3$ or $f(x)=(x + 1)/(x - 1)$ for $x \neq 1$ . b. Verify by composition that one function is the inverse of another. c. Read values of an inverse function from a graph or a table, given that the function has an inverse. d. Produce an invertible function from a non-invertible function by restricting the domain.	Inverse Functions	Inverse Functions Composition of Functions 1	Functions
Build new functions from existing functions.	MAFS.912.F-BF.2.a	Use the change of base formula.	Exponents and Logarithms	Change of Base	Logarithms
<b>Domain: Linear, Quadratic, and Exponential Models.</b>					
Construct and compare linear, quadratic, and exponential models and solve problems.	MAFS.912.F-LE.1.4	For exponential models, express as a logarithm the solution to $ab^{ct}=d$ where $a$ , $c$ , and $d$ are numbers and the base $b$ is 2, 10, or $e$ ; evaluate the logarithm using technology.	Exponents and Logarithms	Log Laws Equations with Logs Log Base 'e'	Logarithms
Interpret Expressions for functions in terms of the situations they model.	MAFS.912.F-LE.2.5	Interpret parameters in a linear or exponential function in terms of a context.	Modeling with Functions	Modeling Linear Relationships Gradients for Real Exponential Growth and Decay	Sequences and Series: Arithmetic Sequences and Series: Geometric Depreciation Interest

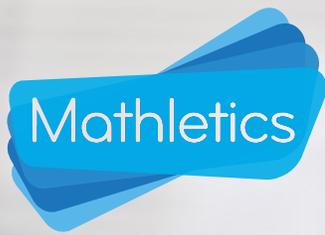


# Mathematics Florida Standards

## Alignment with Mathletics

### Algebra II

Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Functions</b>					
<b>Domain: Trigonometric Functions</b>					
Extend the domain of trigonometric functions using the unit circle.	MAFS.912.F-TF.1.1	Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle; Convert between degrees and radians.	Trigonometric Functions	Converting Radians and Degrees Unit Circle Reductions	Under review
Extend the domain of trigonometric functions using the unit circle.	MAFS.912.F-TF.1.2	Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counter clockwise around the unit circle.	Trigonometric Functions	Sign of the Angle Unit Circle Reductions Trigonometric Relationships Trigonometric Intercepts Inverse Trigonometric Functions	Trigonometric Relationships
Model periodic phenomena with trigonometric functions.	MAFS.912.F-TF.2.5	Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline.	Trigonometric Functions	Period and Amplitude	Under review
Prove and apply trigonometric identities.	MAFS.912.F-TF.3.8	Prove the Pythagorean identity $\sin^2(\theta) + \cos^2(\theta) = 1$ and use it to find $\sin(\theta)$ , $\cos(\theta)$ , or $\tan(\theta)$ given $\sin(\theta)$ , $\cos(\theta)$ , or $\tan(\theta)$ and the quadrant of the angle.	Trigonometric Functions	Rationalising the Denominator Trig Equations 1 Trig Equations 2 Trig Equations 3 Trig Equations 4	Under review
<b>Conceptual Category: Geometry</b>					
<b>Domain: Expressing Geometric Properties with Equations</b>					
Translate between the geometric descriptions and the equation for a conic section.	MAFS.912.G-GPE.2.5	Derive the equation of a parabola given a focus and directrix.	Equations of Parabolas	Vertex of a Parabola Focus and Directrix 1 Focus and Directrix 2 Focus and Directrix 3 Focus and Directrix 4	Under review

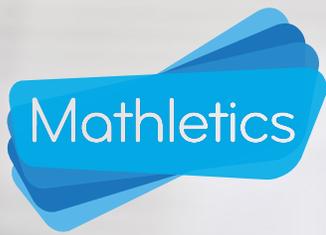


# Mathematics Florida Standards

## Alignment with Mathletics

### Algebra II

Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Statistics and Probability</b>					
<b>Domain: Interpreting Categorical and Quantitative Data</b>					
Summarize, represent, and interpret data on a single count or measurement variable.	MAFS.912.S-ID.1.4	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. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.	Collecting and Analyzing Data	Normal Distribution Calculating z-scores Comparing z-scores Equivalent z-scores	Under review
<b>Domain: Making Inferences and Justifying Conclusions</b>					
Understand and evaluate random processes underlying statistical experiments.	MAFS.912.S-IC.1.1	Understand statistics as a process for making inferences about population parameters based on a random sample from that population.	Collecting and Analyzing Data	Capture Recapture Technique Probability Tables Two-way Table Probability	Under review
Understand and evaluate random processes underlying statistical experiments.	MAFS.912.S-IC.1.2	Decide if a specified model is consistent with results from a given data generating process, e.g., using simulation. <i>For example, a model says a spinning coin falls heads up with probability 0.5. Would a result of 5 tails in a row cause you to question the model?</i>	Under review	Under review	Under review
Make inferences and justify conclusions from sample surveys, experiments, and observational studies.	MAFS.912.S-IC.2.3	Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.	Under review	Under review	Under review
Make inferences and justify conclusions from sample surveys, experiments, and observational studies.	MAFS.912.S-IC.2.4	Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling.	Under review	Under review	Under review

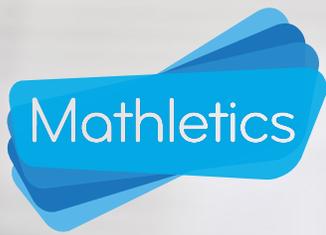


# Mathematics Florida Standards

## Alignment with Mathletics

### Algebra II

Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Statistics and Probability</b>					
<b>Domain: Making Inferences and Justifying Conclusions</b>					
Make inferences and justify conclusions from sample surveys, experiments, and observational studies.	MAFS.912.S-IC.2.5	Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant.	Under review	Under review	Under review
Make inferences and justify conclusions from sample surveys, experiments, and observational studies.	MAFS.912.S-IC.2.6	Evaluate reports based on data.	Under review	Under review	Under review
<b>Domain: Conditional Probability and the Rules of Probability</b>					
Understand independence and conditional probability and use them to interpret data.	MAFS.912.S-CP.1.1	Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events ("or," "and," "not").	Probability and Statistical Data	Complementary Events Venn Diagrams Probability - 'And' and 'Or'	Probability
Understand independence and conditional probability and use them to interpret data.	MAFS.912.S-CP.1.2	Understand that two events $A$ and $B$ are independent if the probability of $A$ and $B$ occurring together is the product of their probabilities, and use this characterization to determine if they are independent.	Under review	Under review	Probability
Understand independence and conditional probability and use them to interpret data.	MAFS.912.S-CP.1.3	Understand the conditional probability of $A$ given $B$ as $P(A \text{ and } B)/P(B)$ , and interpret independence of $A$ and $B$ as saying that the conditional probability of $A$ given $B$ is the same as the probability of $A$ , and the conditional probability of $B$ given $A$ is the same as the probability of $B$ .	Under review	Under review	Under review



# Mathematics Florida Standards

## Alignment with Mathletics

### Algebra II

Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Statistics and Probability					
Domain: Conditional Probability and the Rules of Probability					
Understand independence and conditional probability and use them to interpret data.	MAFS.912.S-CP.1.4	Construct and interpret twoway frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities. <i>For example, collect data from a random sample of students in your school on their favorite subject among math, science, and English. Estimate the probability that a randomly selected student from your school will favor science given that the student is in tenth grade. Do the same for other subjects and compare the results.</i>	Probability	Two-way Table Probability Probability Tables	Probability
Understand independence and conditional probability and use them to interpret data.	MAFS.912.S-CP.1.5	Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations. <i>For example, compare the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer.</i>	Under review	Under review	Under review
Use the rules of probability to compute probabilities of compound events in a uniform probability model.	MAFS.912.S-CP.2.6	Find the conditional probability of $A$ given $B$ as the fraction of $B$ 's outcomes that also belong to $A$ , and interpret the answer in terms of the model.	Under review	Under review	Under review
Use the rules of probability to compute probabilities of compound events in a uniform probability model.	MAFS.912.S-CP.2.7	Apply the Addition Rule, $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$ , and interpret the answer in terms of the model.	Probability	Find the Probability	Under review

# Mathletics



3P Learning

