



# Mathletics

## **New York State Next Generation Learning Standards for Mathematics**

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 New York State Next Generation Learning Standards for Mathematics (2017) incorporate the content of the Common Core State Standards with variations to the standards and content descriptions and additional standards.

Our team of educational publishers has created a course that specifically follows the New York State Next Generation Learning Standards for Mathematics (2017). 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.

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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New York State Next Generation Mathematics Learning Standards (2017) available from The New York State Education Department: [www.nysed.gov](http://www.nysed.gov); accessed 16 May 2018.

# Kindergarten

Domain	Cluster	Standard	Standard Description	 Activities
Counting and Cardinality	Know number names and the count sequence.	NY-K.CC.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	Know number names and the count sequence.	NY-K.CC.2	Count to 100 by ones beginning from any given number (instead of beginning at 1).	Counting Forwards Going Up
Counting and Cardinality	Know number names and the count sequence.	NY-K.CC.3	Write numbers 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	Count to tell the number of objects.	NY-K.CC.4	Understand the relationship between numbers and quantities up to and including 20; connect counting to cardinality. <ol style="list-style-type: none"> <li>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.</li> <li>Understand that the last number name said tells the number of objects counted, (cardinality). The number of objects is the same regardless of their arrangement or the order in which they were counted.</li> <li>Understand the concept that each successive number name refers to a quantity that is one larger.</li> <li>Understand the concept of ordinal numbers (first through tenth) to describe the relative position and magnitude of whole numbers.</li> </ol>	How Many? How Many Dots? Ordinal Numbers
Counting and Cardinality	Count to tell the number of objects.	NY-K.CC.5a	Answer counting questions using as many as 20 objects arranged in a line, a rectangular array, and a circle. Answer counting questions using as many as 10 objects in a scattered configuration.	How Many? How Many Dots?
Counting and Cardinality	Count to tell the number of objects.	NY-K.CC.5b	Given a number from 1–20, count out that many objects.	How Many? How Many Dots?

## Kindergarten

Domain	Cluster	Standard	Standard Description	 Activities
Counting and Cardinality	Compare numbers.	NY-K.CC.6	Identify whether the number of objects in one group is greater than (more than), less than (fewer than), or equal to (the same as) the number of objects in another group.	Picture Graphs: More or Less More, Less or the Same to 10 More, Less or the Same to 20
Counting and Cardinality	Compare numbers.	NY-K.CC.7	Compare two numbers between 1 and 10 presented as written numerals.	Teacher directed
Operations and Algebraic Thinking	Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.	NY-K.OA.1	Represent addition and subtraction using objects, fingers, pennies, drawings, sounds, acting out situations, verbal explanations, expressions, equations or other strategies.	Teacher directed
Operations and Algebraic Thinking	Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.	NY-K.OA.2a	Add and subtract within 10.	Adding to 5 Subtracting from 5 Adding to Ten All about Ten Subtracting from Ten Simple Subtraction Adding to make 5 and 10 Doubles and Halves to 10
Operations and Algebraic Thinking	Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.	NY-K.OA.2b	Solve addition and subtraction word problems within 10.	Adding to 10 Word Problems
Operations and Algebraic Thinking	Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.	NY-K.OA.3	Decompose numbers less than or equal to 10 into pairs in more than one way. Record each decomposition by a drawing or equation.	Adding to 5 Adding to make 5 and 10
Operations and Algebraic Thinking	Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.	NY-K.OA.4	Find the number that makes 10 when given a number from 1 to 9. Record the answer with a drawing or equation.	Balance Numbers to 10 Adding to 5 Subtracting from 5 Adding to make 5 and 10 Adding to Ten Subtracting from Ten

# Kindergarten

Domain	Cluster	Standard	Standard Description	 Activities
Operations and Algebraic Thinking	Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.	NY-K.OA.5	Fluently add and subtract within 5.	Adding to 5 Subtracting from 5
Operations and Algebraic Thinking	Understand simple patterns.	NY-K.OA.6	Duplicate, extend and create simple patterns using concrete objects.	Complete the Pattern Simple Patterns Pattern Error Color Patterns
Number and Operations in Base Ten	Work with numbers 11–19 to gain foundations for place value.	NY-K.NBT.1	Compose and decompose the numbers from 11 to 19 into ten ones and one, two, three, four, five, six, seven, eight, or nine ones.	Making Teen Numbers Making Numbers Count
Measurement and Data	Describe and compare measurable attributes.	NY-K.MD.1	Describe measurable attributes of an object(s), such as length or weight, using appropriate vocabulary.	Everyday Length Everyday Mass Balancing Act How Full?
Measurement and Data	Describe and compare measurable attributes.	NY-K.MD.2	Directly compare two objects with a common measurable attribute and describe the difference.	Compare Length Which Holds More?
Measurement and Data	Classify objects and count the number of objects in each category.	NY-K.MD.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
Measurement and Data	Classify objects and count the number of objects in each category.	NY-K.MD.4	Explore coins (pennies, nickels, dimes, and quarters) and begin identifying pennies and dimes.	Pennies, Nickels, and Dimes
Geometry	Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).	NY-K.G.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>beside</i> , <i>in front of</i> , <i>behind</i> and <i>next to</i> .	Where is it? Left or Right?
Geometry	Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).	NY-K.G.2	Name shapes regardless of their orientation or overall size.	Collect the Shapes Collect Simple Shapes Match the Solid 1

## Kindergarten

Domain	Cluster	Standard	Standard Description	 Activities
Geometry	Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).	NY-K.G.3	Understand the difference between two-dimensional (lying in a plane, "flat") or three-dimensional ("solid") shapes.	Teacher directed
Geometry	Analyze, compare, sort, and compose shapes.	NY-K.G.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	Analyze, compare, and compose shapes.	NY-K.G.5	Model objects in their environment by building and/or drawing shapes.	Teacher directed
Geometry	Analyze, compare, and compose shapes.	NY-K.G.6	Compose larger shapes from simple shapes.	Teacher directed

# Grade 1

Domain	Cluster	Standard	Standard Description	 Activities
Operations and Algebraic Thinking	Represent and solve problems involving addition and subtraction.	NY-1.OA.1	Use addition and subtraction within 20 to solve one step word problems involving situations of adding to, taking from, putting together, taking apart, and/or 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	Represent and solve problems involving addition and subtraction.	NY-1.OA.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	Understand and apply properties of operations and the relationship between addition and subtraction.	NY-1.OA.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	Understand and apply properties of operations and the relationship between addition and subtraction.	NY-1.OA.4	Understand subtraction as an unknown-addend problem within 20.	Related Facts 1
Operations and Algebraic Thinking	Add and subtract within 20.	NY-1.OA.5	Relate counting to addition and subtraction.	Addition Facts
Operations and Algebraic Thinking	Add and subtract within 20.	NY-1.OA.6a	Add and subtract within 20. Use strategies such as: <ul style="list-style-type: none"> <li>counting on;</li> <li>making ten;</li> <li>decomposing a number leading to a ten;</li> <li>using the relationship between addition and subtraction; and</li> <li>creating equivalent but easier or known sums.</li> </ul>	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	Add and subtract within 20.	NY-1.OA.6b	Fluently add and subtract within 10.	Adding to Ten Subtracting from Ten
Operations and Algebraic Thinking	Work with addition and subtraction equations.	NY-1.OA.7	Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false.	Composing Numbers to 10 Composing Numbers to 20 Composing Additions to 20
Operations and Algebraic Thinking	Work with addition and subtraction equations.	NY-1.OA.8	Determine the unknown whole number in an addition or subtraction equation with the unknown in all positions.	Related Facts 1 Missing Numbers

# Grade 1

Domain	Cluster	Standard	Standard Description	Activities
Number and Operations in Base Ten	Extend the counting sequence.	NY-1.NBT.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	Understand place value.	NY-1.NBT.2	Understand that the two digits of a two-digit number represent amounts of tens and ones. a. Understand 10 can be thought of as a bundle of ten ones, called a "ten". b. Understand that the numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones. c. Understand that 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).	Place Value 1 Making Teen Numbers Groups of Ten Complements to 10, 20, 50
Number and Operations in Base Ten	Understand place value.	NY-1.NBT.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	Use place value understanding and properties of operations to add and subtract.	NY-1.NBT.4	Add within 100, including: <ul style="list-style-type: none"> <li>a two-digit number and a one-digit number;</li> <li>a two-digit number and a multiple of 10.</li> </ul> Use concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones, and sometimes it is necessary to compose a ten. Relate the strategy to a written method and explain the reasoning used.	Complements to 10, 20, 50 Columns that Add Addictive Addition
Number and Operations in Base Ten	Use place value understanding and properties of operations to add and subtract.	NY-1.NBT.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

# Grade 1

Domain	Cluster	Standard	Standard Description	Activities
Number and Operations in Base Ten	Use place value understanding and properties of operations to add and subtract.	NY-1.NBT.6	<p>Subtract multiples of 10 in the range 10–90 using:</p> <ul style="list-style-type: none"> <li>concrete models or drawings, and</li> <li>strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.</li> </ul> <p>Relate the strategy used to a written representation and explain the reasoning.</p>	Subtract Tens
Measurement and Data	Measure lengths indirectly and by iterating length units.	NY-1.MD.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	Measure lengths indirectly and by iterating length units.	NY-1.MD.2	Measure the length of an object using same-size “length units” placed end to end with no gaps or overlaps. Express the length of an object as a whole number of “unit lengths”.	Measuring length with blocks
Measurement and Data	Tell and write time and money.	NY-1.MD.3a	Tell and write time in hours and half-hours using analog and digital clocks. Develop an understanding of common terms, such as, but not limited to, <i>o’clock</i> and <i>half past</i> .	Hour Times Half Hour Times Tell Time to the Half Hour
Measurement and Data	Tell and write time and money.	NY-1.MD.3b	Recognize and identify coins (penny, nickel, dime, and quarter) and their value and use the cent symbol (¢) appropriately.	Pennies, Nickels, and Dimes
Measurement and Data	Tell and write time and money.	NY-1.MD.3c	Count a mixed collection of dimes and pennies and determine the cent value (total not to exceed 100 cents).	Count Money How Much Money?
Measurement and Data	Represent and interpret data.	NY-1.MD.4	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.	Who has the Goods? Pictographs Sorting Data 1
Geometry	Reason with shapes and their attributes.	NY-1.G.1	Distinguish between defining attributes versus non-defining attributes for a wide variety of shapes. Build and/or draw shapes to possess defining attributes.	Teacher directed

## Grade 1

Domain	Cluster	Standard	Standard Description	 Activities
Geometry	Reason with shapes and their attributes.	NY-1.G.2	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.	<ul style="list-style-type: none"> <li>Collect Simple Shapes</li> <li>Collect the Objects 2</li> <li>Match the Solid 2</li> </ul>
Geometry	Reason with shapes and their attributes.	NY-1.G.3	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 <i>two of</i> , or <i>four of</i> the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.	<ul style="list-style-type: none"> <li>Halves</li> <li>Halves and Quarters</li> </ul>

## Grade 2

Domain	Cluster	Standard	Standard Description	Activities
Operations and Algebraic Thinking	Represent and solve problems involving addition and subtraction.	NY-2.OA.1a	Use addition and subtraction within 100 to solve one-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	Represent and solve problems involving addition and subtraction.	NY-2.OA.1b	Use addition and subtraction within 100 to develop an understanding of solving two-step 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	Add and subtract within 20.	NY-2.OA.2a	Fluently add and subtract within 20 using mental strategies. Strategies could include: <ul style="list-style-type: none"> <li>counting on;</li> <li>making ten;</li> <li>decomposing a number leading to a ten;</li> <li>using the relationship between addition and subtraction; and</li> <li>creating equivalent but easier or known sums.</li> </ul>	Add to 18 Addition Facts to 18 Subtraction Facts to 18 Simple Subtraction Additive Addition Fact Families: Add and Subtract
Operations and Algebraic Thinking	Add and subtract within 20.	NY-2.OA.2b	Know from memory all sums within 20 of two one-digit numbers.	Add to 18 Addition Facts to 18 Subtraction Facts to 18 Simple Subtraction Additive Addition
Operations and Algebraic Thinking	Work with equal groups of objects to gain foundations for multiplication.	NY-2.OA.3a	Determine whether a group of objects (up to 20) has an odd or even number of members.	Odd or Even Count by Twos Counting by Twos
Operations and Algebraic Thinking	Work with equal groups of objects to gain foundations for multiplication.	NY-2.OA.3b	Write an equation to express an even number as a sum of two equal addends	Teacher directed
Operations and Algebraic Thinking	Work with equal groups of objects to gain foundations for multiplication.	NY-2.OA.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

## Grade 2

Domain	Cluster	Standard	Standard Description	Activities
Number and Operations in Base Ten	Understand place value.	NY-2.NBT.1	<p>Understand the three digits of a three-digit number represent amounts of hundreds, tens, and ones.</p> <p>a. Understand 100 can be thought of as a bundle of ten tens, called a “hundred”.</p> <p>b. Understand 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).</p>	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	Understand place value.	NY-2.NBT.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	Understand place value.	NY-2.NBT.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	Understand place value.	NY-2.NBT.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?
Number and Operations in Base Ten	Use place value understanding and properties of operations to add and subtract.	NY-2.NBT.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	Use place value understanding and properties of operations to add and subtract.	NY-2.NBT.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

## Grade 2

Domain	Cluster	Standard	Standard Description	Activities
Number and Operations in Base Ten	Use place value understanding and properties of operations to add and subtract.	NY-2.NBT.7a	Add and subtract within 1000, using <ul style="list-style-type: none"> <li>concrete models or drawings and</li> <li>strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.</li> </ul> Relate the strategy to a written representation.	Add Two 2-Digit Numbers Add Three 2-Digit Numbers Add 3-Digit Numbers 2-Digit Differences 3-Digit Differences 3-Digit Differences with Zeros
Number and Operations in Base Ten	Use place value understanding and properties of operations to add and subtract.	NY-2.NBT.7b	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: Regroup Add Three 2-Digit Numbers: Regroup Add 3-Digit Numbers: Regroup 2-Digit Differences: Regroup 3-Digit Differences: 1 Regrouping 3-Digit Differences: 2 Regroupings
Number and Operations in Base Ten	Use place value understanding and properties of operations to add and subtract.	NY-2.NBT.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 Mental Subtraction
Number and Operations in Base Ten	Use place value understanding and properties of operations to add and subtract.	NY-2.NBT.9	Explain why addition and subtraction strategies work, using place value and the properties of operations.	Teacher directed
Measurement and Data	Measure and estimate lengths in standard units.	NY-2.MD.1	Measure the length of an object to the nearest whole by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.	Measuring Length How Long Is That (Customary)? Measure to the Nearest Half Inch
Measurement and Data	Measure and estimate lengths in standard units.	NY-2.MD.2	Measure the length of an object twice, using different “length units” for the two measurements; describe how the two measurements relate to the size of the unit chosen.	Teacher directed
Measurement and Data	Measure and estimate lengths in standard units.	NY-2.MD.3	Estimate lengths using units of inches, feet, centimeters, and meters.	Inches, Feet, Yards
Measurement and Data	Measure and estimate lengths in standard units.	NY-2.MD.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

## Grade 2

Domain	Cluster	Standard	Standard Description	 Activities
Measurement and Data	Relate addition and subtraction to length.	NY-2.MD.5	Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units.	Teacher directed
Measurement and Data	Relate addition and subtraction to length.	NY-2.MD.6	Represent whole numbers as lengths from 0 on a number line with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line.	Number Lines
Measurement and Data	Work with time and money.	NY-2.MD.7	Tell and write time from analog and digital clocks in five minute increments, using a.m. and p.m. Develop an understanding of common terms, such as, but not limited to, <i>quarter past</i> , <i>half past</i> and <i>quarter to</i> .	Five Minute Times Quarter to and Quarter past
Measurement and Data	Work with time and money.	NY-2.MD.8a	Count a mixed collection of coins whose sum is less than or equal to one dollar.	Count Money Pennies, Nickels, and Dimes
Measurement and Data	Work with time and money.	NY-2.MD.8b	Solve real world and mathematical problems within one dollar involving quarters, dimes, nickels, and pennies, using the ¢ (cent) symbol appropriately.	Using Fewest Coins to Make an Amount Who's got the Money?
Measurement and Data	Represent and interpret data.	NY-2.MD.9	Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Present the measurement data in a line plot, where the horizontal scale is marked off in whole-number units.	Teacher directed
Measurement and Data	Represent and interpret data.	NY-2.MD.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
Geometry	Reason with shapes and their attributes.	NY-2.G.1	Classify two-dimensional figures as polygons or non-polygons.	Collect the Polygons Count Sides and Corners

## Grade 2

Domain	Cluster	Standard	Standard Description	 Activities
Geometry	Reason with shapes and their attributes.	NY-2.G.2	Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.	Teacher directed
Geometry	Reason with shapes and their attributes.	NY-2.G.3	Partition circles and rectangles into two, three, or four equal shares. Describe the shares using the words halves, thirds, half of, a third of, etc. Describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.	Shape Fractions Halves and Quarters

## Grade 3

Domain	Cluster	Standard	Standard Description	Activities
Operations and Algebraic Thinking	Represent and solve problems involving multiplication and division.	NY-3.OA.1	Interpret products of whole numbers.	<ul style="list-style-type: none"> <li>Groups of Two</li> <li>Groups of Three</li> <li>Groups of Four</li> <li>Groups of Five</li> <li>Groups of Six</li> <li>Groups of Seven</li> <li>Groups of Eight</li> <li>Groups of Nine</li> <li>Groups of Ten</li> <li>Times Tables</li> <li>Multiplication Arrays</li> <li>Multiplication Arrays</li> <li>Frog Jump Multiplication</li> <li>Multiplication Arrays</li> <li>Model Multiplication to 5 x 5</li> </ul>
Operations and Algebraic Thinking	Represent and solve problems involving multiplication and division.	NY-3.OA.2	Interpret whole-number quotients of whole numbers.	<ul style="list-style-type: none"> <li>Divide Into Equal Groups</li> <li>Dividing Threes</li> <li>Dividing Fours</li> <li>Dividing Fives</li> <li>Dividing Sixes</li> <li>Dividing Sevens</li> <li>Dividing Eights</li> <li>Dividing Nines</li> <li>Dividing Tens</li> <li>Division Facts</li> </ul>
Operations and Algebraic Thinking	Represent and solve problems involving multiplication and division.	NY-3.OA.3	Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities.	<ul style="list-style-type: none"> <li>Problems: Multiply and Divide</li> <li>I am Thinking of a Number!</li> <li>Word Problems with Letters</li> </ul>
Operations and Algebraic Thinking	Represent and solve problems involving multiplication and division.	NY-3.OA.4	Determine the unknown whole number in a multiplication or division equation relating three whole numbers.	<ul style="list-style-type: none"> <li>Related Facts 2</li> </ul>
Operations and Algebraic Thinking	Understand properties of multiplication and the relationship between multiplication and division.	NY-3.OA.5	Apply properties of operations as strategies to multiply and divide.	<ul style="list-style-type: none"> <li>Multiplication Turn-Abouts</li> <li>Fact Families: Multiply and Divide</li> </ul>
Operations and Algebraic Thinking	Understand properties of multiplication and the relationship between multiplication and division.	NY-3.OA.6	Understand division as an unknown-factor problem.	<ul style="list-style-type: none"> <li>Related Facts 2</li> <li>Division Facts</li> <li>Multiplication Facts</li> </ul>

## Grade 3

Domain	Cluster	Standard	Standard Description	 Activities
Operations and Algebraic Thinking	Multiply and divide within 100.	NY-3.OA.7a	Fluently solve single-digit multiplication and related divisions, using strategies such as the relationship between multiplication and division or properties of operations.	Related Facts 2 Fact Families: Multiply and Divide
Operations and Algebraic Thinking	Multiply and divide within 100.	NY-3.OA.7b	Know from memory all products of two one-digit numbers.	Times Tables
Operations and Algebraic Thinking	Solve problems involving the four operations, and identify and extend patterns in arithmetic.	NY-3.OA.8	Solve two-step word problems posed with whole numbers and having whole-number answers using the four operations. a. Represent these problems using equations or expressions with a letter standing for the unknown quantity. b. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.	Problems: Multiply and Divide Word Problems with Letters I am Thinking of a Number!
Operations and Algebraic Thinking	Solve problems involving the four operations, and identify and extend patterns in arithmetic.	NY-3.OA.9	Identify and extend arithmetic patterns (including patterns in the addition table or multiplication table).	Increasing Patterns Decreasing Patterns
Number and Operations in Base Ten	Use place value understanding and properties of operations to perform multi-digit arithmetic.	NY-3.NBT.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	Use place value understanding and properties of operations to perform multi-digit arithmetic.	NY-3.NBT.2	Fluently add and subtract within 1,000 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

## Grade 3

Domain	Cluster	Standard	Standard Description	Activities
Number and Operations in Base Ten	Use place value understanding and properties of operations to perform multi-digit arithmetic.	NY-3.NBT.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 in Base Ten	Use place value understanding and properties of operations to perform multi-digit arithmetic.	NY-3.NBT.4a	Understand that the four digits of a four-digit number represent amounts of thousands, hundreds, tens and ones.	Place value 3 Understanding Place Value 1 Place Value 1 (x 10 and ÷ 10)
Number and Operations in Base Ten	Use place value understanding and properties of operations to perform multi-digit arithmetic.	NY-3.NBT.4b	Read and write four-digit numbers using base-ten numerals, number names and expanded form.	Place Value – Thousands Place Value to Thousands Expanding Numbers
Number and Operations – Fractions	Develop understanding of fractions as numbers.	NY-3.NF.1	Understand a unit fraction $\frac{1}{b}$ as the quantity formed by 1 part when a whole is partitioned into $b$ equal parts. Understand a fraction $\frac{a}{b}$ is the quantity formed by $a$ parts of size $\frac{1}{b}$ .	Fractions Model Fractions What Fraction Is Shaded? Halves and Quarters Thirds and Sixths
Number and Operations – Fractions	Develop understanding of fractions as numbers.	NY-3.NF.2	Understand a fraction as a number on the number line; represent fractions on a number line. a. Represent a fraction $\frac{1}{b}$ on a number line by defining the interval from 0 to 1 as the whole and partitioning it into $b$ equal parts. Recognize that each part has size $\frac{1}{b}$ and that the endpoint of the part starting at 0 locates the number $\frac{1}{b}$ on the number line. b. Represent a fraction $\frac{a}{b}$ on a number line by marking off $a$ lengths $\frac{1}{b}$ from 0. Recognize that the resulting interval has size $\frac{a}{b}$ and that its endpoint locates the number $\frac{a}{b}$ on the number line.	Counting with Fractions on a Number Line

## Grade 3

Domain	Cluster	Standard	Standard Description	Activities
Number and Operations – Fractions	Develop understanding of fractions as numbers.	NY-3.NF.3	<p>Explain equivalence of fractions 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 rely on the two fractions referring 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	Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.	NY-3.MD.1	Tell and write time to the nearest minute and measure time intervals in minutes. Solve one-step word problems involving addition and subtraction of time intervals in minutes.	What is the Time? Time Mentals Half Hour Times Elapsed Times
Measurement and Data	Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.	NY-3.MD.2a	Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).	How Full? Comparing Volume Cups, Pints, Quarts, Gallons Grams and Milligrams Milliliters and Liters Grams and Kilograms
Measurement and Data	Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.	NY-3.MD.2b	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
Measurement and Data	Represent and interpret data.	NY-3.MD.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 a scaled picture graph or a scaled bar graph.	Making Graphs Pictographs Bar Graphs 1 Bar Graphs 2 Add and Subtract Using Graphs Picture Graphs: with scale & half symbols

## Grade 3

Domain	Cluster	Standard	Standard Description	Activities
Measurement and Data	Represent and interpret data.	NY-3.MD.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	Geometric measurement: understand concepts of area and relate area to multiplication and to addition.	NY-3.MD.5	Recognize area as an attribute of plane figures and understand concepts of area measurement. <ol style="list-style-type: none"> <li>Recognize 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.</li> <li>Recognize a plane figure which can be covered without gaps or overlaps by <math>n</math> unit squares is said to have an area of <math>n</math> square units.</li> </ol>	Equal Areas Bigger or Smaller Shape
Measurement and Data	Geometric measurement: understand concepts of area and relate area to multiplication and to addition.	NY-3.MD.6	Measure areas by counting unit squares.	Area of Shapes Area of Shapes (inches, feet, yards)
Measurement and Data	Geometric measurement: understand concepts of area and relate area to multiplication and to addition.	NY-3.MD.7	Relate area to the operations of multiplication and addition. <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 length <math>a</math> and side length <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 figures composed of non-overlapping rectangles, and apply this technique to solve real world problems.</li> </ol>	Area of Shapes Area of Squares and Rectangles Area of Shapes (inches, feet, yards) Area of Compound Figures

## Grade 3

Domain	Cluster	Standard	Standard Description	 Activities
Measurement and Data	Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.	NY-3.MD.8a	Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths or finding one unknown side length given the perimeter and other side lengths.	Area of Shapes (inches, feet, yards) Perimeter Perimeter: Squares and Rectangles Perimeter Detectives 1 Perimeter of Shapes
Measurement and Data	Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.	NY-3.MD.8b	Identify rectangles with the same perimeter and different areas or with the same area and different perimeters.	Perimeter: Squares and Rectangles
Geometry	Reason with shapes and their attributes.	NY-3.G.1	Recognize and classify polygons based on the number of sides and vertices (triangles, quadrilaterals, pentagons, and hexagons). Identify shapes that do not belong to one of the given subcategories.	Shapes Collect the Shapes 1 Collect the Shapes 2 Collect More Shapes Collect the Polygons Relate Shapes and Solids Count Sides and Corners
Geometry	Reason with shapes and their attributes.	NY-3.G.2	Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole.	Shade Fractions

## Grade 4

Domain	Cluster	Standard	Standard Description	 Activities
Operations and Algebraic Thinking	Use the four operations with whole numbers to solve problems.	NY-4.OA.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	Use the four operations with whole numbers to solve problems.	NY-4.OA.2	Multiply or divide to solve word problems involving multiplicative comparison. Use drawings and equations with a symbol for the unknown number to represent the problem.	Find the Missing Number 1 Find the Missing Number 2
Operations and Algebraic Thinking	Use the four operations with whole numbers to solve problems.	NY-4.OA.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. a. Represent these problems using equations or expressions with a letter standing for the unknown quantity. b. 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	Gain familiarity with factors and multiples.	NY-4.OA.4	Find all factor pairs for a whole number in the range 1–100. 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. 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	Generate and analyze patterns.	NY-4.OA.5	Generate a number or shape pattern that follows a given rule. Identify and informally explain apparent features of the pattern that were not explicit in the rule itself.	Increasing Patterns Decreasing Patterns
Number and Operations in Base Ten	Generalize place value understanding for multi-digit whole numbers.	NY-4.NBT.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	Generalize place value understanding for multi-digit whole numbers.	NY-4.NBT.2a	Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form.	Numbers from Words to Digits 1 Numbers from Words to Digits 2 Expanded Notation Expanding Numbers Place Value to Millions Place Value 3

## Grade 4

Domain	Cluster	Standard	Standard Description	 Activities
Number and Operations in Base Ten	Generalize place value understanding for multi-digit whole numbers.	NY-4.NBT.2b	Compare two multi-digit numbers based on meanings of the digits in each place, using $>$ , $=$ and $<$ symbols to record the results of comparisons.	Greater Than or Less Than? Comparing Numbers
Number and Operations in Base Ten	Generalize place value understanding for multi-digit whole numbers.	NY-4.NBT.3	Use place value understanding to round multi-digit whole numbers to any place.	Rounding Numbers Nearest Thousand?
Number and Operations in Base Ten	Use place value understanding and properties of operations to perform multi-digit arithmetic.	NY-4.NBT.4	Fluently add and subtract multi-digit whole numbers using a 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	Use place value understanding and properties of operations to perform multi-digit arithmetic.	NY-4.NBT.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 $\times \div$ Contracted Multiplication Estimate Products Double and Halve to Multiply
Number and Operations in Base Ten	Use place value understanding and properties of operations to perform multi-digit arithmetic.	NY-4.NBT.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 $\times \div$ 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	Extend understanding of fraction equivalence and ordering.	NY-4.NF.1	Explain why a fraction $a/b$ is equivalent to a fraction $(a \times n)/(b \times n)$ 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

## Grade 4

Domain	Cluster	Standard	Standard Description	 Activities
Number and Operations – Fractions	Extend understanding of fraction equivalence and ordering.	NY-4.NF.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
Number and Operations – Fractions	Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.	NY-4.NF.3	Understand a fraction $a/b$ with $a > 1$ as a sum of fractions $1/b$ . a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. b. 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. c. Add and subtract mixed numbers with like denominators. d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators.	Add subtract fractions 1 Add Like Mixed Numbers Subtract Like Mixed Numbers
Number and Operations – Fractions	Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.	NY-4.NF.4	Apply and extend previous understandings of multiplication to multiply a whole number by a fraction. a. Understand a fraction $a/b$ as a multiple of $1/b$ . b. Understand a multiple of $a/b$ as a multiple of $1/b$ , and use this understanding to multiply a whole number by a fraction. c. Solve word problems involving multiplication of a whole number by a fraction.	Unit Fractions Fraction by Whole Number Model Fractions to Multiply Fraction Fruit Sets 2
Number and Operations – Fractions	Understand decimal notation for fractions, and compare decimal fractions.	NY-4.NF.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	Understand decimal notation for fractions, and compare decimal fractions.	NY-4.NF.6	Use decimal notation for fractions with denominators 10 or 100.	Decimals on the Number Line Measuring Length

## Grade 4

Domain	Cluster	Standard	Standard Description	 Activities
Number and Operations – Fractions	Understand decimal notation for fractions, and compare decimal fractions.	NY-4.NF.7	Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when two decimals refer to the same whole. Record the results of comparisons with the symbols $>$ , $=$ , or $<$ , and justify the conclusions.	Decimal Order 1 Comparing Decimals 1
Measurement and Data	Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.	NY-4.MD.1	Know relative sizes of units: ft., in.; km, m, cm.  Know the conversion factor and use it to convert measurements in a larger unit in terms of a smaller unit; ft., in.; km, m, cm; hr., min., sec. Given the conversion factor, convert all other measurements within a single of measurement from a larger unit to 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	Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.	NY-4.MD.2	Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money. a. Solve problems involving fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. b. Represent measurement quantities using diagrams that feature a measurement scale, such as number lines.	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	Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.	NY-4.MD.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	Represent and interpret data.	NY-4.MD.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

## Grade 4

Domain	Cluster	Standard	Standard Description	Activities
Measurement and Data	Geometric measurement: understand concepts of angle and measure angles.	NY-4.MD.5	<p>Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement.</p> <p>a. Recognize 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.</p> <p>b. Recognize an angle that turns through <math>n</math> one-degree angles is said to have an angle measure of <math>n</math> degrees.</p>	<p>Comparing Angles</p> <p>Equal Angles</p> <p>Estimating Angles</p>
Measurement and Data	Geometric measurement: understand concepts of angle and measure angles.	NY-4.MD.6	Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.	<p>Classifying Angles</p> <p>What Type of Angle?</p> <p>Measuring Angles</p>
Measurement and Data	Geometric measurement: understand concepts of angle and measure angles.	NY-4.MD.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.	<p>Angles of Revolution: Unknown Values</p> <p>Angles of Revolution: Value of <math>x</math></p> <p>Angle Measures in a Triangle</p>
Geometry	Draw and identify lines and angles, and classify shapes by properties of their lines and angles.	NY-4.G.1	Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.	<p>Labelling Angles</p> <p>What Line Am I?</p> <p>Right Angle Relation</p> <p>Triangles; Acute, Right, Obtuse Sides, Angles and Diagonals</p>
Geometry	Draw and identify lines and angles, and classify shapes by properties of their lines and angles.	NY-4.G.2a	Identify and name triangles based on angle size (right, obtuse, acute).	<p>Classifying Angles</p> <p>Collect the Shapes 2 Shapes</p>
Geometry	Draw and identify lines and angles, and classify shapes by properties of their lines and angles.	NY-4.G.2b	Identify and name all quadrilaterals with 2 pairs of parallel sides as parallelograms.	Teacher directed

## Grade 4

Domain	Cluster	Standard	Standard Description	 Activities
Geometry	Draw and identify lines and angles, and classify shapes by properties of their lines and angles.	NY-4.G.2c	Identify and name all quadrilaterals with four right angles as rectangles.	Teacher directed
Geometry	Draw and identify lines and angles, and classify shapes by properties of their lines and angles.	NY-4.G.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	Standard Description	 Activities
Operations and Algebraic Thinking	Write and interpret numerical expressions.	NY-5.OA.1	Apply the order of operations to evaluate numerical expressions.	Order of Operations 1
Operations and Algebraic Thinking	Write and interpret numerical expressions.	NY-5.OA.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	Analyze patterns and relationships.	NY-5.OA.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	Understand the place value system.	NY-5.NBT.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 $1/10$ 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	Understand the place value system.	NY-5.NBT.2	Use whole-number exponents to denote powers of 10. 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.	Multiply Decimals and Powers of 10 Divide by Powers of 10
Number and Operations in Base Ten	Understand the place value system.	NY-5.NBT.3	Read, write, and compare decimals to thousandths. a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form. b. Compare two decimals to thousandths based on meanings of the digits in each place, using $>$ , $=$ , and $<$ symbols to record the results of comparisons.	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	Understand the place value system.	NY-5.NBT.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	Perform operations with multi-digit whole numbers and with decimals to hundredths.	NY-5.NBT.5	Fluently multiply multi-digit whole numbers using a standard algorithm.	Multiply: 2-Digit Number, Regroup Long Multiplication

## Grade 5

Domain	Cluster	Standard	Standard Description	 Activities
Number and Operations in Base Ten	Perform operations with multi-digit whole numbers and with decimals to hundredths.	NY-5.NBT.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
Number and Operations in Base Ten	Perform operations with multi-digit whole numbers and with decimals to hundredths.	NY-5.NBT.7	Using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between operations: <ul style="list-style-type: none"> <li>• add and subtract decimals to hundredths;</li> <li>• multiply and divide decimals to hundredths.</li> </ul> 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	Use equivalent fractions as a strategy to add and subtract fractions.	NY-5.NF.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	Use equivalent fractions as a strategy to add and subtract fractions.	NY-5.NF.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	Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	NY-5.NF.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

## Grade 5

Domain	Cluster	Standard	Standard Description	Activities
Number and Operations — Fractions	Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	NY-5.NF.4	<p>Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.</p> <p>a. Interpret the product <math>(a/b) \times q</math> as <math>a</math> parts of a partition of <math>q</math> into <math>b</math> equal parts; equivalently, as the result of a sequence of operations <math>a \times q \div b</math>.</p> <p>b. Find the area of a rectangle with fractional side lengths by tiling it with rectangles 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.</p>	 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
Number and Operations — Fractions	Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	NY-5.NF.5	<p>Interpret multiplication as scaling (resizing).</p> <p>a. Compare 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.</p> <p>b. Explain 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. Explain why multiplying a given number by a fraction less than 1 results in a product smaller than the given number. Relate the principle of fraction equivalence <math>a/b = a/b \times n/n</math> to the effect of multiplying <math>a/b</math> by 1.</p>	Teacher directed
Number and Operations — Fractions	Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	NY-5.NF.6	Solve real world problems involving multiplication of fractions and mixed numbers.	Estimate Products with Fractions

## Grade 5

Domain	Cluster	Standard	Standard Description	Activities
Number and Operations – Fractions	Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	NY-5.NF.7	<p>Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.</p> <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	Convert like measurement units within a given measurement system.	NY-5.MD.1	Convert among different-sized standard measurement units within a given measurement system when the conversion factor is given. 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
Measurement and Data	Represent and interpret data.	NY-5.MD.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	Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.	NY-5.MD.3	<p>Recognize volume as an attribute of solid figures and understand concepts of volume measurement.</p> <ol style="list-style-type: none"> <li>Recognize that 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>Recognize that 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	Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.	NY-5.MD.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?

## Grade 5

Domain	Cluster	Standard	Standard Description	Activities
Measurement and Data	Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.	NY-5.MD.5	<p>Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.</p> <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.</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>	<p>Volume: Rectangular Prisms 1</p> <p>Volume: Rectangular Prisms 2</p>
Geometry	Graph points on the coordinate plane to solve real-world and mathematical problems.	NY-5.G.1	<p>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.</p>	Coordinate Graphs: 1st Quadrant
Geometry	Graph points on the coordinate plane to solve real-world and mathematical problems.	NY-5.G.2	<p>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.</p>	Coordinate Graphs: 1st Quadrant
Geometry	Classify two-dimensional figures into categories based on their properties.	NY-5.G.3	<p>Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.</p>	<p>Sides, Angles and Diagonals</p> <p>Collect More Shapes</p> <p>Collect the Shapes 2</p> <p>Collect the Polygons</p> <p>Properties of Quadrilaterals</p>

## Grade 5

Domain	Cluster	Standard	Standard Description	 Activities
Geometry	Classify two-dimensional figures into categories based on their properties.	NY-5.G.4	Classify two-dimensional figures in a hierarchy based on properties.	Teacher directed

## Grade 6

Domain	Cluster	Standard	Standard Description	Activities
Ratios and Proportional Relationships	Understand ratio concepts and use ratio reasoning to solve problems.	NY-6.RP.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 and Proportional Relationships	Understand ratio concepts and use ratio reasoning to solve problems.	NY-6.RP.2	Understand the concept of a unit rate $a/b$ associated with a ratio $a : b$ with $b \neq 0$ ( $b$ not equal to zero), and use rate language in the context of a ratio relationship.	Unitary Method Rates
Ratios and Proportional Relationships	Understand ratio concepts and use ratio reasoning to solve problems.	NY-6.RP.3	Use ratio and rate reasoning to solve real-world and mathematical problems.	Tables of Values Reading Values from a Line Graphing from a Table of Values Average Speed Best Buy
			a. 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.	
			b. Solve unit rate problems	Rate Word Problems
			c. Find a percent of a quantity as a rate per 100. Solve problems that involve finding the whole given a part and the percent, and finding a part of a whole given the percent.	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)
			d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.	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
The Number System	Apply and extend previous understandings of multiplication and division to divide fractions by fractions.	NY-6.NS.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	Compute fluently with multi-digit numbers and find common factors and multiples.	NY-6.NS.2	Fluently divide multi-digit numbers using a standard algorithm.	Divide: 1-Digit Divisor 2 Divide: 2-Digit Divisor, Remainder

## Grade 6

Domain	Cluster	Standard	Standard Description	Activities
The Number System	Compute fluently with multi-digit numbers and find common factors and multiples.	NY-6.NS.3	Fluently add, subtract, multiply, and divide multi-digit decimals using a standard algorithm for each operation.	Adding Decimals Subtracting Decimals Multiply Decimals 1 Decimal by Decimal Divide Decimal by Whole Number Divide Decimal by Decimal
The Number System	Compute fluently with multi-digit numbers and find common factors and multiples.	NY-6.NS.4	Find the greatest common factor of two whole numbers less than or equal to 100. 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 other than 1. Find the least common multiple of two whole numbers less than or equal to 12.	Greatest Common Factor Least Common Multiple
The Number System	Apply and extend previous understandings of numbers to the system of rational numbers.	NY-6.NS.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 The Number System	Apply and extend previous understandings of numbers to the system of rational numbers. Apply and extend previous understandings of numbers to the system of rational numbers.	NY-6.NS.6	Understand a rational number as a point on the number line. Use number lines and coordinate axes to represent points on a number line and in the coordinate plane with negative number coordinates. a. 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. b. 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. c. Find and position integers and other rational numbers on a horizontal or vertical number line. Find and position pairs of integers and other rational numbers on a coordinate plane.	Ordering Integers Integers on a Number Line Comparing Integers Number Plane Ordered Pairs Vertical and horizontal shift

## Grade 6

Domain	Cluster	Standard	Standard Description	Activities
The Number System	Apply and extend previous understandings of numbers to the system of rational numbers.	NY-6.NS.7	<p>Understand ordering and absolute value of rational numbers.</p> <ol style="list-style-type: none"> <li>Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.</li> <li>Write, interpret, and explain statements of order for rational numbers in real-world contexts.</li> <li>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.</li> <li>Distinguish comparisons of absolute value from statements about order.</li> </ol>	Absolute Value
The Number System	Apply and extend previous understandings of numbers to the system of rational numbers.	NY-6.NS.8	<p>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.</p>	Number Plane Ordered Pairs Graphing from a Table of Values Graphing from a Table of Values 2 Vertical and horizontal shift
Expressions, Equations and Inequalities	Apply and extend previous understandings of arithmetic to algebraic expressions.	NY-6.EE.1	<p>Write and evaluate numerical expressions involving whole-number exponents.</p>	Exponent Notation Properties of Exponents Exponent Laws and Algebra
Expressions, Equations and Inequalities	Apply and extend previous understandings of arithmetic to algebraic expressions.	NY-6.EE.2	<p>Write, read, and evaluate expressions in which letters stand for numbers.</p> <ol style="list-style-type: none"> <li>Write expressions that record operations with numbers and with letters standing for numbers.</li> <li>Identify parts of an expression using mathematical terms (term, coefficient, sum, difference, product, factor and quotient); view one or more parts of an expression as a single entity.</li> <li>Evaluate expressions given specific values for their variables. Include expressions that arise from formulas in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order. (Order of Operations).</li> </ol>	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)

## Grade 6

Domain	Cluster	Standard	Standard Description	Activities
Expressions, Equations and Inequalities	Apply and extend previous understandings of arithmetic to algebraic expressions.	NY-6.EE.3	Apply the properties of operations to generate equivalent expressions.	Recognizing Like Terms Like Terms: Add, Subtract
Expressions, Equations and Inequalities	Apply and extend previous understandings of arithmetic to algebraic expressions.	NY-6.EE.4	Identify when two expressions are equivalent.	Recognizing Like Terms
Expressions, Equations and Inequalities	Reason about and solve one-variable equations and inequalities.	NY-6.EE.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 and Inequalities	Reason about and solve one-variable equations and inequalities .	NY-6.EE.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 and Inequalities	Reason about and solve one-variable equations and inequalities.	NY-6.EE.7	Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ ; $x - p = q$ ; $px = q$ ; and $x/p = q$ for cases in which $p, q$ and $x$ are all nonnegative 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 and Inequalities	Reason about and solve one-variable equations and inequalities.	NY-6.EE.8	Write an inequality of the form $x > c$ , $x \geq c$ , $x \leq c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of these forms have infinitely many solutions; represent solutions of such inequalities on a number line.	Solve One-Step Inequalities 1 Solve One-Step Inequalities 2 Solve Two-Step Inequalities
Expressions, Equations and Inequalities	Represent and analyze quantitative relationships between dependent and independent variables.	NY-6.EE.9	Use variables to represent two quantities in a real-world problem that change in relationship to one another. Given a verbal context and an equation, identify 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

## Grade 6

Domain	Cluster	Standard	Standard Description	Activities
Geometry	Solve real-world and mathematical problems involving area, surface area, and volume.	NY-6.G.1	Find area of triangles, trapezoids, parallelograms, and other polygons by composing into rectangles or decomposing into triangles and quadrilaterals. 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
Geometry	Solve real-world and mathematical problems involving area, surface area, and volume.	NY-6.G.2	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	Solve real-world and mathematical problems involving area, surface area, and volume.	NY-6.G.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	Solve real-world and mathematical problems involving area, surface area, and volume.	NY-6.G.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
Geometry	Solve real-world and mathematical problems involving area, surface area, and volume.	NY-6.G.5	Use area and volume models to explain perfect squares and perfect cubes.	Teacher directed
Statistics and Probability	Develop understanding of statistical variability.	NY-6.SP.1a	Recognize that a statistical question is one that anticipates variability in the data related to the question and accounts for it in the answers.	Methods of Data Sampling
Statistics and Probability	Develop understanding of statistical variability	NY-6.SP.1b	Understand that statistics can be used to gain information about the 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.	Teacher directed

## Grade 6

Domain	Cluster	Standard	Standard Description	Activities
Statistics and Probability	Develop understanding of statistical variability	NY-6.SP.1c	Understand that the method and sample size used to collect data for a particular question is intended to reduce the difference between a population and a sample taken from the population so valid inferences can be drawn about the population. Generate multiple samples (or simulated samples) of the same size to recognize the variation in estimates or predictions.	Teacher directed
Statistics and Probability	Develop understanding of statistical variability.	NY-6.SP.2	Understand that a set of quantitative data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.	Data Terms
Statistics and Probability	Develop understanding of statistical variability.	NY-6.SP.3	Recognize that a measure of center for a quantitative 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 and Probability	Summarize and describe distributions.	NY-6.SP.4	Display quantitative data in plots on a number line, including dot plots, and histograms.	Dot Plots Histograms Histograms for Grouped Data
Statistics and Probability	Summarize and describe distributions.	NY-6.SP.5	Summarize quantitative data sets in relation to their context. <ol style="list-style-type: none"> <li>Report the number of observations.</li> <li>Describe the nature of the attribute under investigation, including how it was measured and its units of measurement.</li> <li>Calculate range and measures of center, as well as describe any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data was gathered.</li> <li>Relate the range and the choice of measures of center to the shape of the data distribution and the context in which the data was gathered.</li> </ol>	Mode Median Mean Frequency Histograms Data Extremes and Range Mode from Frequency Table Median from Frequency Mean from Frequency Table Calculating Interquartile Range
Statistics and Probability	Investigate chance processes and develop, use and evaluate probability models.	NY-6.SP.6	Understand that the probability of a chance event is a number between 0 and 1 inclusive, that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.	Probability Scale Introductory Probability

## Grade 6

Domain	Cluster	Standard	Standard Description	 Activities
Statistics and Probability	Investigate chance processes and develop, use and evaluate probability models.	NY-6.SP.7	Approximate the probability of a chance simple 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.	Teacher directed
Statistics and Probability	Investigate chance processes and develop, use and evaluate probability models.	NY-6.SP.8	<p>Develop a probability model and use it to find the probabilities of simple events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.</p> <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 simple events.</li> <li>Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.</li> </ol>	Find the Probability Simple Probability

## Grade 7

Domain	Cluster	Standard	Standard Description	Activities
Ratios and Proportional Relationships	Analyze proportional relationships and use them to solve real-world and mathematical problems.	NY-7.RP.1	Compute unit rates associated with ratios of fractions.	Proportional Relationships Rate Word Problems Rates Calculations Rates Solve Proportions Converting Rates Distance Travelled Average Speed Time Taken
Ratios and Proportional Relationships	Analyze proportional relationships and use them to solve real-world and mathematical problems.	NY-7.RP.2	Recognize and represent proportional relationships between quantities. <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 a proportional relationship using an equation.</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 point <math>(0, 0)</math> and <math>(1, r)</math> where <math>r</math> is the unit rate.</li> </ol>	Best Buy Travel Graphs $y=ax$ Conversion Graphs
Ratios and Proportional Relationships	Analyze proportional relationships and use them to solve real-world and mathematical problems.	NY-7.RP.3	Use proportional relationships to solve multistep ratio and percent problems.	Word Problems: Ratio Scale Factor Ratio Word Problems Scale Measurement Ratio and Proportion Wages and Salaries Working Overtime Special Allowances Piecework and Royalties Commission What Percentage? Percentage Change: Increase and Decrease Percent Increase and Decrease Solve Percent Equations Percentage Word Problems Percentage Error Error in Measurement Successive Discounts Profit and Loss Simple Interest

## Grade 7

Domain	Cluster	Standard	Standard Description	 Activities
The Number System	Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	NY-7.NS.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.</p> <ol style="list-style-type: none"> <li>Describe situations in which opposite quantities combine to make 0.</li> <li>Understand addition of rational numbers; <math>p + q</math> is 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 Directed Numbers

## Grade 7

Domain	Cluster	Standard	Standard Description	Activities
The Number System	Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	NY-7.NS.2	<p>Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.</p> <p>a. 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.</p> <p>b. 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.</p> <p>c. Apply properties of operations as strategies to multiply and divide rational numbers.</p> <p>d. Convert a fraction to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.</p>	<p>Integers: Multiplication and Division</p> <p>Multiplying and Dividing Integers</p> <p>Powers of Integers</p> <p>Multiply Two Fractions 2</p> <p>Divide Fractions by Fractions 2</p> <p>Operations with Fractions</p> <p>Divide Mixed Numbers with Signs</p> <p>Fractions to Decimals 2</p>
The Number System	Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	NY-7.NS.3	Solve real-world and mathematical problems involving the four operations with rational numbers.	<p>Fraction Word Problems</p> <p>More Fraction Problems</p> <p>Integers: Order of Operations (PEMDAS)</p> <p>Exponent Form to Numbers</p> <p>Integers: Operations Order</p>
Expressions, Equations, and Inequalities	Use properties of operations to generate equivalent expressions.	NY-7.EE.1	Add, subtract, factor, and expand linear expressions with rational coefficients by applying the properties of operations.	<p>Algebraic Fractions 1</p> <p>Using the Distributive Property</p> <p>Factoring</p>
Expressions, Equations, and Inequalities	Use properties of operations to generate equivalent expressions.	NY-7.EE.2	Understand that rewriting an expression in different forms in real-world and mathematical problems can reveal and explain how the quantities are related.	Teacher directed

## Grade 7

Domain	Cluster	Standard	Standard Description	 Activities
Expressions, Equations, and Inequalities	Solve real-life and mathematical problems using numerical and algebraic expressions, equations and inequalities.	NY-7.EE.3	Solve multi-step real-world 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. 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, and Inequalities	Solve real-life and mathematical problems using numerical and algebraic expressions, equations, and inequalities.	NY-7.EE.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 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 $px + q > r$ , $px + q \geq r$ , $px + q \leq r$ , or $px + q < r$ , where $p$ , $q$ and $r$ are rational numbers. Graph the solution set of the inequality on the number line 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	Draw, construct and describe geometrical figures and describe the relationships between them.	NY-7.G.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
Geometry	Draw, construct and describe geometrical figures and describe the relationships between them.	NY-7.G.2	Draw triangles when given measures of angles and/or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.	Teacher directed
Geometry	Draw, construct and describe geometrical figures and describe the relationships between them.	NY-7.G.3	Describe the two-dimensional shapes that result from slicing three-dimensional solids parallel or perpendicular to the base.	Teacher directed

## Grade 7

Domain	Cluster	Standard	Standard Description	 Activities
Geometry	Solve real-life and mathematical problems involving angle measure, area, surface area and volume.	NY-7.G.4	Apply the formulas for the area and circumference of a circle to solve problems.	Calculate Circumference of Circles Area: Circles 1 Area: Circles 2 Area: Annulus
Geometry	Solve real-life and mathematical problems involving angle measure, area, surface area and volume.	NY-7.G.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	Solve real-life and mathematical problems involving angle measure, area, surface area and volume.	NY-7.G.6	Solve real-world and mathematical problems involving area of two-dimensional objects composed of triangles and trapezoids. Solve surface area problems involving right prisms and right pyramids composed of triangles and trapezoids. Find the volume of right triangular prisms, and solve volume problems involving three-dimensional objects composed of right rectangular 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 and Probability	Draw informal comparative inferences about two populations.	NY-7.SP.1	Construct and interpret box-plots, find the interquartile range and determine if a data point is an outlier.	Box-and-Whisker Plots 1 Box-and-Whisker Plots 2
Statistics and Probability	Draw informal comparative inferences about two populations.	NY-7.SP.3	Informally assess the degree of visual overlap of two quantitative data distributions.	Teacher directed
Statistics and Probability	Draw informal comparative inferences about two populations.	NY-7.SP.4	Use measures of center and measures of variability for quantitative data from random samples or populations to draw informal comparative inferences about the populations.	Teacher directed

## Grade 7

Domain	Cluster	Standard	Standard Description	 Activities
Statistics and Probability	Investigate chance processes and develop, use and evaluate probability models.	NY-7.SP.8	<p>Find probabilities of compound events using organized lists, sample space tables, tree diagrams, and simulation.</p> <ul style="list-style-type: none"> <li>a. 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>b. Represent sample spaces for compound events using methods such as organized lists, sample space tables and tree diagrams. For an event described in everyday language, identify the outcomes in the sample space which compose the event.</li> <li>c. Design and use a simulation to generate frequencies for compound events.</li> </ul>	Chance Dial Relative Frequency Probability Tables Counting Principle Counting Techniques 1 Dice and Coins Probability- Replacement

## Grade 8

Domain	Cluster	Standard	Standard Description	 Activities
The Number System	Know that there are numbers that are not rational and approximate them by rational numbers.	NY-8.NS.1	Understand informally that every number has a decimal expansion; the rational numbers show that the decimal expansion eventually repeats. Know that other numbers that are not rational are called irrational.	<ul style="list-style-type: none"> <li>Recurring Decimals</li> <li>Estimate Square Roots</li> <li>Simplifying Irrational Numbers</li> <li>Multiplying Irrational Numbers</li> <li>Dividing Irrational Numbers</li> <li>Adding and Subtracting Irrational Numbers</li> </ul>
The Number System	Know that there are numbers that are not rational and approximate them by rational numbers.	NY-8.NS.2	Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line, and estimate the value of expressions.	<ul style="list-style-type: none"> <li>Simplifying Irrational Numbers</li> <li>Ordering Scientific Notation</li> </ul>
Expressions, Equations, and Inequalities	Work with radicals and integer exponents.	NY-8.EE.1	Know and apply the properties of integer exponents to generate equivalent numerical expressions.	<ul style="list-style-type: none"> <li>Algebraic Multiplication</li> <li>Zero Exponent and Algebra</li> <li>The Zero Exponent</li> <li>Simplifying with Exponential Laws 2</li> <li>Multiplication with Exponents</li> <li>Fractional Exponents</li> <li>Properties of Exponents</li> <li>Exponents</li> <li>Exponent Notation and Algebra</li> <li>Powers of Integers</li> <li>Powers and Patterns</li> <li>Rationalising and Binomials</li> </ul>
Expressions, Equations, and Inequalities	Work with radicals and integer exponents.	NY-8.EE.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. Know square roots of perfect squares up to 225 and cube roots of perfect cubes up to 125. Know that the square root of a non-perfect square is irrational.	<ul style="list-style-type: none"> <li>Estimate Square Roots</li> <li>Square and Cube Roots</li> <li>Estimating Cube Roots</li> <li>Square Roots</li> </ul>
Expressions, Equations, and Inequalities	Work with radicals and integer exponents.	NY-8.EE.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.	<ul style="list-style-type: none"> <li>Scientific Notation</li> <li>Scientific Notation 1</li> <li>Scientific Notation 2</li> <li>Scientific notation to decimal</li> <li>Ordering Scientific Notation</li> </ul>

## Grade 8

Domain	Cluster	Standard	Standard Description	 Activities
Expressions, Equations, and Inequalities	Work with radicals and integer exponents.	NY-8.EE.4	Perform multiplication and division with numbers expressed in scientific notation, including problems where both standard decimal form 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, and Inequalities	Understand the connections between proportional relationships, lines, and linear equations.	NY-8.EE.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 Modelling Linear Relationships
Expressions, Equations, and Inequalities	Understand the connections between proportional relationships, lines, and linear equations.	NY-8.EE.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 equations $y = mx$ for a line through the origin and the equations $y = mx + b$ for a line intercepting the vertical axis at $b$ .	Teacher directed
Expressions, Equations, and Inequalities	Analyze and solve linear equations and pairs of simultaneous linear equations.	NY-8.EE.7	<p>Solve linear equations in one variable.</p> <ol style="list-style-type: none"> <li>Recognize when linear equations in one variable have one solution, infinitely many solutions, or no solutions. Give examples and show which of these possibilities is the case by successively transforming the given equation into simpler forms.</li> <li>Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and combining like terms.</li> </ol>	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

## Grade 8

Domain	Cluster	Standard	Standard Description	 Activities
Expressions, Equations, and Inequalities	Analyze and solve linear equations and pairs of simultaneous linear equations.	NY-8.EE.8	Analyze and solve pairs of simultaneous linear equations. <ol style="list-style-type: none"> <li>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. Recognize when the system has one solution, no solution, or infinitely many solutions.</li> <li>Solve systems of two linear equations in two variables with integer coefficients: graphically, numerically using a table, and algebraically. Solve simple cases by inspection.</li> <li>Solve real-world and mathematical problems involving systems of two linear equations in two variables with integer coefficients.</li> </ol>	Simultaneous Equations 1 Simultaneous Equations 2 Simultaneous Linear Equations Modelling Linear Relationships
Functions	Define, evaluate, and compare functions.	NY-8.F.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	Define, evaluate, and compare functions.	NY-8.F.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	Define, evaluate, and compare functions.	NY-8.F.3	Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line. Recognize examples of functions that are linear and non-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

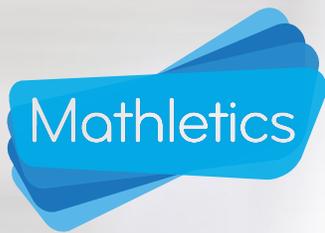
Domain	Cluster	Standard	Standard Description	 Activities
Functions	Use functions to model relationships between quantities.	NY-8.F.4	Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship 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	Use functions to model relationships between quantities.	NY-8.F.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 in a real-world context.	Conversion Graphs
Geometry	Understand congruence and similarity using physical models, transparencies, or geometry software.	NY-8.G.1	Verify experimentally the properties of rotations, reflections, and translations. <ul style="list-style-type: none"> <li>a. Verify experimentally lines are mapped to lines and line segments to line segments of the same length.</li> <li>b. Verify experimentally angles are mapped to angles of the same measure.</li> <li>c. Verify experimentally parallel lines are mapped 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	Understand congruence and similarity using physical models, transparencies, or geometry software.	NY-8.G.2	Know that a two-dimensional figure is congruent to another if the corresponding angles are congruent and the corresponding sides are congruent. Equivalently, two two-dimensional figures are congruent if one is the image of the other after a sequence of rotations, reflections, and translations. Given two congruent figures, describe a sequence that maps the congruence between them on the coordinate plane.	Congruent Triangles Congruent Figures Congruent Figures: Find Values
Geometry	Understand congruence and similarity using physical models, transparencies, or geometry software.	NY-8.G.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

## Grade 8

Domain	Cluster	Standard	Standard Description	 Activities
Geometry	Understand congruence and similarity using physical models, transparencies, or geometry software.	NY-8.G.4	Know that a two-dimensional figure is similar to another if the corresponding angles are congruent and the corresponding sides are in proportion. Equivalently, two two-dimensional figures are similar if one is the image of the other after a sequence of rotations, reflections, translations, and dilations. Given two similar two-dimensional figures, describe a sequence that maps the similarity between them on the coordinate plane.	Similar Figures Similarity Proofs Using Similar Triangles
Geometry	Understand congruence and similarity using physical models, transparencies, or geometry software.	NY-8.G.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
Geometry	Understand and apply the Pythagorean Theorem.	NY-8.G.6	Understand a proof of the Pythagorean Theorem and its converse.	Pythagorean Triads Pythagorean Theorem
Geometry	Understand and apply the Pythagorean Theorem.	NY-8.G.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	Understand and apply the Pythagorean Theorem.	NY-8.G.8	Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	Distance Between Two Points
Geometry	Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.	NY-8.G.9	Given the formulas for the volume of cones, cylinders, and spheres, solve mathematical and real-world problems.	Volume: Cylinders Volume: Cones Volume: Spheres Volume: Composite Figures
Statistics and Probability	Investigate patterns of association in bivariate data.	NY-8.SP.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

## Grade 8

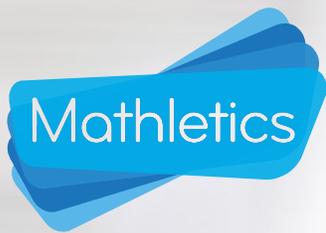
Domain	Cluster	Standard	Standard Description	 Activities
Statistics and Probability	Investigate patterns of association in bivariate data.	NY-8.SP.2	Understand that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, 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 and Probability	Investigate patterns of association in bivariate data.	NY-8.SP.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



# CCSS Standards Alignment with Mathletics

## CCSS Algebra I

Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Number and Quantity						
The Real Number System	Extend the properties of exponents to rational exponents.	N.RN.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 Exponent and Algebra	Radicals and Exponents Exponents
The Real Number System	Extend the properties of exponents to rational exponents.	N.RN.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 Multiplication with Exponents Exponent Laws and Algebra Exponent Laws with Brackets	Grade 8 Pythagoras' Theorem
The Real Number System	Use properties of rational and irrational numbers.	N.RN.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
Quantities	Reason quantitatively and use units to solve problems.	N.Q.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 Consideration	Under review



# CCSS Standards Alignment with Mathletics

## CCSS Algebra I

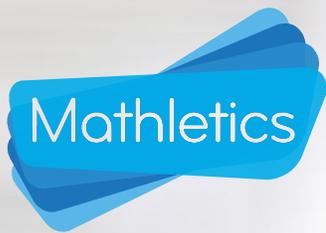
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Number and Quantity</b>						
Quantities	Reason quantitatively and use units to solve problems.	N.Q.2	Define appropriate quantities for the purpose of descriptive modeling.	Under review	Under Consideration	Under review
Quantities	Reason quantitatively and use units to solve problems.	N.Q.3	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.	Quantities and Solving Linear Equations	Error in Measurement Percentage Error	Decimals
<b>Conceptual Category: Algebra</b>						
Seeing Structure in Expressions	Interpret the structure of expressions.	A.SSE.1.a	Interpret expressions that represent a quantity in terms of its context. Interpret parts of an expression, such as terms, factors, and coefficients.	Linear Expressions and Equations	Gradients for Real Write an Equation: Word Problems	Depreciation Interest
				Quadratic Equations and Inequalities	Vertex of a Parabola	
				Exponents	Compound Interest Compound Interest by Formula Depreciation Declining Balance Depreciation	
Seeing Structure in Expressions	Interpret the structure of expressions.	A.SSE.1.b	Interpret expressions that represent a quantity in terms of its context. 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>	Quadratic Equations and Inequalities	The Discriminant Constructing Formulae	Under review
Seeing Structure in Expressions	Interpret the structure of expressions.	A.SSE.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



# CCSS Standards Alignment with Mathletics

## CCSS Algebra I

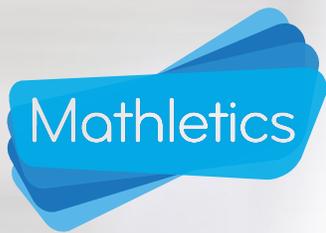
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Algebra						
Seeing Structure in Expressions	Write expressions in equivalent forms to solve problems.	A.SSE.3.a	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. Factor a quadratic expression to reveal the zeros of the function it defines.	Quadratic Equations and Inequalities	Highest Common Algebraic Factor Factoring Quadratics 1 Factoring Quadratics 2 Grouping in Pairs	Under review
Seeing Structure in Expressions	Write expressions in equivalent forms to solve problems.	A.SSE.3.b	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.	Quadratic Equations and Inequalities	Completing the Square Completing the Square 2 Vertex of a Parabola	Under review
Seeing Structure in Expressions	Write expressions in equivalent forms to solve problems.	A.SSE.3.c	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. Use the properties of exponents to transform expressions for exponential functions. <i>For example the expression <math>1.15t</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>	Under review	Under Consideration	Under review
Arithmetic with Polynomials and Rational Expressions	Perform arithmetic operations on polynomials.	A.APR.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



# CCSS Standards Alignment with Mathletics

## CCSS Algebra I

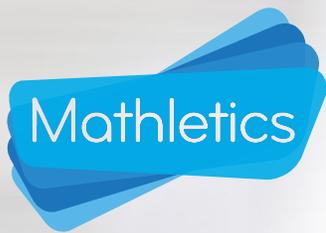
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Algebra						
Creating Equations	Create equations that describe numbers or relationships.	A.CED.1	Create equations and inequalities in one variable and use them to solve problems. <i>Include equations arising from linear and quadratic functions, and simple rational and exponential functions.</i>	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	
Creating Equations	Create equations that describe numbers or relationships.	A.CED.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	
Creating Equations	Create equations that describe numbers or relationships.	A.CED.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 Consideration	Under review



# CCSS Standards Alignment with Mathletics

## CCSS Algebra I

Domain	Cluster	Standard	Description	Topic	 Activities	 eBooks
Conceptual Category: Algebra						
Creating Equations	Create equations that describe numbers or relationships.	A.CED.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>	Quantities and Solving Linear Equations	Changing the Subject	Linear Relationships Depreciation
Reasoning with Equations and Inequalities	Understand solving equations as a process of reasoning and explain the reasoning.	A.REI.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



# CCSS Standards Alignment with Mathletics

## CCSS Algebra I

Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Algebra						
Reasoning with Equations and Inequalities	Solve equations and inequalities in one variable.	A.REI.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 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
Reasoning with Equations and Inequalities	Solve equations and inequalities in one variable.	A.REI.4.a.	Solve quadratic equations in one variable. 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.	Quadratic Equations and Inequalities	Quadratic Equations 1 Quadratic Equations 2 Roots of the Quadratic	Quadratic Equations



# CCSS Standards Alignment with Mathletics

## CCSS Algebra I

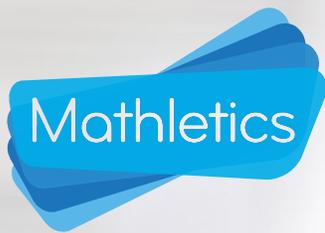
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Algebra						
Reasoning with Equations and Inequalities	Solve equations and inequalities in one variable.	A.REI.4.b	Solve quadratic equations in one variable. Solve quadratic equations by inspection (e.g., for $x^2 = 49$ ), 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 $b$ .	Quadratic Equations and Inequalities	Quadratic Equations 1 Quadratic Equations 2 Quadratic Formula The Discriminant Grouping in Pairs Quadratic Inequalities	Equations and Inequalities Factorizing Quadratic Equations
Reasoning with Equations and Inequalities	Solve systems of equations.	A.REI.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 Consideration	Equations and Inequalities
Reasoning with Equations and Inequalities	Solve systems of equations.	A.REI.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	Solve Systems by Graphing Are they Parallel? Simultaneous Linear Equations Breakeven Point Simultaneous Equations 1 Simultaneous Equations 2	Equations and Inequalities
Reasoning with Equations and Inequalities	Solve systems of equations.	A.REI.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>	Linear and Quadratic Systems	Intersection: Line & Parabola Simultaneous Equations 3 Intersection: Line & Circle	Quadratic Equations
Reasoning with Equations and Inequalities	Represent and solve equations and inequalities graphically.	A.REI.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



# CCSS Standards Alignment with Mathletics

## CCSS Algebra I

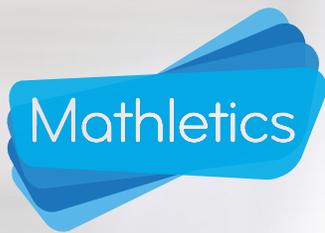
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Algebra</b>						
Reasoning with Equations and Inequalities	Represent and solve equations and inequalities graphically.	A.REI.11	Explain why the $x$ -coordinates of the points where the graphs of the equations $y = f(x)$ 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 Consideration	Under review
Reasoning with Equations and Inequalities	Represent and solve equations and inequalities graphically.	A.REI.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>						
Interpreting Functions	Understand the concept of a function and use function notation.	F.IF.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
Interpreting Functions	Understand the concept of a function and use function notation.	F.IF.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



# CCSS Standards Alignment with Mathletics

## CCSS Algebra I

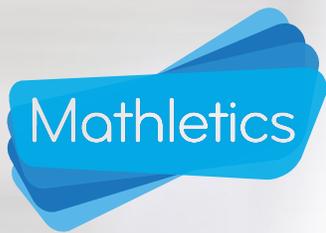
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Functions						
Interpreting Functions	Understand the concept of a function and use function notation.	F.IF.3	Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. <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
Interpreting Functions	Interpret functions that arise in applications in terms of a context.	F.IF.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
Interpreting Functions	Interpret functions that arise in applications in terms of a context.	F.IF.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 Consideration	Functions
Interpreting Functions	Interpret functions that arise in applications in terms of the context.	F.IF.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



# CCSS Standards Alignment with Mathletics

## CCSS Algebra I

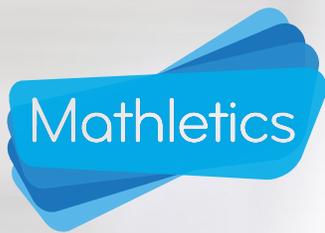
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Functions						
Interpreting Functions	Analyze functions using different representations.	F.IF.7.a	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. Graph linear and quadratic functions and show intercepts, maxima, and minima.	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
Interpreting Functions	Analyze functions using different representations.	F.IF.7.b	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.	Absolute Value, Step, and Piecewise	Absolute Value Expressions Absolute Value Equations Absolute Value Graphs Step Graphs Piecemeal Functions	Under review
Interpreting Functions	Analyze functions using different representations.	F.IF.7.e	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.	Exponents	Graphing Exponentials	Exponential and Power Graphs
Interpreting Functions	Analyze functions using different representations.	F.IF.8.a	Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. 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.	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



# CCSS Standards Alignment with Mathletics

## CCSS Algebra I

Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Functions						
Interpreting Functions	Analyze functions using different representations.	F.IF.8.b	Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. 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)^t</math>, <math>y = (0.97)^t</math>, <math>y = (1.01)^{12t}</math>, <math>y = (1.2)^{t/10}</math>, and classify them as representing exponential growth or decay.</i>	Exponents	Multiplication with Exponents	Under review
Interpreting Functions	Analyze functions using different representations.	F.IF.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 Consideration	Linear Relationships Exponential and Power Graphs
Building Functions	Build a function that models a relationship between two quantities.	F.BF.1.a	Write a function that describes a relationship between two quantities. Determine an explicit expression, a recursive process, or steps for calculation from a context.	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



# CCSS Standards Alignment with Mathletics

## CCSS Algebra I

Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Functions						
Building Functions	Build a function that models a relationship between two quantities.	F.BF.1.b	Write a function that describes a relationship between two quantities. 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>	Under review	Under Consideration	Under review
Building Functions	Build a function that models a relationship between two quantities.	F.BF.2	Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.	Arithmetic and Geometric Sequences	Table of Values Terms: Arithmetic Progressions Terms: Geometric Progressions 1 Terms: Geometric Progressions 2	Sequences & Series: Arithmetic Sequences & Series: Geometric
Building Functions	Build new functions from existing functions.	F.BF.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>	Under review	Under Consideration	Exponential and Power Graphs Functions Parabolas
Building Functions	Build new functions from existing functions.	F.BF.4.a	Find inverse functions. 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. <i>For example, <math>f(x) = 2x^3</math> or <math>f(x) = (x + 1)/(x - 1)</math> for <math>x \neq 1</math>.</i>	Functions	Inverse Functions	Functions



# CCSS Standards Alignment with Mathletics

## CCSS Algebra I

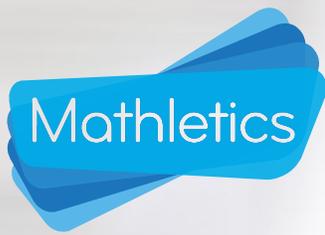
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Functions</b>						
Linear, Quadratic, and Exponential Models	Construct and compare linear, quadratic, and exponential models and solve problems.	F.LE.1.a	Distinguish between situations that can be modeled with linear functions and with exponential functions. Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.	Under review	Under Consideration	Sequences & Series: Arithmetic Sequences & Series: Geometric
Linear, Quadratic, and Exponential Models	Construct and compare linear, quadratic, and exponential models and solve problems.	F.LE.1.b	Distinguish between situations that can be modeled with linear functions and with exponential functions. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.	Functions	What Type of Function?	Straight Lines Sequences & Series: Arithmetic
Linear, Quadratic, and Exponential Models	Construct and compare linear, quadratic, and exponential models and solve problems.	F.LE.1.c	Distinguish between situations that can be modeled with linear functions and with exponential functions. 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
Linear, Quadratic, and Exponential Models	Construct and compare linear, quadratic, and exponential models and solve problems.	F.LE.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	
				Arithmetic and Geometric Sequences	Terms: Geometric Progressions 2	Depreciation Interest Sequences & Series: Geometric



# CCSS Standards Alignment with Mathletics

## CCSS Algebra I

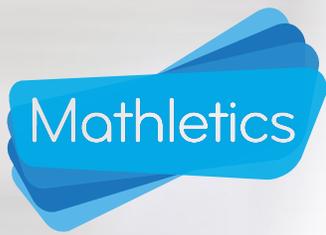
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Functions</b>						
Linear, Quadratic, and Exponential Models	Construct and compare linear, quadratic, and exponential models and solve problems.	F.LE.3	Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.	Under review	Under Consideration	Under review
Linear, Quadratic, and Exponential Models	Interpret expressions for functions in terms of the situation they model.	F.LE.5	Interpret the parameters in a linear or exponential function in terms of a context.	Linear Expressions and Equations	Gradients for Real	Under review
<b>Conceptual Category: Statistics and Probability</b>						
Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on a single count or measurement variable.	S.ID.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
Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on a single count or measurement variable.	S.ID.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
Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on a single count or measurement variable.	S.ID.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



# CCSS Standards Alignment with Mathletics

## CCSS Algebra I

Domain	Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Statistics and Probability</b>						
Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on two categorical and quantitative variables.	S.ID.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 Consideration	Under review
Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on two categorical and quantitative variables.	S.ID.6.a	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. 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, quadratic, and exponential models.</i>	Under review	Under Consideration	Under review
Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on two categorical and quantitative variables.	S.ID.6.b	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. Informally assess the fit of a function by plotting and analyzing residuals.	Under review	Under Consideration	Under review
Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on two categorical and quantitative variables.	S.ID.6.c	Fit a linear function for a scatter plot that suggests a linear association.	Descriptive Statistics	Data Analysis: Scatter Plots Scatter Plots	Under review
Interpreting Categorical and Quantitative Data	Interpret linear models.	S.ID.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 Consideration	Under review
Interpreting Categorical and Quantitative Data	Interpret linear models.	S.ID.8	Compute (using technology) and interpret the correlation coefficient of a linear fit.	Descriptive Statistics	Correlation	Under review
Interpreting Categorical and Quantitative Data	Interpret linear models.	S.ID.9	Distinguish between correlation and causation	Under review	Under Consideration	Under review



# CCSS Standards Alignment with Mathletics

## CCSS Geometry

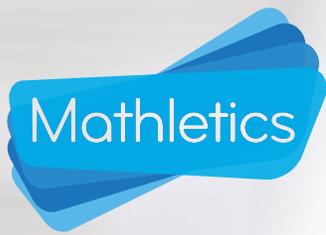
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Geometry						
Congruence	Experiment with transformations in the plane.	G.CO.1	Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, 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
Congruence	Experiment with transformations in the plane.	G.CO.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
Congruence	Experiment with transformations in the plane.	G.CO.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
Congruence	Experiment with transformations in the plane.	G.CO.4	Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.	Under review	Under Consideration	Under review
Congruence	Experiment with transformations in the plane.	G.CO.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 Consideration	Under review



# CCSS Standards Alignment with Mathletics

## CCSS Geometry

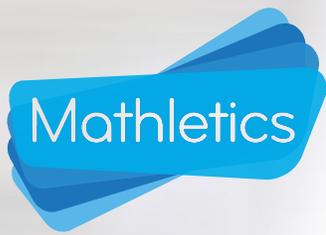
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Geometry						
Congruence	Understand congruence in terms of rigid motions.	G.CO.6	Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given 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
Congruence	Understand congruence in terms of rigid motions.	G.CO.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
Congruence	Understand congruence in terms of rigid motions.	G.CO.8	Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.	Under review	Under Consideration	Similarity and Congruence
Congruence	Prove Geometric Theorems.	G.CO.9	Prove theorems about lines and angles. <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
Congruence	Prove Geometric Theorems.	G.CO.10	Prove theorems about triangles. <i>Theorems include: measures of interior angles of a triangle sum to 180°; 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



# CCSS Standards Alignment with Mathletics

## CCSS Geometry

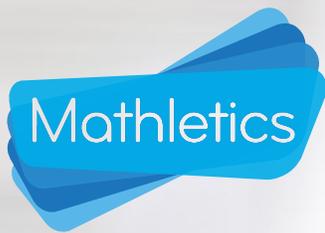
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Geometry						
Congruence	Prove geometric theorems.	G.CO.11	Prove theorems about parallelograms. <i>Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.</i>	Geometric Theorems	Plane Figure Theorems	Under review
Congruence	Make geometric constructions.	G.CO.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 Consideration	Constructions
Congruence	Make geometric constructions.	G.CO.13	Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.	Under review	Under Consideration	Constructions
Similarity, Right Triangles, and Trigonometry	Understand similarity in terms of similarity transformations.	G.SRT.1.a	Verify experimentally the properties of dilations given by a center and a scale factor: A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged.	Under review	Under Consideration	Under review



# CCSS Standards Alignment with Mathletics

## CCSS Geometry

Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Geometry						
Similarity, Right Triangles, and Trigonometry	Understand similarity in terms of similarity transformations.	G.SRT.1.b	Verify experimentally the properties of dilations given by a center and a scale factor: 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
Similarity, Right Triangles, and Trigonometry	Understand similarity in terms of similarity transformations.	G.SRT.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
Similarity, Right Triangles, and Trigonometry	Understand similarity in terms of similarity transformations.	G.SRT.3	Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.	Similarity	Similarity Proofs	Similarity and Congruence
Similarity, Right Triangles, and Trigonometry	Prove theorems involving similarity.	G.SRT.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
Similarity, Right Triangles, and Trigonometry	Prove theorems involving similarity.	G.SRT.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



# CCSS Standards Alignment with Mathletics

## CCSS Geometry

Domain	Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Geometry</b>						
Similarity, Right Triangles, and Trigonometry	Define trigonometric ratios and solve problems involving right triangles.	G.SRT.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
Similarity, Right Triangles, and Trigonometry	Define trigonometric ratios and solve problems involving right triangles.	G.SRT.7	Explain and use the relationship between the sine and cosine of complementary angles.	Under review	Under Consideration	Trigonometric Relationships
Similarity, Right Triangles, and Trigonometry	Define trigonometric ratios and solve problems involving right triangles.	G.SRT.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
Similarity, Right Triangles, and Trigonometry	Apply trigonometry to general triangles.	G.SRT.9	Derive the formula $A = 1/2 ab \sin(C)$ for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side.	Trigonometry	Area Rule 1 Area Rule 2 Area Problems	Non Right Angled Triangles
Similarity, Right Triangles, and Trigonometry	Apply trigonometry to general triangles.	G.SRT.10	Prove the Laws of Sines and Cosines and use them to solve problems.	Trigonometry	Sine Rule 1 Cosine Rule 1 Cosine Rule 2	Non Right Angled Triangles
Similarity, Right Triangles, and Trigonometry	Apply trigonometry to general triangles.	G.SRT.11	Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).	Trigonometry	Sine Rule 1 Cosine Rule 1 Cosine Rule 2	Non Right Angled Triangles
Circles	Understand and apply theorems about circles.	G.C.1	Prove that all circles are similar.	Under review	Under Consideration	Under review



# CCSS Standards Alignment with Mathletics

## CCSS Geometry

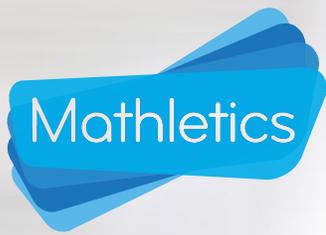
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Geometry						
Circles	Understand and apply theorems about circles.	G.C.2	Identify and describe relationships among inscribed angles, radii, and chords. <i>Include the relationship between central, inscribed, and circumscribed 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
Circles	Understand and apply theorems about circles.	G.C.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 Consideration	Under review
Circles	Understand and apply theorems about circles.	G.C.4	Construct a tangent line from a point outside a given circle to the circle.	Circles	Intersection: Line & Circle	Constructions
Circles	Find arc lengths and areas of sectors of circles.	G.C.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
Expressing Geometric Properties with Equations	Translate between the geometric description and the equation for a conic section.	G.GPE.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
Expressing Geometric Properties with Equations	Translate between the geometric description and the equation for a conic section.	G.GPE.2	Derive the equation of a parabola given a focus and directrix.	Equations of Parabolas	Vertex of a Parabola Graphing Parabolas Focus and Directrix 1 Focus and Directrix 2 Focus and Directrix 3 Focus and Directrix 4	Under review



# CCSS Standards Alignment with Mathletics

## CCSS Geometry

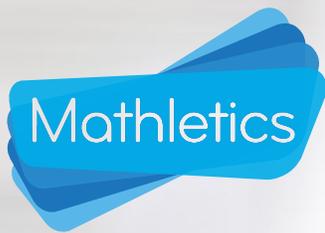
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Geometry						
Expressing Geometric Properties with Equations	Use coordinates to prove simple geometric theorems algebraically.	G.GPE.4	Use coordinates to prove simple geometric theorems algebraically. <i>For example, prove 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
				Circles	Intersection: Line & Circle	Circle Graphs
Expressing Geometric Properties with Equations	Use coordinates to prove simple geometric theorems algebraically.	G.GPE.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
Expressing Geometric Properties with Equations	Use coordinates to prove simple geometric theorems algebraically.	G.GPE.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
Expressing Geometric Properties with Equations	Use coordinates to prove simple geometric theorems algebraically.	G.GPE.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
Geometric Measurement and Dimension	Explain volume formulas and use them to solve problems.	G.GMD.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. <i>Use dissection arguments, Cavalieri's principle, and informal limit arguments.</i>	Under review	Under Consideration	Under review



# CCSS Standards Alignment with Mathletics

## CCSS Geometry

Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Geometry						
Geometric Measurement and Dimension	Explain volume formulas and use them to solve problems.	G.GMD.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 What Pyramid am I? Volume: Cones Volume: Spheres Volume Composite Figures Volume: Rearrange Formula	Measuring Solids
Geometric Measurement and Dimension	Visualize relationships between two-dimensional and three-dimensional objects.	G.GMD.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	Relate Shapes and Solids Nets	Under review
Modeling with Geometry	Apply geometric concepts in modeling situations.	G.MG.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
Modeling with Geometry	Apply geometric concepts in modeling situations.	G.MG.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 Consideration	Under review
Modeling with Geometry	Apply geometric concepts in modeling situations.	G.MG.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



# CCSS Standards Alignment with Mathletics

## CCSS Geometry

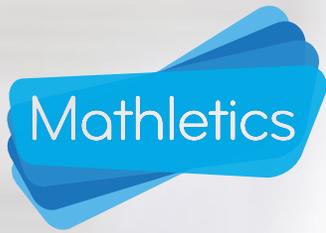
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Statistics and Probability						
Conditional Probability and the Rules of Probability	Understand independence and conditional probability and use them to interpret data.	S.CP.1	Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events ("or," "and," "not").	Probability	Complementary Events Venn Diagrams Probability - 'And' and 'Or'	Probability
Conditional Probability and the Rules of Probability	Understand independence and conditional probability and use them to interpret data.	S.CP.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 Consideration	Probability
Conditional Probability and the Rules of Probability	Understand independence and conditional probability and use them to interpret data.	S.CP.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 Consideration	Under review
Conditional Probability and the Rules of Probability	Understand independence and conditional probability and use them to interpret data.	S.CP.4	Construct and interpret two-way 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



# CCSS Standards Alignment with Mathletics

## CCSS Geometry

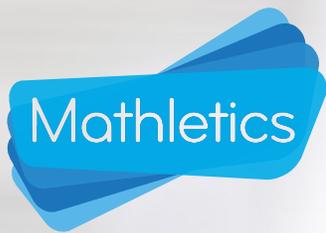
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Statistics and Probability						
Conditional Probability and the Rules of Probability	Understand independence and conditional probability and use them to interpret data.	S.CP.5	Recognize and explain the concepts of conditional 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 Consideration	Under review
Conditional Probability and the Rules of Probability	Use the rules of probability to compute probabilities of compound events in a uniform probability model.	S.CP.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 Consideration	Under review
Conditional Probability and the Rules of Probability	Use the rules of probability to compute probabilities of compound events in a uniform probability model.	S.CP.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
Conditional Probability and the Rules of Probability	Use the rules of probability to compute probabilities of compound events in a uniform probability model.	S.CP.8	Apply the general Multiplication Rule in a uniform probability model, $P(A \text{ and } B) = P(A)P(B   A) = P(B)P(A   B)$ , and interpret the answer in terms of the model.	Probability	Probability With Replacement Probability Without Replacement	Under review
Conditional Probability and the Rules of Probability	Use the rules of probability to compute probabilities of compound events in a uniform probability model.	S.CP.9	Use permutations and combinations to compute probabilities of compound events and solve problems.	Probability	Counting Techniques 1 Counting Techniques 2 Tree Diagrams	Under review
Using Probability to Make Decisions	Use probability to evaluate outcomes of decisions.	S.MD.6	Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).	Probability	Fair Games	Under review



# CCSS Standards Alignment with Mathletics

## CCSS Geometry

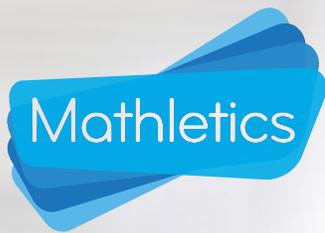
Domain	Cluster	Standard	Description	Topic	 Activities	 eBooks
Conceptual Category: Statistics and Probability						
Using Probability to Make Decisions	Use probability to evaluate outcomes of decisions.	S.MD.7	Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).	Under review	Under Consideration	Under review



# CCSS Standards Alignment with Mathletics

## CCSS Algebra II

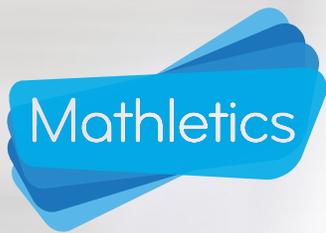
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Number and Quantity</b>						
The Complex Number System	Perform arithmetic operations with complex numbers.	N.CN.1	Know there is a complex number $i$ such that $i^2 = -1$ , and every complex number has the form $a + bi$ with $a$ and $b$ real.	Complex Numbers	Introduction to Complex Numbers	Under review
The Complex Number System	Perform arithmetic operations with complex numbers.	N.CN.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
The Complex Number System	Use complex numbers in polynomial identities and equations.	N.CN.7	Solve quadratic equations with real coefficients that have complex solutions.	Under review	Under Consideration	Under review
The Complex Number System	Use complex numbers in polynomial identities and equations.	N.CN.8	Extend polynomial identities to the complex numbers. <i>For example, rewrite <math>x^2 + 4</math> as <math>(x + 2i)(x - 2i)</math>.</i>	Under review	Under Consideration	Under review
The Complex Number System	Use complex numbers in polynomial identities and equations.	N.CN.9	Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials.	Under review	Under Consideration	Under review
<b>Conceptual Category: Algebra</b>						
Seeing Structure in Expressions	Interpret the structure of expressions.	A.SSE.1.a	Interpret expressions that represent a quantity in terms of its context. Interpret parts of an expression, such as terms, factors, and coefficients.	Modeling with Functions	Gradients for Real Exponential Growth and Decay	Sketching Polynomials
Seeing Structure in Expressions	Interpret the structure of expressions.	A.SSE.1.b	Interpret expressions that represent a quantity in terms of its context. 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>	Solving Higher Order Equations	Factoring Expressions Equations Reducible to Quadratics	Geometric Series in Finance



# CCSS Standards Alignment with Mathletics

## CCSS Algebra II

Domain	Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Algebra</b>						
Seeing Structure in Expressions	Interpret the structure of expressions.	A.SSE.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>	Solving Higher Order Equations	Equations Reducible to Quadratics	Factorizing
				Polynomial Arithmetic	Polynomial Long Division Simplifying Binomial Expressions	Factorizing
Seeing Structure in Expressions	Write expressions in equivalent forms to solve problems.	A.SSE.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
Arithmetic with Polynomials and Rational Expressions	Perform arithmetic operations on polynomials.	A.APR.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 Dividing Expressions Algebraic Fractions 1 Indirect Variation Special Binomial Products Expanding Brackets Expand then Simplify Expanding Binomial Products	Polynomials Equations Expanding and Factorizing Simplifying Algebra Binomials and Pascal's Triangle
Arithmetic with Polynomials and Rational Expressions	Understand the relationship between zeros and factors of polynomials.	A.APR.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 Higher Order Equations	Polynomial Factor Theorem More Substitution in Formulae Rationalising the Denominator Rationalising and Binomials	Polynomials
Arithmetic with Polynomials and Rational Expressions	Understand the relationship between zeros and factors of polynomials.	A.APR.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 Higher Order Equations	Factoring Expressions Equations Reducible to Quadratics Polynomial Factor Theorem Graphing Cubics	Factorizing Polynomials Sketching Polynomials



# CCSS Standards Alignment with Mathletics

## CCSS Algebra II

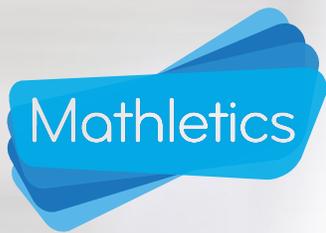
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Algebra</b>						
Arithmetic with Polynomials and Rational Expressions	Use polynomial identities to solve problems.	A.APR.4	Prove polynomial identities and use them to describe numerical relationships. For example, the polynomial identity $(x^2 + y^2)^2 = (x^2 - y^2)^2 + (2xy)^2$ can be used to generate Pythagorean triples.	Solving Higher Order Equations	Equations Reducible to Quadratics	Factorizing
Arithmetic with Polynomials and Rational Expressions	Use polynomial identities to solve problems.	A.APR.5	Know and apply the Binomial Theorem for the expansion of $(x + y)^n$ in powers of $x$ and $y$ for a positive integer $n$ , where $x$ and $y$ are any numbers, with coefficients determined for example by Pascal's Triangle.	Under review	Under Consideration	The Binomial Theorem Binomials and Pascal's Triangle
Arithmetic with Polynomials and Rational Expressions	Rewrite rational expressions.	A.APR.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
Arithmetic with Polynomials and Rational Expressions	Rewrite rational expressions.	A.APR.7	Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions.	Rational Equations	Algebraic Fractions 2 Algebraic Fractions 3 Factoring and Fractions 1 Factoring and Fractions 2	Factorizing
Creating Equations	Create equations that describe numbers or relationships.	A.CED.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 and exponential functions.</i>	Modeling with Functions	Write an Equation: Word Problems	Under review
Creating Equations	Create equations that describe numbers or relationships.	A.CED.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



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## CCSS Algebra II

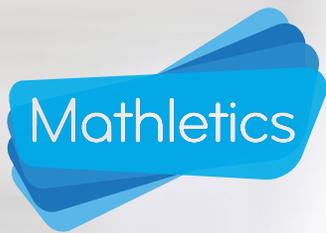
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Algebra						
Creating Equations	Create equations that describe numbers or relationships.	A.CED.3	Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions 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 Consideration	Under review
Creating Equations	Create equations that describe numbers or relationships.	A.CED.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
				Radical Equations	Surface Area: Rearrange Formula Volume: Rearrange Formula Rearranging the Equation	Under review
Reasoning with Equations and Inequalities	Understand solving equations as a process of reasoning and explain the reasoning.	A.REI.2	Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.	Radical Equations	Equations with Square Roots Equations with Cube Roots More Substitution in Formulae Rationalising the Denominator Rationalising and Binomials	Under review
Reasoning with Equations and Inequalities	Represent and solve equations and inequalities graphically.	A.REI.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.	Solving Higher Order Equations	Solve Systems by Graphing	Under review
				Rational Equations	Graphing Hyperbolas	Under review



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## CCSS Algebra II

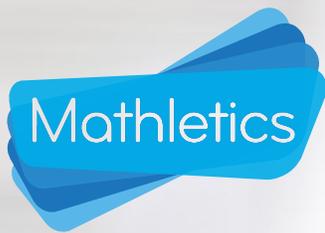
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Functions						
Interpreting Functions	Interpret functions that arise in applications in terms of a context.	F.IF.4	For a function that models a relationship between two quantities, interpret key features of graphs and tables 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
Interpreting Functions	Interpret functions that arise in applications in terms of a context.	F.IF.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	Perpendicular Distance 1 Absolute Value Graphs Conversion Graphs What Type of Function? Domain Domain and Range	Functions
Interpreting Functions	Interpret functions that arise in applications in terms of the context.	F.IF.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 Consideration	Under review
Interpreting Functions	Analyze functions using different representations.	F.IF.7.b	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.	Inverse Functions	Graphing Inverse Functions Piecemeal Functions	Under review



# CCSS Standards Alignment with Mathletics

## CCSS Algebra II

Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Functions						
Interpreting Functions	Analyze functions using different representations.	F.IF.7.c	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.	Solving Higher Order Equations	Graphing Cubics	Exponential and Power Graphs Sketching Polynomials
Interpreting Functions	Analyze functions using different representations.	F.IF.7.e	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.	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
Interpreting Functions	Analyze functions using different representations.	F.IF.8.a	Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. 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.	Polynomial Arithmetic	Polynomial Long Division Simplifying Binomial Expressions	Factorizing Polynomials Sketching Polynomials
Interpreting Functions	Analyze functions using different representations.	F.IF.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 Consideration	Under review



# CCSS Standards Alignment with Mathletics

## CCSS Algebra II

Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Functions						
Building Functions	Build a function that models a relationship between two quantities.	F.BF.1.a	Write a function that describes a relationship between two quantities. Determine an explicit expression, a recursive process, or steps for calculation from a context.	Modeling with Functions	Gradients for Real Write an Equation: Word Problems	Under review
Building Functions	Build a function that models a relationship between two quantities.	F.BF.1.b	Write a function that describes a relationship between two quantities. 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>	Under review	Under Consideration	Under review
Building Functions	Build new functions from existing functions.	F.BF.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
Building Functions	Build new functions from existing functions.	F.BF.4.a	Find inverse functions. 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. <i>For example, <math>f(x) = 2x^3</math> or <math>f(x) = (x + 1)/(x - 1)</math> for <math>x \neq 1</math>.</i>	Inverse Functions	Inverse Functions	Under review
Linear, Quadratic, and Exponential Models	Construct and compare linear, quadratic, and exponential models and solve problems.	F.LE.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



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## CCSS Algebra II

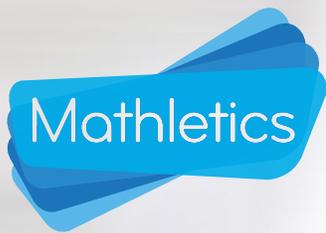
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Functions</b>						
Trigonometric Functions	Extend the domain of trigonometric functions using the unit circle.	F.TF.1	Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle.	Trigonometric Functions	Converting Radians and Degrees Unit Circle Reductions	Under review
Trigonometric Functions	Extend the domain of trigonometric functions using the unit circle.	F.TF.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 counterclockwise around the unit circle.	Trigonometric Functions	Sign of the Angle Unit Circle Reductions Trigonometric Relationships Trigonometric Intercepts Inverse Trigonometric Functions	Trigonometric Relationships
Trigonometric Functions	Model periodic phenomena with trigonometric functions.	F.TF.5	Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline.	Trigonometric Functions	Period and Amplitude	Under review
Trigonometric Functions	Prove and apply trigonometric identities.	F.TF.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: Statistics and Probability</b>						
Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on a single count or measurement variable.	S.ID.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



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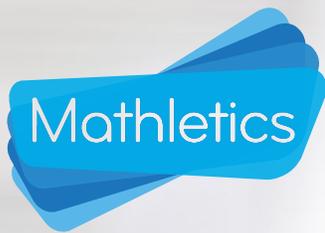
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Statistics and Probability</b>						
Making Inferences and Justifying Conclusions	Understand and evaluate random processes underlying statistical experiments.	S.IC.1	Understand statistics as a process for making inferences 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
Making Inferences and Justifying Conclusions	Understand and evaluate random processes underlying statistical experiments.	S.IC.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 Consideration	Under review
Making Inferences and Justifying Conclusions	Make inferences and justify conclusions from sample surveys, experiments, and observational studies.	S.IC.3	Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.	Under review	Under Consideration	Under review
Making Inferences and Justifying Conclusions	Make inferences and justify conclusions from sample surveys, experiments, and observational studies.	S.IC.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 Consideration	Under review
Making Inferences and Justifying Conclusions	Make inferences and justify conclusions from sample surveys, experiments, and observational studies.	S.IC.5	Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant.	Under review	Under Consideration	Under review
Making Inferences and Justifying Conclusions	Make inferences and justify conclusions from sample surveys, experiments, and observational studies.	S.IC.6	Evaluate reports based on data.	Under review	Under Consideration	Under review



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## CCSS Algebra II

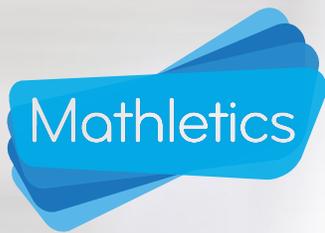
Domain	Cluster	Standard	Description	Topic	 Activities	 eBooks
Conceptual Category: Statistics and Probability						
Using Probability to Make Decisions	Use probability to evaluate outcomes of decisions.	S.MD.6	Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).	Collecting and Analyzing Data	Fair Games	Under review
Using Probability to Make Decisions	Use probability to evaluate outcomes of decisions.	S.MD.7	Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).	Under review	Under Consideration	Under review



# CCSS Standards Alignment with Mathletics

## Integrated Math I

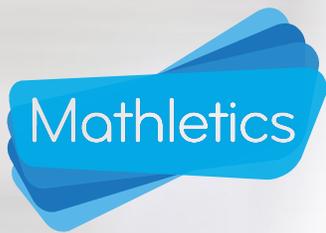
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Number and Quantity</b>						
Quantities	Reason quantitatively and use units to solve problems.	N.Q.1	Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.	Under review	Under review	Under review
Quantities	Reason quantitatively and use units to solve problems.	N.Q.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.	N.Q.3	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.	Number and Quantity	Error in Measurement Percentage Error	Decimals
<b>Conceptual Category: Algebra</b>						
Seeing Structure in Expressions	Interpret the structure of expressions.	A.SSE.1.a	Interpret expressions that represent a quantity in terms of its context. Interpret parts of an expression, such as terms, factors, and coefficients.	Writing and Graphing Linear Equations	Gradients for Real Write an Equation: Word Problems	Under review
Seeing Structure in Expressions	Interpret the structure of expressions.	A.SSE.1.a	Interpret expressions that represent a quantity in terms of its context. Interpret parts of an expression, such as terms, factors, and coefficients.	Exponential Equations and Functions	Compound Interest by Formula Depreciation Declining Balance Depreciation	Depreciation Interest
Seeing Structure in Expressions	Interpret the structure of expressions.	A.SSE.1.b	Interpret expressions that represent a quantity in terms of its context. 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>	Exponential Equations and Functions	Compound Interest by Formula Depreciation Declining Balance Depreciation	Depreciation Interest



# CCSS Standards Alignment with Mathletics

## Integrated Math I

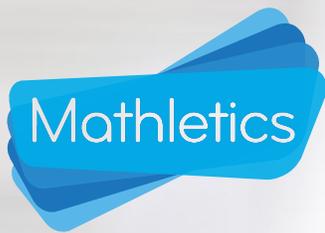
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Algebra						
Creating Equations	Create equations that describe numbers or relationships.	A.CED.1	Create equations and inequalities in one variable and use them to solve problems. <i>Include equations arising from linear and quadratic functions, and simple rational and exponential functions.</i>	Writing and Graphing Linear Equations	Writing Algebraic Expressions Equations to Solve Problems Writing Equations Write an Equation: Word Problems	Under review
Creating Equations	Create equations that describe numbers or relationships.	A.CED.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 and exponential functions.</i>	Exponential Equations and Functions	Compound Interest by Formula Depreciation Declining Balance Depreciation	Depreciation Interest
Creating Equations	Create equations that describe numbers or relationships.	A.CED.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	Writing and Graphing Linear Equations	Equation from Point and Gradient Equation from Two Points $y=ax$ Determining a Rule for a Line Modeling Linear Relationships	Linear Relationships Exponential and Power Graphs
Creating Equations	Create equations that describe numbers or relationships.	A.CED.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	Writing and Graphing Linear Equations	Which Straight Line? Equation of a Line 1	Straight Lines
Creating Equations	Create equations that describe numbers or relationships.	A.CED.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	Exponential Equations and Functions	Graphing Exponentials	Under review
Creating Equations	Create equations that describe numbers or relationships.	A.CED.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



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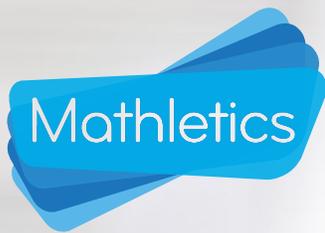
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Algebra						
Creating Equations	Create equations that describe numbers or relationships.	A.CED.4	Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. <i>For example, rearrange Ohm's law <math>V=IR</math> to highlight resistance <math>R</math>.</i>	Number and Quantity	Changing the Subject	Linear Relationships Depreciation
Reasoning with Equations and Inequalities	Understand solving equations as a process of reasoning and explain the reasoning.	A.REI.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 Linear Equations and Systems	Find the Mistake Addition Properties Multiplication Properties Using the Distributive Property	Equations
Reasoning with Equations and Inequalities	Understand solving equations as a process of reasoning and explain the reasoning.	A.REI.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.	Exponential Equations and Functions	Exponent Laws and Algebra Exponent Laws with Brackets	Exponents
Reasoning with Equations and Inequalities	Understand solving equations as a process of reasoning and explain the reasoning.	A.REI.3	Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	Solving Linear Equations and Systems	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	Equations Equations and Inequalities



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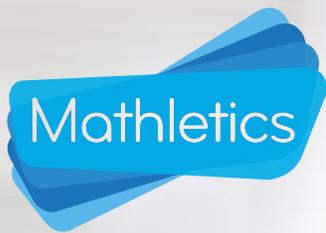
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Algebra						
Reasoning with Equations and Inequalities	Understand solving equations as a process of reasoning and explain the reasoning.	A.REI.3	Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	Solving Linear Equations and Systems	Equations to Solve Problems Writing Equations Write an Equation: Word Problems	Equations Equations and Inequalities
Reasoning with Equations and Inequalities	Solve equations and inequalities in one variable.	A.REI.3	Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	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
Reasoning with Equations and Inequalities	Solve systems of equations.	A.REI.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
Reasoning with Equations and Inequalities	Solve systems of equations.	A.REI.6	Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.	Solving Linear Equations and Systems	Solve Systems by Graphing Simultaneous Linear Equations Breakeven Point Simultaneous Equations 1 Simultaneous Equations 2	Equations and Inequalities
Reasoning with Equations and Inequalities	Represent and solve equations and inequalities graphically.	A.REI.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).	Writing and Graphing Linear Equations	Reading Values from a Line	Under review



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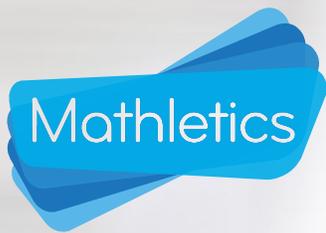
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Algebra</b>						
Reasoning with Equations and Inequalities	Represent and solve equations and inequalities graphically.	A.REI.11	Explain why the $x$ -coordinates of the points where the graphs of the equations $y=f(x)$ 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
Reasoning with Equations and Inequalities	Represent and solve equations and inequalities graphically.	A.REI.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>						
Interpreting Functions	Understand the concept of a function and use function notation.	F.IF.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 and Sequences	Function Rules and Tables	Functions
Interpreting Functions	Understand the concept of a function and use function notation.	F.IF.2	Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.	Functions and Sequences	Function Notation 1 Function Notation 2 Function Notation 3	Functions



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Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Functions						
Interpreting Functions	Understand the concept of a function and use function notation.	F.IF.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, f(n+1)=f(n) + f(n-1)</math> for <math>n \geq 1</math>.</i>	Functions and Sequences	Terms: Arithmetic Progressions Terms: Geometric Progressions 1 Terms: Geometric Progressions 2	Sequences & Series: Arithmetic Sequences & Series: Geometric
Interpreting Functions	Interpret functions that arise in applications in terms of a context.	F.IF.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>	Writing and Graphing Linear Equations	Intercepts Slope of a Line $y=ax$ Gradients for Real	Linear Relationships
Interpreting Functions	Interpret functions that arise in applications in terms of a context.	F.IF.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
Interpreting Functions	Interpret functions that arise in applications in terms of the context.	F.IF.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.	Writing and Graphing Linear Equations	Equation from Two Points	Under review

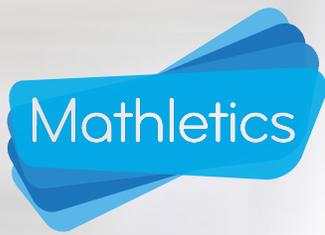


# CCSS Standards Alignment with Mathletics



## Integrated Math I

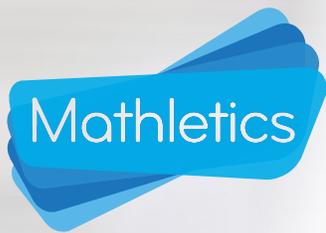
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Functions</b>						
Interpreting Functions	Analyze functions using different representations.	F.IF.7.a	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. Graph linear and quadratic functions and show intercepts, maxima, and minima.	Writing and Graphing Linear Equations	Which Straight Line?	Linear Relationships
Interpreting Functions	Analyze functions using different representations.	F.IF.7.e	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.	Exponential Equations and Functions	Graphing Exponentials	Exponential and Power Graphs
Interpreting Functions	Analyze functions using different representations.	F.IF.9	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.	Under review	Under review	Linear Relationships Exponential and Power Graphs
Building Functions	Build a function that models a relationship between two quantities.	F.BF.1.a	Write a function that describes a relationship between two quantities. Determine an explicit expression, a recursive process, or steps for calculation from a context.	Writing and Graphing Linear Equations	Modeling Linear Relationships	Under review
Building Functions	Build a function that models a relationship between two quantities.	F.BF.1.a	Write a function that describes a relationship between two quantities. Determine an explicit expression, a recursive process, or steps for calculation from a context.	Exponential Equations and Functions	Compound Interest Compound Interest by Formula Depreciation Declining Balance Depreciation	Depreciation Interest



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Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Functions						
Building Functions	Build a function that models a relationship between two quantities.	F.BF.1.b	Write a function that describes a relationship between two quantities. 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>	Under review	Under review	Under review
Building Functions	Build a function that models a relationship between two quantities.	F.BF.2	Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.	Functions and Sequences	Table of Values Terms: Arithmetic Progressions Terms: Geometric Progressions 1 Terms: Geometric Progressions 2 Linear Expression for the Nth Term	Sequences & Series: Arithmetic Sequences & Series: Geometric
Building Functions	Build new functions from existing functions.	F.BF.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>	Writing and Graphing Linear Equations	Vertical and horizontal shift	Exponential and Power Graphs Functions
Linear, Quadratic, and Exponential Models	Construct and compare linear, quadratic, and exponential models and solve problems.	F.LE.1.a	Distinguish between situations that can be modeled with linear functions and with exponential functions. Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.	Under review	Under review	Sequences & Series: Arithmetic Sequences & Series: Geometric



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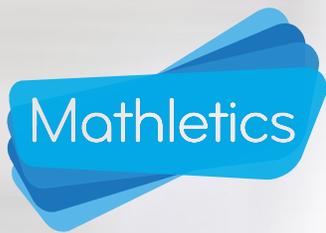
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Functions</b>						
Linear, Quadratic, and Exponential Models	Construct and compare linear, quadratic, and exponential models and solve problems.	F.LE.1.b	Distinguish between situations that can be modeled with linear functions and with exponential functions. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.	Functions and Sequences	Terms: Arithmetic Progressions	Straight Lines Sequences & Series: Arithmetic
Linear, Quadratic, and Exponential Models	Construct and compare linear, quadratic, and exponential models and solve problems.	F.LE.1.c	Distinguish between situations that can be modeled with linear functions and with exponential functions. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.	Functions and Sequences	Terms: Geometric Progressions 1 Terms: Geometric Progressions 2	Depreciation Interest Sequences & Series: Geometric
Linear, Quadratic, and Exponential Models	Construct and compare linear, quadratic, and exponential models and solve problems.	F.LE.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 and Sequences	Find the Function Rule	Sequences & Series: Arithmetic
Linear, Quadratic, and Exponential Models	Construct and compare linear, quadratic, and exponential models and solve problems.	F.LE.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).	Writing and Graphing Linear 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
Linear, Quadratic, and Exponential Models	Construct and compare linear, quadratic, and exponential models and solve problems.	F.LE.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 and Sequences	Terms: Geometric Progressions 2	Depreciation Interest Sequences & Series: Geometric



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Domain	Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Functions</b>						
Linear, Quadratic, and Exponential Models	Construct and compare linear, quadratic, and exponential models and solve problems.	F.LE.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
Linear, Quadratic, and Exponential Models	Interpret expressions for functions in terms of the situation they model.	F.LE.5	Interpret the parameters in a linear or exponential function in terms of a context.	Writing and Graphing Linear Equations	Gradients for Real	Under review
<b>Conceptual Category: Geometry</b>						
Congruence	Experiment with transformations in the plane.	G.CO.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
Congruence	Experiment with transformations in the plane.	G.CO.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
Congruence	Experiment with transformations in the plane.	G.CO.3	Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.	Rigid Transformations	Symmetry or Not? Rotational Symmetry	Under review



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## Integrated Math I

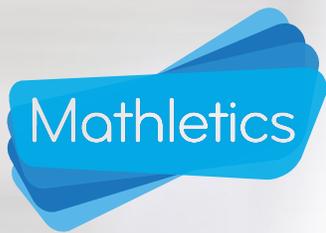
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Geometry</b>						
Congruence	Experiment with transformations in the plane.	G.CO.4	Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.	Under review	Under review	Under review
Congruence	Experiment with transformations in the plane.	G.CO.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
Congruence	Understand congruence in terms of rigid motions.	G.CO.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
Congruence	Understand congruence in terms of rigid motions.	G.CO.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
Congruence	Understand congruence in terms of rigid motions.	G.CO.8	Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.	Under review	Under review	Similarity and Congruence



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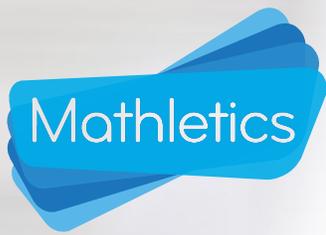
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Geometry						
Congruence	Make geometric constructions.	G.CO.12	Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric 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
Congruence	Make geometric constructions.	G.CO.13	Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.	Under review	Under review	Constructions
Expressing Geometric Properties with Equations	Use coordinates to prove simple geometric theorems algebraically.	G.GPE.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
Expressing Geometric Properties with Equations	Use coordinates to prove simple geometric theorems algebraically.	G.GPE.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? Perpendicular and Parallel Lines Equation of a Line 3	Linear Relationships Straight Lines
Expressing Geometric Properties with Equations	Use coordinates to prove simple geometric theorems algebraically.	G.GPE.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



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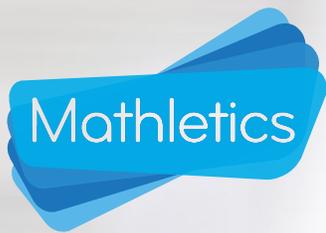
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Statistics and Probability</b>						
Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on a single count or measurement variable	S.ID.1	Represent data with plots on the real number 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
Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on a single count or measurement variable	S.ID.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	Mean Mean 1 Median Median 1 Mode Calculating Interquartile Range Calculating Standard Deviation Interpreting Standard Deviation	Data Interpreting Data
Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on a single count or measurement variable	S.ID.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
Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on two categorical and quantitative variables	S.ID.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



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Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Statistics and Probability						
Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on two categorical and quantitative variables	S.ID.6.a	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. 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, quadratic, and exponential models.</i>	Under review	Under review	Under review
Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on two categorical and quantitative variables	S.ID.6.b	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. Informally assess the fit of a function by plotting and analyzing residuals.	Under review	Under review	Under review
Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on two categorical and quantitative variables	S.ID.6.c	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. Fit a linear function for a scatter plot that suggests a linear association.	Descriptive Statistics	Scatter Plots	Under review
Interpreting Categorical and Quantitative Data	Interpret linear models.	S.ID.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
Interpreting Categorical and Quantitative Data	Interpret linear models.	S.ID.8	Compute (using technology) and interpret the correlation coefficient of a linear fit.	Descriptive Statistics	Correlation	Under review
Interpreting Categorical and Quantitative Data	Interpret linear models.	S.ID.9	Distinguish between correlation and causation.	Under review	Under review	Under review



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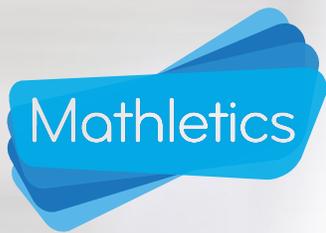
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Number and Quantity						
The Real Number System	Extend the properties of exponents to rational exponents.	N.RN.1	Explain how the definition of the meaning of rational exponents follows from extending the properties of integer 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}</math> to hold, so <math>(5^{1/3})^3</math> must equal 5.</i>	Exponents	Fractional Exponents Irrational Number to Exponent Form Zero Exponents and Algebra	Radicals and Exponents Exponents
The Real Number System	Extend the properties of exponents to rational exponents.	N.RN.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	Radicals and Exponents Exponents
The Real Number System	Use properties of rational and irrational numbers.	N.RN.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
The Complex Number System	Perform arithmetic operations with complex numbers.	N.CN.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



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Domain	Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Number and Quantity</b>						
The Complex Number System	Perform arithmetic operations with complex numbers.	N.CN.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
The Complex Number System	Use complex numbers in polynomial identities and equations.	N.CN.7	Solve quadratic equations with real coefficients that have complex solutions.	Under review	Under review	Under review
The Complex Number System	Use complex numbers in polynomial identities and equations.	N.CN.8	Extend polynomial identities to the complex numbers. <i>For example, rewrite <math>x^2 + 4</math> as <math>(x + 2i)(x - 2i)</math>.</i>	Under review	Under review	Under review
The Complex Number System	Use complex numbers in polynomial identities and equations.	N.CN.9	Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials.	Under review	Under review	Under review
<b>Conceptual Category: Algebra</b>						
Seeing Structure in Expressions	Interpret the structure of expressions.	A.SSE.1.a	Interpret expressions that represent a quantity in terms of its context. Interpret parts of an expression, such as terms, factors, and coefficients.	Quadratic Functions and Equations	Vertex of a Parabola	Parabolas
Seeing Structure in Expressions	Interpret the structure of expressions.	A.SSE.1.b	Interpret expressions that represent a quantity in terms of its context. 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>	Quadratic Functions and Equations	The Discriminant Constructing Formulae Equations Reducible to Quadratics	Under review



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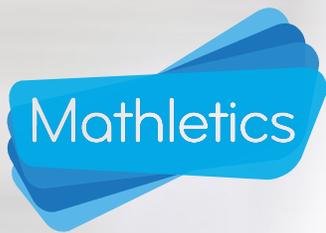
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Algebra						
Seeing Structure in Expressions	Interpret the structure of expressions.	A.SSE.1.b	Interpret expressions that represent a quantity in terms of its context. Interpret complicated expressions by viewing one or 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>	Exponents	Fractional Exponents Compound Interest by Formula Depreciation Declining Balance Depreciation	Geometric Series in Finance
Seeing Structure in Expressions	Interpret the structure of expressions.	A.SSE.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 $(x^2 - y^2)(x^2 + y^2)$ .	Quadratic Functions and Equations	Factoring Quadratics 1 Factoring Quadratics 2 Equations Reducible to Quadratics	Expanding and Factorizing
Seeing Structure in Expressions	Write expressions in equivalent forms to solve problems.	A.SSE.3.a	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. Factor a quadratic expression to reveal the zeros of the function it defines.	Solving Quadratic Equations	Highest Common Algebraic Factor Factoring Quadratics 1 Factoring Quadratics 2 Grouping in Pairs	Quadratic Equations
Seeing Structure in Expressions	Write expressions in equivalent forms to solve problems.	A.SSE.3.b	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.	Quadratic Functions and Equations	Completing the Square Completing the Square 2 Vertex of a Parabola	Quadratic Equations
Seeing Structure in Expressions	Write expressions in equivalent forms to solve problems.	A.SSE.3.c	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. Use the properties of exponents to transform expressions for exponential functions. <i>For example the expression <math>1.15t</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>	Under review	Under review	Under review



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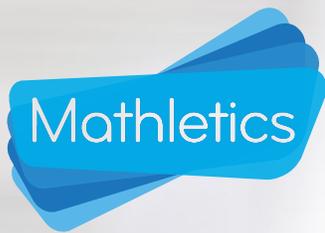
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Algebra						
Arithmetic with Polynomials and Rational Expressions	Perform arithmetic operations on polynomials.	A.APR.1	Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.	Polynomial Arithmetic	Like Terms: Add and Subtract Simplifying Expressions Algebraic Fractions 1 Algebraic Fractions 2 Algebraic Multiplication Expand then Simplify Expanding Brackets Expanding Binomial Products Special Binomial Products Multiplication with Exponents	Polynomials Equations Expanding and Factorizing Simplifying Algebra Binomials and Pascal's Triangle
Creating Equations	Create equations that describe numbers or relationships.	A.CED.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 and exponential functions.</i>	Quadratic Functions and Equations	Constructing Formulae	Quadratic Equations
Creating Equations	Create equations that describe numbers or relationships.	A.CED.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 and exponential functions.</i>	Exponents	Compound Interest by Formula Depreciation Declining Balance Depreciation	"Depreciation Interest"
Creating Equations	Create equations that describe numbers or relationships.	A.CED.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	Exponents	Graphing Exponentials	Exponential and Power Graphs
Creating Equations	Create equations that describe numbers or relationships.	A.CED.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	Quadratic Functions and Equations	Vertex of a Parabola Graphing Parabolas Constructing Formulae	Parabolas



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Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Algebra						
Creating Equations	Create equations that describe numbers or relationships.	A.CED.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>	Functions	Changing the Subject	Linear Relationships Depreciation
Reasoning with Equations and Inequalities	Solve equations and inequalities in one variable.	A.REI.4.a.	Solve quadratic equations in one variable. 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.	Solving Quadratic Equations	Quadratic Equations 1 Quadratic Equations 2	Quadratic Equations
Reasoning with Equations and Inequalities	Solve equations and inequalities in one variable.	A.REI.4.b	Solve quadratic equations in one variable. Solve quadratic equations by inspection (e.g., for $x^2=49$ ), 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 Quadratic Equations	Quadratic Equations 1 Quadratic Equations 2 Quadratic Formula The Discriminant Factoring Quadratics 1 Factoring Quadratics 2 Checking Quadratic Equations	Equations and Inequalities Factorizing Quadratic Equations
Reasoning with Equations and Inequalities	Solve systems of equations.	A.REI.7	Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. For example, find the points of intersection between the line $y=-3x$ and the circle $x^2 + y^2=3$ .	Linear and Quadratic Systems	Intersection: Line & Parabola Simultaneous Equations 3 Intersection: Line & Circle	Quadratic Equations



# CCSS Standards Alignment with Mathletics



## Integrated Math II

Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Functions						
Interpreting Functions	Interpret functions that arise in applications in terms of a context.	F.IF.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>	Quadratic Functions and Equations	Vertex of a Parabola Graphing Parabolas Parabolas and Rectangles Parabolas and Marbles	Parabolas
Interpreting Functions	Interpret functions that arise in applications in terms of a context.	F.IF.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>	Functions	Domain Domain and Range	Functions
Interpreting Functions	Interpret functions that arise in applications in terms of the context.	F.IF.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.	Functions	Equation from Two Points	Under review
Interpreting Functions	Analyze functions using different representations.	F.IF.7.a	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. Graph linear and quadratic functions and show intercepts, maxima, and minima.	Quadratic Functions and Equations	Graphing Parabolas	Parabolas
Interpreting Functions	Analyze functions using different representations.	F.IF.7.b	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.	Absolute Value, Step, and Piecewise	Absolute Value Graphs Step Graphs Piecemeal Functions	Under review

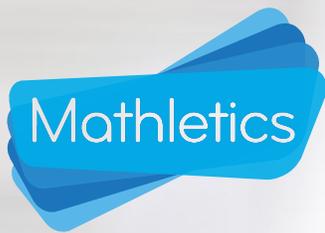


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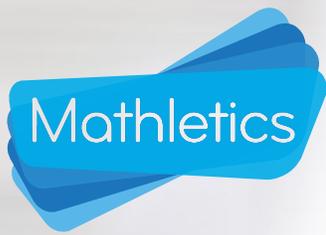
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Functions						
Interpreting Functions	Analyze functions using different representations.	F.IF.8.a	Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. 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.	Quadratic Functions and Equations	Factoring Quadratics 1 Factoring Quadratics 2 Grouping in Pairs Completing the Square Completing the Square 2 Vertex of a Parabola	Factorizing Parabolas Quadratic Equations
Interpreting Functions	Analyze functions using different representations.	F.IF.8.b	Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. 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)^t</math>, <math>y=(0.97)^t</math>, <math>y=(1.01)^{12t}</math>, <math>y=(1.2)^{t/10}</math>, and classify them as representing exponential growth or decay.</i>	Exponents	Multiplication with Exponents Fractional Exponents	Under review
Interpreting Functions	Analyze functions using different representations.	F.IF.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
Building Functions	Build a function that models a relationship between two quantities.	F.BF.1.a	Write a function that describes a relationship between two quantities. Determine an explicit expression, a recursive process, or steps for calculation from a context.	Exponents	Compound Interest by Formula Depreciation Declining Balance Depreciation	Depreciation Interest
Building Functions	Build a function that models a relationship between two quantities.	F.BF.1.a	Write a function that describes a relationship between two quantities. Determine an explicit expression, a recursive process, or steps for calculation from a context.	Quadratic Functions and Equations	Constructing Formulae	Parabolas



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Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Functions						
Building Functions	Build a function that models a relationship between two quantities.	F.BF.1.b	Write a function that describes a relationship between two quantities. 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>	Under review	Under review	Under review
Building Functions	Build new functions from existing functions.	F.BF.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>	Functions	Vertical and horizontal shift Symmetries of Graphs 1 Odd and Even Functions	Functions Parabolas Sketching Polynomials
Building Functions	Build new functions from existing functions.	F.BF.4.a	Find inverse functions. 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. <i>For example, <math>f(x)=2x^3</math> or <math>f(x)=(x + 1)/(x - 1)</math> for <math>x \neq 1</math>.</i>	Functions	Inverse Functions	Functions
Linear, Quadratic, and Exponential Models	Construct and compare linear, quadratic, and exponential models and solve problems.	F.LE.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
Trigonometric Functions	Prove and apply trigonometric identities.	F.T.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.	Under review	Under review	Under review

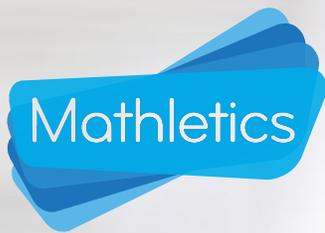


# CCSS Standards Alignment with Mathletics



## Integrated Math II

Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Geometry						
Congruence	Prove Geometric Theorems	G.CO.9	Prove theorems about lines and angles. <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>	Similarity, Congruence, and Theorems	Angles and Parallel Lines Parallel Lines	Under review
Congruence	Prove Geometric Theorems	G.CO.10	Prove theorems about triangles. <i>Theorems include: measures of interior angles of a triangle sum to 180°; 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>	Similarity, Congruence, and Theorems	Angle Measures in a Triangle Plane Figure Theorems Ratio of Intercepts	Polygons and Angles
Congruence	Prove geometric theorems.	G.CO.11	Prove theorems about parallelograms. <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>	Similarity, Congruence, and Theorems	Plane Figure Theorems	Under review
Similarity, Right Triangles, and Trigonometry	Understand similarity in terms of similarity transformations.	G.SRT.1.a	Verify experimentally the properties of dilations given by a center and a scale factor: <i>a</i> . A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged.	Under review	Under review	Under review
Similarity, Right Triangles, and Trigonometry	Understand similarity in terms of similarity transformations.	G.SRT.1.b	Verify experimentally the properties of dilations given by a center and a scale factor: <i>b</i> . The dilation of a line segment is longer or shorter in the ratio given by the scale factor.	Similarity, Congruence, and Theorems	Scale Measurement Scale Factor	Under review



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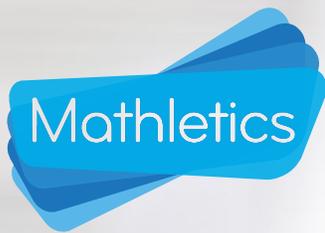
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Geometry</b>						
Similarity, Right Triangles, and Trigonometry	Understand similarity in terms of similarity transformations.	G.SRT.2	Given two figures, use the definition of similarity in terms of similarity transformations 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, Congruence, and Theorems	Similar Figures 1	Similarity and Congruence
Similarity, Right Triangles, and Trigonometry	Understand similarity in terms of similarity transformations.	G.SRT.3	Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.	Similarity, Congruence, and Theorems	Similarity Proofs	Similarity and Congruence
Similarity, Right Triangles, and Trigonometry	Prove theorems involving similarity.	G.SRT.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>	Similarity, Congruence, and Theorems	Ratio of Intercepts	Under review
Similarity, Right Triangles, and Trigonometry	Prove theorems involving similarity.	G.SRT.5	Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.	Similarity, Congruence, and Theorems	Similar Figures Using Similar Triangles Using Similar Triangles 1	Similarity and Congruence
Similarity, Right Triangles, and Trigonometry	Define trigonometric ratios and solve problems involving right triangles.	G.SRT.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
Similarity, Right Triangles, and Trigonometry	Define trigonometric ratios and solve problems involving right triangles.	G.SRT.7	Explain and use the relationship between the sine and cosine of complementary angles.	Under review	Under review	Trigonometric Relationships
Similarity, Right Triangles, and Trigonometry	Define trigonometric ratios and solve problems involving right triangles.	G.SRT.8	Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.	Trigonometry	Find Unknown Sides Find Unknown Angles Elevation and Depression Trigonometry Problems 2	Pythagorean Theorem Trigonometry



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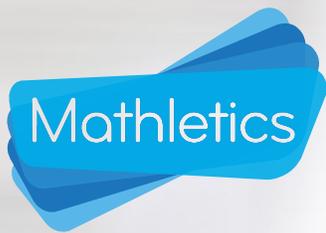
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Geometry</b>						
Circles	Understand and apply theorems about circles.	G.C.1	Prove that all circles are similar.	Under review	Under review	Under review
Circles	Understand and apply theorems about circles.	G.C.2	Identify 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 and Parabolas	Circle Theorem Tangents and Secants	Tangents and Secants Chords and Angles
Circles	Understand and apply theorems about circles.	G.C.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	Constructions
Circles	Understand and apply theorems about circles.	G.C.4	Construct a tangent line from a point outside a given circle to the circle.	Under review	Under review	Constructions
Circles	Find arc lengths and areas of sectors of circles.	G.C.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 and Parabolas	Converting Radians and Degrees Perimeter and Circles Arc Length Length of an Arc Area of a Sector (degrees and radians)	Perimeter and Area
Expressing Geometric Properties with Equations	Translate between the geometric description and the equation for a conic section.	G.GPE.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 and Parabolas	Centre and Radius 1 Centre and Radius 2	Circle Graphs
Expressing Geometric Properties with Equations	Translate between the geometric description and the equation for a conic section.	G.GPE.2	Derive the equation of a parabola given a focus and directrix.	Circles and Parabolas	Focus and Directrix 1 Focus and Directrix 2 Focus and Directrix 3 Focus and Directrix 4	



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Domain	Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Geometry</b>						
Expressing Geometric Properties with Equations	Use coordinates to prove simple geometric theorems algebraically.	G.GPE.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 (1, <math>\sqrt{3}</math>) lies on the circle centered at the origin and containing the point (0, 2).</i>	Circles and Parabolas	Centre and Radius 1 Centre and Radius 2 Focus and Directrix 1 Focus and Directrix 2 Focus and Directrix 3 Focus and Directrix 4	Coordinate Geometry Circle Graphs
Expressing Geometric Properties with Equations	Use coordinates to prove simple geometric theorems algebraically.	G.GPE.6	Find the point on a directed line segment between two given points that partitions the segment in a given ratio.	Similarity, Congruence, and Theorems	Midpoint by Formula	Coordinate Geometry
Geometric Measurement and Dimension	Explain volume formulas and use them to solve problems.	G.GMD.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. <i>Use dissection arguments, Cavalieri's principle, and informal limit arguments.</i>	Under review	Under review	Under review
Geometric Measurement and Dimension	Explain volume formulas and use them to solve problems.	G.GMD.3	Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.	Three-Dimensional Figures	Volume: Cylinders Volume: Pyramids Volume: Cones Volume: Spheres Volume: Composite Figures Volume: Rearrange Formula	Measuring Solids
<b>Conceptual Category: Statistics and Probability</b>						
Conditional Probability and the Rules of Probability	Understand independence and conditional probability and use them to interpret data.	S.CP.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	Venn Diagrams Probability - 'And' and 'Or'	Probability



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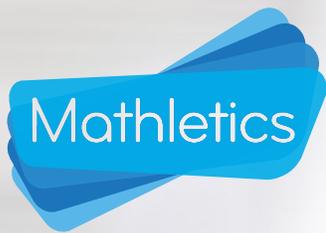
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Statistics and Probability						
Conditional Probability and the Rules of Probability	Understand independence and conditional probability and use them to interpret data.	S.CP.2	Understand that two events $A$ and $B$ are 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
Conditional Probability and the Rules of Probability	Understand independence and conditional probability and use them to interpret data.	S.CP.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 $B$ .	Probability	Conditional Probability	Under review
Conditional Probability and the Rules of Probability	Understand independence and conditional probability and use them to interpret data.	S.CP.4	Construct and interpret two-way 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
Conditional Probability and the Rules of Probability	Understand independence and conditional probability and use them to interpret data.	S.CP.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



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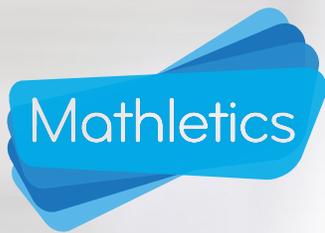
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Statistics and Probability</b>						
Conditional Probability and the Rules of Probability	Use the rules of probability to compute probabilities of compound events in a uniform probability model.	S.CP.6	Find the conditional 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.	Probability	Conditional probability	Under review
Conditional Probability and the Rules of Probability	Use the rules of probability to compute probabilities of compound events in a uniform probability model.	S.CP.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	Probability - 'And' and 'Or'	Under review
Conditional Probability and the Rules of Probability	Use the rules of probability to compute probabilities of compound events in a uniform probability model.	S.CP.8	Apply the general Multiplication Rule in a uniform probability model, $P(A \text{ and } B) = P(A)P(B   A) = P(B)P(A   B)$ , and interpret the answer in terms of the model.	Probability	Probability Without Replacement	Under review
Conditional Probability and the Rules of Probability	Use the rules of probability to compute probabilities of compound events in a uniform probability model.	S.CP.9	Use permutations and combinations to compute probabilities of compound events and solve problems.	Probability	Counting Techniques 1 Counting Techniques 2 Introduction to Permutations and Combinations Permutations and Probability Combinations and Probability	Under review
Using Probability to Make Decisions	Use probability to evaluate outcomes of decisions.	S.MD.6	Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).	Probability	Fair Games	Under review
Using Probability to Make Decisions	Use probability to evaluate outcomes of decisions.	S.MD.7	Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).	Under review	Under review	Under review



# CCSS Standards Alignment with Mathletics

## Integrated Math III

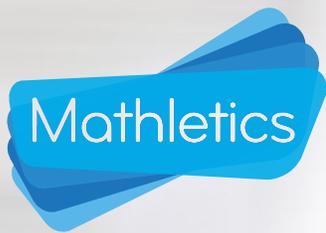
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Number and Quantity</b>						
The Complex Number System	Use complex numbers in polynomial identities and equations.	N.CN.8	Extend polynomial identities to the complex numbers. <i>For example, rewrite <math>x^2 + 4</math> as <math>(x + 2i)(x - 2i)</math>.</i>	Solving Higher Order Equations	Complex Conjugate	Under review
The Complex Number System	Use complex numbers in polynomial identities and equations.	N.CN.9	Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials.	Under review	Under review	Under review
<b>Conceptual Category: Algebra</b>						
Seeing Structure in Expressions	Interpret the structure of expressions.	A.SSE.1.a	Interpret expressions that represent a quantity in terms of its context. Interpret parts of an expression, such as terms, factors, and coefficients.	Modeling with Functions	Gradients for Real Exponential Growth and Decay	Sketching Polynomials
				Rational Equations	Vertical and Horizontal Asymptotes	Under review
Seeing Structure in Expressions	Interpret the structure of expressions.	A.SSE.1.b	Interpret expressions that represent a quantity in terms of its context. 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>	Solving Higher Order Equations	Factoring Expressions Reducible to Quadratics	Geometric Series in Finance
Seeing Structure in Expressions	Interpret the structure of expressions.	A.SSE.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>	Solving Higher Order Equations	Equations Reducible to Quadratics	Factorizing
				Polynomial Arithmetic	Polynomial Long Division Simplifying Binomial Expressions	Factorizing



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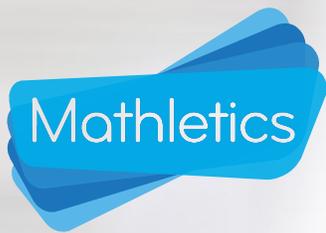
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Algebra						
Seeing Structure in Expressions	Write expressions in equivalent forms to solve problems.	A.SSE.4	Derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems. <i>For example, calculate mortgage payments.</i>	Sequences and Series	Sum: Geometric Progressions Sigma Notation 1 Sigma Notation 2	Sequences & Series: Geometric Series and Loan Repayments Geometric Series in Finance
Arithmetic with Polynomials and Rational Expressions	Perform arithmetic operations on polynomials.	A.APR.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
Arithmetic with Polynomials and Rational Expressions	"Understand the relationship between zeros and factors of polynomials."	A.APR.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 Higher Order Equations	Polynomial Factor Theorem	Polynomials
Arithmetic with Polynomials and Rational Expressions	"Understand the relationship between zeros and factors of polynomials."	A.APR.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 Higher Order Equations	Factoring Expressions Equations Reducible to Quadratics Polynomial Factor Theorem Graphing Cubics	Factorizing Polynomials Sketching Polynomials
Arithmetic with Polynomials and Rational Expressions	Use polynomial identities to solve problems.	A.APR.4	Prove polynomial identities and use them to describe numerical relationships. <i>E20</i>	Solving Higher Order Equations	Equations Reducible to Quadratics	Factorizing



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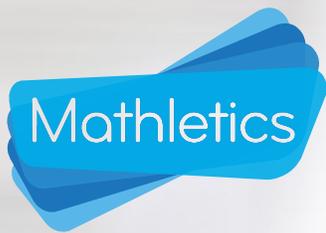
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Algebra</b>						
Arithmetic with Polynomials and Rational Expressions	Use polynomial identities to solve problems.	A.APR.5	Know and apply the Binomial Theorem for the expansion of $(x + y)^n$ in powers of $x$ and $y$ for a positive integer $n$ , where $x$ and $y$ are any numbers, with coefficients determined for example by Pascal's Triangle.	Polynomial Arithmetic	Pascal's Triangle, Expansion	The Binomial Theorem Binomials and Pascal's Triangle
Arithmetic with Polynomials and Rational Expressions	Rewrite rational expressions.	A.APR.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
Arithmetic with Polynomials and Rational Expressions	Rewrite rational expressions.	A.APR.7	Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions.	Rational Equations	Algebraic Fractions 2 Algebraic Fractions 3 Factoring and Fractions 1 Factoring and Fractions 2	Factorizing
Creating Equations	Create equations that describe numbers or relationships.	A.CED.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 and exponential functions.</i>	Modeling with Functions	Write an Equation: Word Problems	Under review
Creating Equations	Create equations that describe numbers or relationships.	A.CED.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 Modeling Parabolas and Marbles Parabolas and Rectangles Constructing Formulae	Under review



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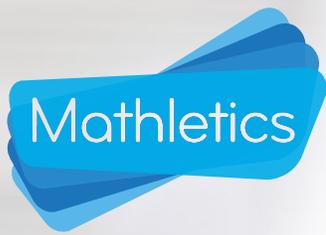
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Algebra						
Creating Equations	Create equations that describe numbers or relationships.	A.CED.3	Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions 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
Creating Equations	Create equations that describe numbers or relationships.	A.CED.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 Graphing Inverse Functions	Functions
Reasoning with Equations and Inequalities	Understand solving equations as a process of reasoning and explain the reasoning.	A.REI.2	Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.	Radical Equations	Equations with Square Roots Equations with Cube Roots	Under review
Reasoning with Equations and Inequalities	Represent and solve equations and inequalities graphically.	A.REI.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.	Solving Higher Order Equations	Solve Systems by Graphing	Under review



# CCSS Standards Alignment with Mathletics

## Integrated Math III

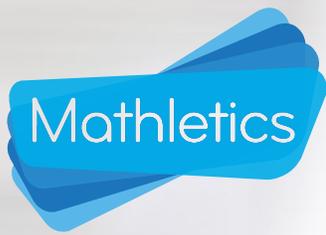
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Functions						
Interpreting Functions	Interpret functions that arise in applications in terms of a context.	F.IF.4	For a function that models a relationship between two quantities, interpret key features of graphs and tables 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
Interpreting Functions	Interpret functions that arise in applications in terms of a context.	F.IF.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
Interpreting Functions	Interpret functions that arise in applications in terms of the context.	F.IF.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.	Modeling with Functions	Equation from Two Points	Under review
Interpreting Functions	Analyze functions using different representations.	F.IF.7.b	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.	Inverse Functions	Graph Inverse Functions	Under review
				Modeling with Functions	Absolute Value Graphs Piecemeal Functions Step Graphs	Under review



# CCSS Standards Alignment with Mathletics

## Integrated Math III

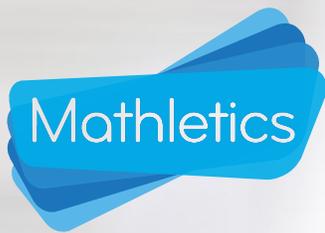
Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Functions						
Interpreting Functions	Analyze functions using different representations.	F.IF.7.c	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.	Solving Higher Order Equations	Graphing Cubics	Sketching Polynomials
Interpreting Functions	Analyze functions using different representations.	F.IF.7.e	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.	Trigonometry	Sine and Cosine Curves Trig Graphs in Radians Graph Inverse Trig Functions	Trigonometric Relationships
				Exponents and Logarithms	Graphing Exponentials Exponential or Log Graph?	Exponential and Power Graphs Logarithms Simple Nonlinear Graphs
Interpreting Functions	Analyze functions using different representations.	F.IF.8.a	Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. 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.	Polynomial Arithmetic	Polynomial Long Division Simplifying Binomial Expressions	Factorizing Polynomials Sketching Polynomials
Interpreting Functions	Analyze functions using different representations.	F.IF.8.b	Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. 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)^{2x}</math>, <math>y=(1.2)^{x/10}</math>, and classify them as representing exponential growth or decay.</i>	Exponents and Logarithms	Change of Base	Under review



# CCSS Standards Alignment with Mathletics

## Integrated Math III

Domain	Cluster	Standard	Description	Topic	Activities	eBooks
Conceptual Category: Functions						
Interpreting Functions	Analyze functions using different representations.	F.IF.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
Building Functions	Build a function that models a relationship between two quantities.	F.BF.1.b	Write a function that describes a relationship between two quantities. 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>	Under review	Under review	Under review
Building Functions	Build new functions from existing functions.	F.BF.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 Symmetries of Graphs 1 Vertical and horizontal shift	Exponential and Power Graphs Functions Sketching Polynomials
Building Functions	Build new functions from existing functions.	F.BF.4.a	Find inverse functions. 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. <i>For example, <math>f(x)=2x^3</math> or <math>f(x)=(x + 1)/(x - 1)</math> for <math>x \neq 1</math>.</i>	Inverse Functions	Inverse Functions	Functions



# CCSS Standards Alignment with Mathletics

## Integrated Math III

Domain	Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Functions</b>						
Linear, Quadratic, and Exponential Models	Construct and compare linear, quadratic, and exponential models and solve problems.	F.LE.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
Trigonometric Functions	Extend the domain of trigonometric functions using the unit circle.	F.TF.1	Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle.	Trigonometry	Converting Radians and Degrees Unit Circle Reductions	Under review
Trigonometric Functions	Extend the domain of trigonometric functions using the unit circle.	F.TF.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 counterclockwise around the unit circle.	Trigonometry	Sign of the Angle Unit Circle Reductions Trigonometric Relationships	Trigonometric Relationships
Trigonometric Functions	Model periodic phenomena with trigonometric functions.	F.TF.5	Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline.	Trigonometry	Period and Amplitude	Under review
<b>Conceptual Category: Geometry</b>						
Similarity, Right Triangles, and Trigonometry	Apply trigonometry to general triangles.	G.SRT.9	Derive the formula $A=1/2 ab \sin(C)$ for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side.	Trigonometry	Area Rule 1 Area Rule 2 Area Problems	Non Right Angled Triangles
Similarity, Right Triangles, and Trigonometry	Apply trigonometry to general triangles.	G.SRT.10	Prove the Laws of Sines and Cosines and use them to solve problems.	Trigonometry	Sine Rule 1 Cosine Rule 1 Cosine Rule 2	Non Right Angled Triangles
Similarity, Right Triangles, and Trigonometry	Apply trigonometry to general triangles.	G.SRT.11	Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).	Trigonometry	Sine Rule 1 Cosine Rule 1 Cosine Rule 2	Non Right Angled Triangles



# CCSS Standards Alignment with Mathletics

## Integrated Math III

Domain	Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Geometry</b>						
Geometric Measurement and Dimension	Visualize relationships between two-dimensional and three-dimensional objects.	G.GMD.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	Relate Shapes and Solids Nets	Under review
Modeling with Geometry	Apply geometric concepts in modeling situations.	G.MG.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	Match the Solid 2	Measuring Solids
Modeling with Geometry	Apply geometric concepts in modeling situations.	G.MG.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
Modeling with Geometry	Apply geometric concepts in modeling situations.	G.MG.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
<b>Conceptual Category: Statistics and Probability</b>						
Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on a single count or measurement variable	S.ID.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 Normal Distribution Probability Calculating Standard Deviation Calculating z-scores Comparing z-scores Equivalent z-scores	Interpreting Data
Making Inferences and Justifying Conclusions	Understand and evaluate random processes underlying statistical experiments.	S.IC.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	Under review



# CCSS Standards Alignment with Mathletics

## Integrated Math III

Domain	Cluster	Standard	Description	Topic	Activities	eBooks
<b>Conceptual Category: Statistics and Probability</b>						
Making Inferences and Justifying Conclusions	Understand and evaluate random processes underlying statistical experiments.	S.IC.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
Making Inferences and Justifying Conclusions	Make inferences and justify conclusions from sample surveys, experiments, and observational studies.	S.IC.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
Making Inferences and Justifying Conclusions	Make inferences and justify conclusions from sample surveys, experiments, and observational studies.	S.IC.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
Making Inferences and Justifying Conclusions	Make inferences and justify conclusions from sample surveys, experiments, and observational studies.	S.IC.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
Making Inferences and Justifying Conclusions	Make inferences and justify conclusions from sample surveys, experiments, and observational studies.	S.IC.6	Evaluate reports based on data.	Under review	Under review	Under review
Using Probability to Make Decisions	Use probability to evaluate outcomes of decisions.	S.MD.6	Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).	Collecting and Analyzing Data	Fair Games	Under review
Using Probability to Make Decisions	Use probability to evaluate outcomes of decisions.	S.MD.7	Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).	Under review	Under review	Under review

# Mathletics



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