



Mathletics

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New York State Next Generation Mathematics Learning Standards

Grades K – 8

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; 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 by tens.	Count by Tens 1 to 30 Before, After and Between 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 Forward Going Up Order Numbers to 10 Order Numbers to 20 Counting Up to 20
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).	Matching Numbers to 10 Matching Numbers to 20 Reading Numbers to 30
Counting and Cardinality	Count to tell the number of objects.	NY-K.CC.4	Understand the relationship between numbers and quantities up to 20; connect counting to cardinality. a. When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object. (1:1 correspondence) b. 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. c. Understand the concept that each successive number name refers to a quantity that is one larger. d. Understand the concept of ordinal numbers (first through tenth) to describe the relative position and magnitude of whole numbers.	How Many? Dot Display How Many Dots? Count to 5 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? Count to 5 Dot Display How Many Dots? Concept of Zero

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?
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.	Model Addition Model Subtraction
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 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.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.	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.4	Find the number that makes 10 when given a number from 1 to 9. Record the answer with a drawing or equation.	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.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 Make 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 Hot or Cold? 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? Hot or Cold?
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 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 above, below, beside, in front of, behind and next to.	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
Geometry	Identify and describe shapes (squares, circles, triangles,	NY-K.G.3	Understand the difference between two-dimensional (lying in a plane, "flat") or three-dimensional ("solid") shapes.	Teacher directed

	rectangles, hexagons, cubes, cones, cylinders, and spheres).			
Geometry	Analyze, compare, sort, and compose shapes.	NY-K.G.4	Analyze, compare, and sort 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 Relate Shapes and Solids
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 Word 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 Single Digit Numbers Add 3 Numbers Using Bonds to 10 Add and Subtract Problems
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 Missing Numbers
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: • counting on; • making ten; • decomposing a number leading to a ten; • using the relationship between addition and subtraction; and • creating equivalent but easier or known sums.	Fact Families: Add and Subtract Adding to Ten Subtracting from Ten All about Twenty Subtracting from 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

Grade 1

Domain	Cluster	Standard	Standard Description	Activities
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.	Balancing Act Balancing Objects 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
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.	Make Big Numbers Count Before, After & Between to 100 Counting Forward Going Up
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 Making Numbers Count
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 20 Compare Numbers to 50 Compare Numbers to 100

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.4	Add within 100, including: • a two-digit number and a one-digit number; • a two-digit number and a multiple of 10. 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 representation and explain the reasoning used.	Complements to 10, 20, 50 Complements to 50 and 100 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
Number and Operations in Base Ten	Use place value understanding and properties of operations to add and subtract.	NY-1.NBT.6	Subtract multiples of 10 in the range 10–90 using • concrete models or drawings, and • strategies based on place value, properties of operations, and/or the relationship between addition and subtraction. Relate the strategy used to a written representation and explain the reasoning.	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

Grade 1

Domain	Cluster	Standard	Standard Description	Activities
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, *o'clock* and *half past*.**	**Set Time to the Hour** **Set 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 (USD)**
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.**	**Picture Graphs: Who has the Goods?** **Pictographs** **Read Graphs** **Sorting Data**
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.**	**Collect Simple Shapes** **Collect the Shapes** **Collect More Shapes** **Count Sides and Corners**
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.**	**Teacher directed**

Grade 1

Domain	Cluster	Standard	Standard Description	Activities
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 *halves*, *fourths*, and *quarters*, and use the phrases *half of*, *fourth of*, and *quarter of*. Describe the whole as *two of*, or *four of* the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.**	**Halves** **Halves and Quarters**

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 Bar Model Problems 2
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 Bar Model Problems 2
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: • counting on; • making ten; • decomposing a number leading to a ten; • using the relationship between addition and subtraction; and • creating equivalent but easier or known sums.	Addition Addition Facts Subtraction Facts to 18 Simple Subtraction Addictive 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.	Addition Addition Facts Subtraction Facts to 18 Simple Subtraction Addictive 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
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

Grade 2

Domain	Cluster	Standard	Standard Description	Activities
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
Number and Operations in Base Ten	Understand place value.	NY-2.NBT.1	Understand that the digits of a three-digit number represent amounts of hundreds, tens, and ones. a. Understand 100 can be thought of as a bundle of ten tens, called a "hundred". 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).	Model Numbers Understanding Place Value 1 Place Value 2 Place Value Partitioning
Number and Operations in Base Ten	Understand place value.	NY-2.NBT.2	Count within 1000; skip-count by 5s, 10s, and 100s.	Count by Fives Count by Tens Count by 2s, 5s and 10s
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.	Place Value 2 Understanding Place Value 1 Place Value Partitioning
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 Complements to 50 and 100 Decompose Numbers to 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.6	Add up to four two-digit numbers using strategies based on place value and properties of operations.	Add Two 2-Digit Numbers Add Two 2-Digit Numbers: Regroup Add 3 Numbers: Bonds to 100 Add 3 Numbers: Bonds to Multiples of 10 Add Three 2-Digit Numbers
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 • concrete models or drawings, and • strategies based on place value, properties of operations, and/or the relationship between addition and subtraction. Relate the strategy to a written 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 up to 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 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.	10 More, 10 Less
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

Grade 2

Domain	Cluster	Standard	Standard Description	Activities
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
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.	Teacher directed
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, *quarter past*, *half past* and *quarter to*.	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.	How Much Money? (USD) Money-Totalling (USD)
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.	Choosing the Fewest Coins (USD) Who's got the Money?

Grade 2

Domain	Cluster	Standard	Standard Description	Activities
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 picture graph or a bar graph.**	**Bar Graphs 1** **Bar Graphs 2** **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**
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.**	**Shade Fractions** **Halves** **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.	Groups of Two Groups of Three Groups of Four Groups of Five Groups of Six Groups of Seven Groups of Eight Groups of Nine Groups of Ten Multiplication Arrays Arrays 1 Frog Jump Multiplication Model Multiplication to 5 x 5
Operations and Algebraic Thinking	Represent and solve problems involving multiplication and division.	NY-3.OA.2	Interpret whole-number quotients of whole numbers.	Divide Into Equal Groups Dividing Threes Dividing Fours Dividing Fives Dividing Sixes Dividing Sevens Dividing Eights Dividing Nines Dividing Tens Frog Jump Division Share the Treasure
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.	Multiplication Problems 1 Fill the Jars Problems: Times and Divide
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.	Related Facts 2 Missing Numbers: × and ÷ facts
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.	Multiplication Turn-Abouts Multiplication Properties Fact Families: Multiply and Divide

Grade 3

Domain	Cluster	Standard	Standard Description	Activities
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.	Missing Numbers: × and ÷ facts
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 Multiplication Facts
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.	Word Problems with Letters
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 Describing 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?

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.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 2-Digit Numbers: Regroup Addition Properties Missing Numbers 1 3-Digit Differences 3-Digit Differences with Zeros 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 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
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 digits of a four-digit number represent amounts of thousands, hundreds, tens, and ones.	Place Value 3 Understanding Place Value 2 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 to Thousands Expanding Numbers
Number and Operations — Fractions	Develop understanding of fractions as numbers.	NY-3.NF.1	Understand a unit fraction, $1/b$, is the quantity formed by 1 part when a whole is partitioned into b equal parts. Understand a fraction a/b as the quantity formed by a parts of size $1/b$.	Shade Fractions Model Fractions What Fraction Is Shaded 1 Halves and Quarters Thirds and Sixths

Grade 3

Domain	Cluster	Standard	Standard Description	Activities
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 $1/b$ 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 $1/b$ and that the endpoint of the part starting at 0 locates the number $1/b$ on the number line. b. Represent a fraction a/b on a number line by marking off a lengths $1/b$ from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line.	Identifying Fractions on a Number Line
Number and Operations — Fractions	Develop understanding of fractions as numbers.	NY-3.NF.3	Explain equivalence of fractions and compare fractions by reasoning about their size. a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line. b. Recognize and generate simple equivalent fractions. Explain why the fractions are equivalent. c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. d. 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 >, =, or <, and justify the conclusions.	Equivalent Fraction Wall 1 Compare Fractions 1a Comparing Fractions 1

Grade 3

Domain	Cluster	Standard	Standard Description	Activities
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? Five Minute Times Time Mentals Elapsed Time
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? How Heavy? Cups, Pints, Quarts, Gallons
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 Picture Graphs: With Scale Pictographs Bar Graphs 1 Bar Graphs 2 Add and Subtract Using Graphs Picture Graphs: with scale & half symbols
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.	Measure to the Nearest Half Inch

Grade 3

Domain	Cluster	Standard	Standard Description	Activities
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.** **a. 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.** **b. Recognize a plane figure which can be covered without gaps or overlaps by *n* unit squares is said to have an area of *n* square units.**	**Teacher directed**
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** **Calculate Area of Shapes (inches, feet, yards)** **Biggest Shape**

Grade 3

Domain	Cluster	Standard	Standard Description	Activities
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. a. 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. b. 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. c. Use tiling to show in a concrete case that the area of a rectangle with whole-number side length a and side length $b + c$ is the sum of $a \times b$ and $a \times c$. Use area models to represent the distributive property in mathematical reasoning. d. Recognize area as additive. Find areas of figures composed of non-overlapping rectangles, and apply this technique to solve real world problems.	Area of Squares and Rectangles Calculate Area of Squares and Rectangles Area: Compound Figures
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.	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.	Teacher directed

Grade 3

Domain	Cluster	Standard	Standard Description	Activities
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** **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.	Teacher directed
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, distinguishing multiplicative comparison from additive comparison. Use drawings and equations with a symbol for the unknown number to represent the problem.	Multiplication Problems 1
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 Describing Patterns

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.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.	Place Value 1 (×10 and ÷10) Place Value 2 (×10 and ÷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 Place Value Partitioning Understanding Place Value 2 Understanding Place Value 3
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? Greater Than or Less Than 1
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 Multi-Digit Numbers 1 Add Multi-Digit Numbers 2 Adding Colossal Columns Subtracting Colossal Columns 2-Digit Differences: Regroup 3-Digit Differences: 2 Regroupings 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 2 Digits Area Model Contracted Multiplication Double and Halve to Multiply

Grade 4

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-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.	Remainders by Arrays Remainders by Tables Divide: 1-Digit Divisor 1 Divide: 1-Digit Divisor 2 Divide: 1-Digit Divisor, Remainder
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 Equivalent Fraction Wall 2 Selecting Equivalent Fractions Equivalent Fractions on a Number Line 1
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 1b Comparing Fractions 1

Grade 4

Domain	Cluster	Standard	Standard Description	Activities
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 Like Fractions Subtract Like Fractions 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.	Multiply Fraction by Whole Number Model Fractions to Multiply
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 from Words to Digits 1

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.	Decimals on the Number Line 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 Meters and Kilometers Centimeters and Millimeters Milliliters and Liters Grams and Kilograms Conversions Converting Units of Mass 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) Mass Word Problems Using Timetables 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

Grade 4

Domain	Cluster	Standard	Standard Description	Activities
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 (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots.**	**Teacher directed**
Measurement and Data	**Geometric measurement: understand concepts of angle and measure angles.**	**NY-4.MD.5**	**Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement.** **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 1/360 of a circle is called a "one-degree angle," and can be used to measure angles.** **b. Recognize an angle that turns through *n* one-degree angles is said to have an angle measure of *n* degrees.**	**Comparing Angles** **Equal Angles**
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.**	**Estimating Angles** **Measuring Angles**
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.**	**Angles of Revolution: Unknown Values**

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.1	Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.	What Line am I? Right Angle Relation Triangles; Acute, Right, Obtuse What Type of Angle?
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).	Triangle Tasters Triangle - Tasters
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
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 Symmetry or Not? Lines of Symmetry

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 (PEDMAS) Operations Order 1 (PEDMAS)
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.	Teacher directed
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.	Table of Values Coordinate Graphs: 1st Quadrant
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 1 (×10 and ÷10) Place Value 2 (×10 and ÷10)
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.	Multiplying by 10, 100, 1000 Dividing by 10, 100, 1000 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.	Decimals from Words to Digits 1 Decimals from Words to Digits 2 Place Value to Millions Place Value to Billions Decimal Place Value Decimal Order 1 Decimal Order 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 1

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.5	Fluently multiply multi-digit whole numbers using a standard algorithm.	Multiply: 2-Digit Number, Regroup Long Multiplication
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 Long Division Mental Methods Division 2 Mental Methods Division 3
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: • add and subtract decimals to hundredths; • multiply and divide decimals to hundredths. Relate the strategy to a written method and explain the reasoning used.	Add Decimals 1 Subtract Decimals 1 Multiply Decimals 1 Multiply Decimals: Area Model Divide Decimal by Whole Number 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 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 Word Problems

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.3	Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers.	Partition into Equal Parts
Number and Operations — Fractions	Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	NY-5.NF.4	Apply and extend previous understandings of multiplication to multiply a fraction by a whole number or a fraction. a. Interpret the product $a/b \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations a x $q \div b$. 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.	Model Fractions to Multiply Multiply Fraction by Whole Number Multiply: Whole Number and Fraction Multiply Fraction by Fraction Multiply Two Fractions 1
Number and Operations — Fractions	Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	NY-5.NF.5	Interpret multiplication as scaling (resizing). 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. 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 $a/b = a/b \times n/n$ to the effect of multiplying a/b by 1.	Teacher directed

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.6	Solve real world problems involving multiplication of fractions and mixed numbers.	More Fraction Problems
Number and Operations — Fractions	Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	NY-5.NF.7	Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. b. Interpret division of a whole number by a unit fraction, and compute such quotients. c. Solve real-world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions.	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 Addition Milliliters and Liters Customary Units of Capacity Capacity Addition
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 (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots.	Teacher directed

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.3	Recognize volume as an attribute of solid figures and understand concepts of volume measurement. a. 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. b. Recognize that a solid figure which can be packed without gaps or overlaps using *n* unit cubes is said to have a volume of *n* cubic units.	Volume of Solids and Prisms - 1cm³ 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 - 1cm³ blocks How many Blocks?
Measurement and Data	Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.	NY-5.MD.5	Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. a. 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. b. Apply the formulas $V = l \times w \times h$ and $V = B \times h$ 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. c. 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.	Volume: Rectangular Prisms 1 Volume: Rectangular Prisms 2

Grade 5

Domain	Cluster	Standard	Standard Description	Activities
Geometry	Graph points on the coordinate plane to solve real-world and mathematical problems.	NY-5.G.1	Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond.	Coordinate Graphs: 1st Quadrant
Geometry	Graph points on the coordinate plane to solve real-world and mathematical problems.	NY-5.G.2	Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.	Coordinate Graphs: 1st Quadrant
Geometry	Classify two-dimensional figures into categories based on their properties.	NY-5.G.3	Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.	Properties of Quadrilaterals
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.	Collect More Shapes Collect the Shapes 2 Collect the Polygons

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.	Teacher directed
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.	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. 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. 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. d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.	Ratio Word Problems Ratios Equivalent Ratios Graphing from a Table of Values Graphing from a Table of Values 2 Average Speed Best Buy Rate Word Problems 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 (no units) Customary Units of Length Customary Units of Capacity Customary Units of Weight 1 Customary Units of Weight 2

Grade 6

Domain	Cluster	Standard	Standard Description	Activities
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 Fractions by Fractions 1 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 Long Division
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 Adding and Subtracting Decimals Multiply 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.	Find the Factor Greatest Common Factor Multiples 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.	Teacher directed

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.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.	Integers on a Number Line Number Plane Ordered Pairs Coordinate Graphs
The Number System	Apply and extend previous understandings of numbers to the system of rational numbers.	NY-6.NS.7	Understand ordering and absolute value of rational numbers. a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. b. Write, interpret, and explain statements of order for rational numbers in real-world contexts. c. Understand the absolute value of a rational number as its distance from 0 on the number line. Interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. d. Distinguish comparisons of absolute value from statements about order.	Ordering Integers (Number Line) Comparing Integers Absolute Value

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.8	Solve real-world and mathematical problems by graphing points on a coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.	Graphing from a Table of Values Graphing from a Table of Values 2
Expressions, Equations, and Inequalities	Apply and extend previous understandings of arithmetic to algebraic expressions.	NY-6.EE.1	Write and evaluate numerical expressions involving whole-number exponents.	Exponents I am Thinking of a Number! Order of Operations 2 (PEDMAS)
Expressions, Equations, and Inequalities	Apply and extend previous understandings of arithmetic to algebraic expressions.	NY-6.EE.2	Write, read, and evaluate expressions in which letters stand for numbers. a. Write expressions that record operations with numbers and with letters standing for numbers. b. Identify parts of an expression using mathematical terms (term, coefficient, sum, difference, product, factor, and quotient); view one or more parts of an expression as a single entity. c. 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).	Writing Algebraic Expressions Simple Substitution 1
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.	Multiplication Properties
Expressions, Equations, and Inequalities	Apply and extend previous understandings of arithmetic to algebraic expressions.	NY-6.EE.4	Identify when two expressions are equivalent.	Teacher directed

Grade 6

Domain	Cluster	Standard	Standard Description	Activities
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.	Teacher directed
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.	Writing Algebraic Expressions
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: Multiply, Divide 1
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.	Inequalities on a Number Line: Basics Inequalities on a Number Line: Mixed Basics
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, 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: Right Triangles 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 1 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.	Teacher directed
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
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.	Teacher directed
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.**	**Teacher directed**
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.**	**Teacher directed**
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.**	**Line Plots** **Dot Plots** **Histograms**
Statistics and Probability	**Summarize and describe distributions.**	**NY-6.SP.5**	**Summarize quantitative data sets in relation to their context.** **a. Report the number of observations.** **b. Describe the nature of the attribute under investigation, including how it was measured and its units of measurement.** **c. 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 were gathered.** **d. Relate the range and the choice of measures of center to the shape of the data distribution and the context in which the data were gathered.**	**Mode** **Median** **Mean** **Data Extremes and Range** **Calculating Interquartile Range**

Grade 6

Domain	Cluster	Standard	Standard Description	Activities
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.	Chance Dial Probability Scale
Statistics and Probability	Investigate chance processes and develop, use, and evaluate probability models.	NY-6.SP.7	Approximate the probability of a 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.	Find the Probability Simple Probability Introductory Probability
Statistics and Probability	Investigate chance processes and develop, use, and evaluate probability models.	NY-6.SP.8	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. a. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of simple events. b. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.	Probability Tables

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 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. a. Decide whether two quantities are in a proportional relationship. b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. c. Represent a proportional relationship using an equation. d. Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$ where r is the unit rate.	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.	Best Buy Commission Percentage Change: Increase and Decrease Percent Increase and Decrease Percentage Word Problems Percentage Error 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	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. a. Describe situations in which opposite quantities combine to make 0. b. Understand addition of rational numbers; $p + q$ is the number located a distance $\|q\|$ from p, in the positive or negative direction depending on whether q 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. c. Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. 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. d. Apply properties of operations as strategies to add and subtract rational numbers.	Negative or Positive? Integers: Add and Subtract More with Integers Add Integers Subtract Integers Adding Integers: Positive, Negative or Zero Add Unlike Fractions Add Mixed Numbers: Signs Can Differ Subtract Unlike Fractions Subtract Mixed Numbers: Signs Differ Subtract Negative Mixed 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	Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. 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 $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts. 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 p and q are integers, then $-(p/q) = -p/q = p/-q$. Interpret quotients of rational numbers by describing real-world contexts. c. Apply properties of operations as strategies to multiply and divide rational numbers. 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.	Integers: Multiplication and Division Multiplying and Dividing Integers Multiply Two Fractions 2 Divide Fractions by Fractions 2 Divide Mixed Numbers with Signs Fractions to Decimals 2
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.	More Fraction Problems Integers: Order of Operations (PEDMAS) Integers: Operations Order
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.	Using the Distributive Property Factoring

Grade 7

Domain	Cluster	Standard	Standard Description	Activities
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
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.	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.	Write an Equation: Word Problems Writing Equations Solve Equations: Add, Subtract 1 Solve Equations: Add, Subtract 2 Solve Equations: Multiply, Divide 1 Solve Equations: Multiply, Divide 2 Solving Simple Equations Solve Two-Step Equations Solve Multi-Step Equations Inequalities on a Number Line: Basics Inequalities on a Number Line: Mixed Basics Graphing Inequalities 2 Graphing Inequalities on a Number Line Solve One-Step Inequalities 1 Solve One-Step Inequalities 2

Grade 7

Domain	Cluster	Standard	Standard Description	Activities
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.	Relate Shapes and Solids
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: Squares and Rectangles Area: Compound Figures Area: Triangles Area: Composite Shapes Area: Parallelograms Area: Quadrilaterals Nets Surface Area: Cuboids Surface Area: Rectangular Prisms Surface Area: Triangular Prisms 1 Volume of Rectangular Prisms 1 Volume of Triangular Prisms Volume: Prisms

Grade 7

Domain	Cluster	Standard	Standard Description	Activities
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 Understanding Box-and-Whisker Plots Calculating Interquartile Range Data Extremes and Range Median
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
Statistics and Probability	Investigate chance processes and develop, use, and evaluate probability models.	NY-7.SP.8	Find probabilities of compound events using organized lists, sample space tables, tree diagrams, and simulation. 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. 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. c. Design and use a simulation to generate frequencies for compound events.	Counting Principle Counting Techniques 1 Dice and Coins Probability-Replacement Probability-No 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; for rational numbers show that the decimal expansion eventually repeats. Know that other numbers that are not rational are called irrational.	Recurring Decimals Fraction to Terminating Decimal Irrational Numbers
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.	Estimating Square Roots
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.	Exponent Notation Exponent Laws with Brackets The Zero Exponent Negative Exponents Integer Exponents Simplifying with Exponential Laws 1 Multiplication with Exponents Properties of Exponents Exponent Notation and Algebra Exponent Laws and Algebra Exponent Form to Numbers
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.	Square Roots Square Roots 1 Square and Cube Roots
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.	Scientific Notation Scientific Notation 1 Scientific Notation 2 Scientific notation to decimal Ordering Scientific Notation

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.	Teacher directed
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.	y=ax
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.	Determining a Rule for a Line Gradient Slope of a Line Equation of a Line 1 Which Straight Line? Equation from Point and Gradient Modeling Linear Relationships

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.7	Solve linear equations in one variable. a. 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. b. Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and combining like terms.	Equations with Grouping Symbols Equations with Fractions Equations with Decimals Equations to Solve Problems Equations: Variable Both Sides Solving More Equations
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. a. Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously. Recognize when the system has one solution, no solution, or infinitely many solutions. b. Solve systems of two linear equations in two variables with integer coefficients: graphically, numerically using a table, and algebraically. Solve simple cases by inspection. c. Solve real-world and mathematical problems involving systems of two linear equations in two variables with integer coefficients.	Solve Systems by Graphing Linear Modelling Simultaneous Equations 1 Simultaneous Equations 2 Simultaneous Linear Equations

Grade 8

Domain	Cluster	Standard	Standard Description	Activities
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.**	**Function Rules and Tables** **Vertical Line Test**
Function	**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).**	**Teacher directed**
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.**	**Find the Function Rule**
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.**	**Teacher directed**
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.**	**Travel Graphs** **Line Graphs: Interpretation**

Grade 8

Domain	Cluster	Standard	Standard Description	Activities
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. a. Verify experimentally lines are mapped to lines, and line segments to line segments of the same length. b. Verify experimentally angles are mapped to angles of the same measure. c. Verify experimentally parallel lines are mapped to parallel lines.	Flip, Slide, Turn Transformations Transformations: Coordinate Plane Rotations: Coordinate Plane
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 Figures (Dot Grid) Congruent Figures (Grid)
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 Scale Factor

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 1
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.	Angles and Parallel Lines Angles on Parallel Lines Introduction to Angles on Parallel Lines 1 Introduction to Angles on Parallel Lines 3 Parallel Lines Vertically Opposite Angles: Unknown Values Vertically Opposite: Value of x Using Similar Triangles Similar Triangles Angle Measures in a Triangle Angle Sum of 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
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.	Pythagorean Theorem Pythagoras: Find a Short Side (decimal values) Pythagoras: Find a Short Side (integers only) Pythagoras: Find a Short Side (rounding needed) Pythagoras' Theorem 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

Grade 8

Domain	Cluster	Standard	Standard Description	Activities
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.**	**Data Analysis: Scatter Plots** **Scatter Plots**
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.**	**Teacher directed**
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.**	**Teacher directed**

Mathletics

3P Learning