A Correlation of

Connected Mathematics Project 3

©2018

CMP3

to the

New York State Next Generation Mathematics Learning Standards (2017)

Grades 6-8

SAVVAS

A Correlation of Connected Mathematics Project 3 (CMP3), ©2018
To the New York State Next Generation Mathematics Learning Standards

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To the New York State Next Generation Mathematics Learning Standards

New York State Next Generation Mathematics Learning Standards Grade 6	Connected Mathematics Project 3 (CMP3), ©2018 Grade 6
Ratios and Proportional Relationships NY-6.RP	
Understand ratio concepts and use ratio reasoning to solve problems.	
1. Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.	**Comparing Bits and Pieces:** 1.1: Fundraising; 1.2: Fundraising Thermometers; 1.3: Equivalent Fractions on the Line; 1.4: Making Progress; 1.5: Comparing Fundraising Goals; 2.2: Unequal Shares **Decimal Ops:** 1.3: Take a Hike
2. Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0 (b not equal to zero), and use rate language in the context of a ratio relationship.	**Comparing Bits and Pieces:** 1.1: Fundraising; 1.2: Fundraising Thermometers; 1.3: Equivalent Fractions on the Line; 1.4: Making Progress; 1.5: Comparing Fundraising Goals; 2.1: Equal Shares; 2.2: Unequal Shares; 2.3: Making Comparisons with Rate Tables **Decimal Ops:** 1.3: Take a Hike
3. Use ratio and rate reasoning to solve real-world and mathematical problems.	**Comparing Bits and Pieces:** 1.1: Fundraising; 1.2: Fundraising Thermometers; 1.3: Equivalent Fractions on the Line; 1.4: Making Progress; 1.5: Comparing Fundraising Goals; 2.1: Equal Shares; 2.2: Unequal Shares; 2.3: Making Comparisons with Rate Tables **Decimal Ops:** 1.3: Take a Hike **Variables and Patterns:** 1.1: Getting Ready to Ride; 1.2: From Atlantic City to Lewes; 1.3: From Lewes to Chincoteague Island; 1.4: From Chincoteague to Colonial Williamsburg; 2.1: Renting Bicycles; 3.1: Visit to Wild World; 3.2: Moving, Texting, and Measuring
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.	**Comparing Bits and Pieces:** 2.3: Making Comparisons with Rate Tables **Variables and Patterns:** 1.1: Getting Ready to Ride; 2.1: Renting Bicycles; 3.2: Moving, Texting, and Measuring

ACE = Applications Connections – Extensions
INV = Investigations
MR = Mathematical Reflections

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b. Solve unit rate problems.	**Comparing Bits and Pieces:** 2.1: Equal Shares **Decimal Ops:** 1.3: Take a Hike **Variables and Patterns:** 1.1: Getting Ready to Ride; 1.2: From Atlantic City to Lewes; 1.3: From Lewes to Chincoteague Island; 1.4: From Chincoteague to Colonial Williamsburg; 3.1: Visit to Wild World; 3.2: Moving, Texting, and Measuring
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.	**Comparing Bits and Pieces:** 4.1: Who Is the Best? Making Sense of Percents; 4.2: Genetic Traits; 4.3: The Art of Comparison **Decimal Ops:** 4.1: What's the Tax on This Item?; 4.2: Computing Tips; 4.3: Percent Discounts; 4.4: Putting Operations Together
d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.	**Covering and Surrounding:** 1.2: Building Storm Shelters; 1.3: Fencing in Spaces, 4.2: Filling the Boxes; 4.3: Designing Gift Boxes **Decimal Ops:** 4.4: Putting Operations Together
The Number System NY-6.NS	
Apply and extend previous understandings of multiplication and division to divide fractions by fractions.	
1. Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions.	**Let's Be Rational:** 3.1: Preparing Food; 3.2: Into Pieces; 3.3: Sharing a Prize; 3.4: Examining Algorithms for Dividing Fractions
Compute fluently with multi-digit numbers and find common factors and multiples.	
2. Fluently divide multi-digit numbers using the standard algorithm.	**Prime Time:** 1.1: Playing the Factor Game; 1.4: Rectangles and Factor Pairs; 3.2: Finding the Longest Factor String; 3.3: Using Prime Factorizations **Let's Be Rational:** 3.1: Preparing Food; 3.2: Into Pieces; 3.3: Sharing a Prize; 3.4: Examining Algorithms for Dividing Fractions **Decimal Ops:** 3.3: How Many Times?; 3.4: Going the Long Way; 3.5: Challenging Cases

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3. Fluently add, subtract, multiply, and divide multi-digit decimals using a standard algorithm for each operation.	**Decimal Ops:** 2.1: Getting Things in the Right Place; 2.2: What's the Difference; 2.3: Connecting Operations; 3.1: It's Decimal Time(s); 3.2: It Works Every Time; 3.3: How Many Times?; 3.4: Going the Long Way; 3.5: Challenging Cases
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. Find the least common multiple pf two whole numbers less than or equal to 12.	**Prime Time:** 2.1: Riding Ferris Wheels; 2.2: Looking at Cicada Cycles; 2.3: Bagging Snacks; 3.2: Finding the Longest Factor String; 3.3: Using Prime Factorizations; 3.4: Unraveling the Locker Problem; 4.2: Using the Distributive Property; 4.3: Ordering Operations **Let's Be Rational:** 1.3: Land Sections; 1.4: Visiting the Spice Shop
Apply and extend previous understandings of numbers to the system of rational numbers.	
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.	**Comparing Bits and Pieces:** 3.1: Extending the Number Line; 3.2: Estimating and Ordering Rational Numbers **Variables and Patterns:** 2.3: Predicting Profits; 2.4: Interpreting Graphs
6. Understand a rational number as a point on the number line. Use number lines and coordinate axes to represent points on a line and in the coordinate plane with negative number coordinates.	**Comparing Bits and Pieces:** 3.1: Extending the Number Line; 3.2: Estimating and Ordering Rational Numbers; 3.4 Decimals on the Number Line **Variables and Patterns:** 2.3: Predicting Profits; 2.4: Interpreting Graphs
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.	**Comparing Bits and Pieces:** 3.1: Extending the Number Line; 3.2: Estimating and Ordering Rational Numbers; 3.4 Decimals on the Number Line
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.	**Comparing Bits and Pieces:** 3.1: Extending the Number Line; 3.2: Estimating and Ordering Rational Numbers **Variables and Patterns:** 2.3: Predicting Profits

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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.	**Comparing Bits and Pieces:** 3.1: Extending the Number Line; 3.2: Estimating and Ordering Rational Numbers; 3.4 Decimals on the Number Line **Variables and Patterns:** 2.3: Predicting Profits
7. Understand ordering and absolute value of rational numbers.	**Comparing Bits and Pieces:** 3.1: Extending the Number Line; 3.2: Estimating and Ordering Rational Numbers; 3.4 Decimals on the Number Line
a. Interpret statements of inequality as statements about the relative position of two numbers on a number line.	**Comparing Bits and Pieces:** 3.1: Extending the Number Line; 3.2: Estimating and Ordering Rational Numbers; 3.4 Decimals on the Number Line
b. Write, interpret, and explain statements of order for rational numbers in real-world contexts.	**Comparing Bits and Pieces:** 3.1: Extending the Number Line; 3.2: Estimating and Ordering Rational Numbers **Variables and Patterns:** 2.3: Predicting Profits
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.	**Comparing Bits and Pieces:** 3.1: Extending the Number Line; 3.2: Estimating and Ordering Rational Numbers
d. Distinguish comparisons of absolute value from statements about order.	**Comparing Bits and Pieces:** 3.1: Extending the Number Line; 3.2: Estimating and Ordering Rational Numbers **Variables and Patterns:** 2.3: Predicting Profits
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.	**Covering and Surrounding:** 2.1: Triangles on Grids; 3.4: Polygons on Coordinate Grids **Variables and Patterns:** 1.1: Getting Ready to Ride; 1.2: From Atlantic City to Lewes; 1.3: From Lewes to Chincoteague Island; 1.4: From Chincoteague to Colonial Williamsburg

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Expressions and Equations NY-6.EE	
Apply and extend previous understandings of arithmetic to algebraic expressions.	
1. Write and evaluate numerical expressions involving whole-number exponents.	**Prime Time: Factors and Multiples:** 3.2: Finding the Longest Factor String; 3.3: Using Prime Factorizations; 3.4: Unraveling the Locker Problem
2. Write, read, and evaluate expressions in which letters stand for numbers.	**Covering and Surrounding:** 4.2: Filling the Boxes; 4.3: Designing Gift Boxes **Variables and Patterns:** 3.1: Visit to Wild World; 3.2: Moving, Texting, and Measuring; 3.3: Group Discounts and a Bonus Card; 3.4: Getting the Calculation Right; 4.1: Taking the Plunge; 4.2: More Than One Way to Say It; 4.3: Putting It All Together; 4.4: Finding the Unknown Value; 4.5: It's Not Always Equal
a. Write expressions that record operations with numbers and with letters standing for numbers.	**Variables and Patterns:** 3.1: Visit to Wild World; 3.2: Moving, Texting, and Measuring; 3.3: Group Discounts and a Bonus Card; 3.4: Getting the Calculation Right; 4.1: Taking the Plunge; 4.2: More Than One Way to Say It; 4.3: Putting It All Together; 4.4: Finding the Unknown Value; 4.5: It's Not Always Equal
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.	**Prime Time:** 1.3: The Product Game; 1.4: Rectangles and Factor Pairs; 3.1: The Product Puzzle; 3.2: Finding the Longest Factor String; 3.3: Using Prime Factorizations; 3.4: Unraveling the Locker Problem; 4.2: Using the Distributive Property; 4.3: Ordering Operations
c. Evaluate expressions given specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole number exponents, in the conventional order (Order of Operations).	**Covering and Surrounding:** 4.2: Filling the Boxes; 4.3: Designing Gift Boxes **Variables and Patterns:** 3.1: Visit to Wild World; 3.2: Moving, Texting, and Measuring; 3.3: Group Discounts and a Bonus Card; 3.4: Getting the Calculation Right; 4.1: Taking the Plunge; 4.2: More Than One Way to Say It; 4.3: Putting It All Together; 4.4: Finding the Unknown Value; 4.5: It's Not Always Equal

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3. Apply the properties of operations to generate equivalent expressions.	**Prime Time:** Factors and Multiples: 4.2: Using the Distributive Property; 4.3: Ordering Operations; 4.4: Choosing an Operation **Variables and Patterns:** 4.1: Taking the Plunge; 4.2: More Than One Way to Say It; 4.3: Putting It All Together
4. Identify when two expressions are equivalent.	**Prime Time:** Factors and Multiples: 4.2: Using the Distributive Property; 4.3: Ordering Operations; 4.4: Choosing an Operation **Variables and Patterns:** 4.1: Taking the Plunge; 4.2: More Than One Way to Say It; 4.3: Putting It All Together
Reason about and solve one-variable equations and inequalities.	
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.	**Variables and Patterns:** 4.4: Finding the Unknown Value; 4.5: It's Not Always Equal
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.	**Variables and Patterns:** 3.1: Visit to Wild World; 3.2: Moving, Texting, and Measuring; 3.3: Group Discounts and a Bonus Card; 3.4: Getting the Calculation Right; 4.1: Taking the Plunge; 4.2: More Than One Way to Say It; 4.3: Putting It All Together; 4.4: Finding the Unknown Value; 4.5: It's Not Always Equal
7. Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$; $x-p=q$; $px = q$; $x/p=q$ for cases in which p, q and x are all nonnegative rational numbers.	**Variables and Patterns:** 4.1: Taking the Plunge; 4.2: More Than One Way to Say It; 4.3: Putting It All Together; 4.4: Finding the Unknown Value
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 number line.	**Variables and Patterns:** 4.5: It's Not Always Equal

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Represent and analyze quantitative relationships between dependent and independent variables.	
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.	**Variables and Patterns:** 1.1: Getting Ready to Ride; 1.2: From Atlantic City to Lewes; 1.3: From Lewes to Chincoteague Island; 1.4: From Chincoteague to Colonial Williamsburg; 2.1: Renting Bicycles; 2.2: Finding Customers; 2.3: Predicting Profits; 2.4: What's the Story?; 3.1: Visit to Wild World; 3.2: Moving, Texting, and Measuring; 3.3: Group Discounts and a Bonus Card; 3.4: Getting the Calculation Right
Geometry NY-6.G	
Solve real-world and mathematical problems involving area, surface area, and volume.	
1. Find the area of right triangles, trapezoids and polygons by composing into rectangles or decomposing into triangles and quadrilaterals. Apply these techniques in the context of solving real-world and mathematical problems.	**Covering and Surrounding:** 1.1: Designing Bumper-Car Rides; 1.2: Building Storm Shelters; 1.3: Fencing in Spaces; 2.1: Triangles on Grids; 2.2: More Triangles; 2.3: Making Families of Triangles; 2.4: Designing Triangles Under Constraints; 3.1: Parallelograms and Triangles; 3.2: Making Families of Parallelograms; 3.3: Designing Parallelograms; 3.4: Polygons on Coordinate Grids; 4.1: Making Rectangular Boxes; 4.2: Filling the Boxes; 4.3: Designing Gift Boxes
2. Find the volume of a right rectangular prism with fractional edge lengths in the context of solving real-world and mathematical problems.	**Covering and Surrounding:** 4.2: Filling the Boxes; 4.3: Designing Gift Boxes
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.	**Covering and Surrounding:** 2.1: Triangles on Grids; 3.4: Polygons on Coordinate Grids
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.	**Covering and Surrounding:** 4.1: Making Rectangular Boxes; 4.3: Designing Gift Boxes

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5. Use area and volume to explain perfect squares and perfect cubes.	This standard is outside the scope of Connected Mathematics Project 3.
Statistics and Probability NY-6.SP	
Develop understanding of statistical variability.	
1a. Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.	**Data About Us:** 1.1: How Many Letters Are in a Name?; 1.2: Describing Name Lengths; 1.3: Describing Name Lengths; 2.1: What's a Mean Household Size?; 2.2: Comparing Distributions With the Same Mean; 2.3: Making Choices; 2.4: Who Else Is in Your Household; 3.1: Estimating Cereal Serving Sizes; 3.2: Connecting Cereal Shelf Location and Sugar; 3.3: Is It Worth the Wait?; 4.1: Traveling to School; 4.2: Jumping Rope; 4.3: How Much Taller is a 6th Grader Than A Second Grader?
1b. Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population.	**Data About Us:** 1.1: How Many Letters Are in a Name?; 1.2: Describing Name Lengths; 1.3: Describing Name Lengths; 2.1: What's a Mean Household Size?; 2.2: Comparing Distributions With the Same Mean; 2.3: Making Choices; 2.4: Who Else Is in Your Household; 3.1: Estimating Cereal Serving Sizes; 3.2: Connecting Cereal Shelf Location and Sugar; 3.3: Is It Worth the Wait?; 4.1: Traveling to School; 4.2: Jumping Rope; 4.3: How Much Taller is a 6th Grader Than A Second Grader?
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.	**Data About Us:** 1.1: How Many Letters Are in a Name?; 1.2: Describing Name Lengths; 1.3: Describing Name Lengths; 2.1: What's a Mean Household Size?; 2.2: Comparing Distributions With the Same Mean; 2.3: Making Choices; 2.4: Who Else Is in Your Household; 3.1: Estimating Cereal Serving Sizes; 3.2: Connecting Cereal Shelf Location and Sugar; 3.3: Is It Worth the Wait?; 4.1: Traveling to School; 4.2: Jumping Rope; 4.3: How Much Taller is a 6th Grader Than A Second Grader?

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2. Understand that a set of quantitative data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.	**Data About Us:** 1.1: How Many Letters Are in a Name?; 1.2: Describing Name Lengths; 1.3: Describing Name Lengths; 2.1: What's a Mean Household Size?; 2.2: Comparing Distributions With the Same Mean; 2.3: Making Choices; 2.4: Who Else Is in Your Household; 3.1: Estimating Cereal Serving Sizes; 3.2: Connecting Cereal Shelf Location and Sugar; 3.3: Is It Worth the Wait?; 4.1: Traveling to School; 4.2: Jumping Rope; 4.3: How Much Taller is a 6th Grader Than A Second Grader?
3. Recognize that a measure of center for a quantitative data set summarizes all of its values with a single number while a measure of variation describes how its values vary with a single number.	**Data About Us:** 2.1: What's a Mean Household Size?; 2.2: Comparing Distributions With the Same Mean; 2.3: Making Choices; 2.4: Who Else Is in Your Household; 3.1: Estimating Cereal Serving Sizes; 3.2: Connecting Cereal Shelf Location and Sugar; 3.3: Is It Worth the Wait?
Summarize and describe distributions.	
4. Display quantitative data in plots on a number line, including dot plots, and histograms.	**Data About Us:** 1.1: How Many Letters Are in a Name?; 1.2: Describing Name Lengths; 1.3: Describing Name Lengths; 2.1: What's a Mean Household Size?; 2.2: Comparing Distributions With the Same Mean; 2.3: Making Choices; 2.4: Who Else Is in Your Household; 3.1: Estimating Cereal Serving Sizes; 3.2: Connecting Cereal Shelf Location and Sugar; 3.3: Is It Worth the Wait?; 4.1: Traveling to School; 4.2: Jumping Rope; 4.3: How Much Taller is a 6th Grader Than A Second Grader?
5. Summarize quantitative data sets in relation to their context.	**Data About Us:** 1.1: How Many Letters Are in a Name?; 1.2: Describing Name Lengths; 1.3: Describing Name Lengths; 2.1: What's a Mean Household Size?; 2.2: Comparing Distributions With the Same Mean; 2.3: Making Choices; 2.4: Who Else Is in Your Household; 3.1: Estimating Cereal Serving Sizes; 3.2: Connecting Cereal Shelf Location and Sugar; 3.3: Is It Worth the Wait?; 4.1: Traveling to School; 4.2: Jumping Rope; 4.3: How Much Taller is a 6th Grader Than A Second Grader?

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a. Reporting the number of observations.	**Data About Us:** 1.1: How Many Letters Are in a Name?; 1.2: Describing Name Lengths; 1.3: Describing Name Lengths; 2.1: What's a Mean Household Size?; 2.2: Comparing Distributions With the Same Mean; 2.3: Making Choices; 2.4: Who Else Is in Your Household; 3.1: Estimating Cereal Serving Sizes; 3.2: Connecting Cereal Shelf Location and Sugar; 3.3: Is It Worth the Wait?; 4.1: Traveling to School; 4.2: Jumping Rope; 4.3: How Much Taller is a 6th Grader Than A Second Grader?
b. Describe the nature of the attribute under investigation, including how it was measured and its units of measurement.	**Data About Us:** 1.1: How Many Letters Are in a Name?; 1.2: Describing Name Lengths; 1.3: Describing Name Lengths; 2.1: What's a Mean Household Size?; 2.2: Comparing Distributions With the Same Mean; 2.3: Making Choices; 2.4: Who Else Is in Your Household; 3.1: Estimating Cereal Serving Sizes; 3.2: Connecting Cereal Shelf Location and Sugar; 3.3: Is It Worth the Wait?; 4.1: Traveling to School; 4.2: Jumping Rope; 4.3: How Much Taller is a 6th Grader Than A Second Grader?
c. Calculate the range and measure of center, as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.	**Data About Us:** 2.1: What's a Mean Household Size?; 2.2: Comparing Distributions With the Same Mean; 2.3: Making Choices; 2.4: Who Else Is in Your Household; 3.1: Estimating Cereal Serving Sizes; 3.2: Connecting Cereal Shelf Location and Sugar; 3.3: Is It Worth the Wait?
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.	**Data About Us:** 2.1: What's a Mean Household Size?; 2.2: Comparing Distributions With the Same Mean; 2.3: Making Choices; 2.4: Who Else Is in Your Household; 3.1: Estimating Cereal Serving Sizes; 3.2: Connecting Cereal Shelf Location and Sugar; 3.3: Is It Worth the Wait?

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Investigate chance processes and develop, use, and evaluate probability models.	
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 ½ indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.	**This standard is addressed in CMP3 Grade 7. See, for example:** **What Do You Expect?:** 1.1: Choosing Cereal; 1.2: Tossing Paper Cups; 1.3 One More Try; 1.4 Analyzing Events; 2.1 Predicting to Win; 2.2 Choosing Marbles; 2.3: Designing a Fair Game; 2.4: Winning the Bonus Prize; 3.1: Designing a Spinner to Find Probabilities; 3.2: Making Decisions; 3.3: Roller Derby; 3.4: Scratching Spots
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.	**This standard is addressed in CMP3 Grade 7. See, for example:** **What Do You Expect?:** 1.1: Choosing Cereal; 1.2: Tossing Paper Cups; 1.3 One More Try; 1.4 Analyzing Events; 2.1 Predicting to Win; 2.2 Choosing Marbles; 2.3: Designing a Fair Game; 2.4: Winning the Bonus Prize; 3.1: Designing a Spinner to Find Probabilities; 3.2: Making Decisions; 3.3: Roller Derby; 3.4: Scratching Spots
8. Develop a probability model and use it to find probabilities of simple events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.	This standard is addressed in CMP3 Grade 7. See, for example: **What Do You Expect?:** 2.1 Predicting to Win; 2.2 Choosing Marbles; 2.3: Designing a Fair Game; 2.4: Winning the Bonus Prize; 3.1: Designing a Spinner to Find Probabilities; 3.2: Making Decisions; 3.3: Roller Derby; 3.4: Scratching Spots; 4.1: Drawing Area Models to Find the Sample Space; 4.2: Making Purple; 4.3: One-and-One Free Throws: Simulating a Probability Situation; 4.4: Finding Expected Value; 5.1: Guessing Answers: Finding More Expected Values; 5.2: Ortonville: Binomial Probability; 5.3: A Baseball Series: Expanding Binomial Probability

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a. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of simple events.	This standard is addressed in CMP3 Grade 7. See, for example: **What Do You Expect?:** 4.1: Drawing Area Models to Find the Sample Space; 4.2: Making Purple; 4.3: One-and-One Free Throws: Simulating a Probability Situation; 4.4: Finding Expected Value; 5.1: Guessing Answers: Finding More Expected Values; 5.2: Ortonville: Binomial Probability; 5.3: A Baseball Series: Expanding Binomial Probability
b. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.	This standard is addressed in CMP3 Grade 7. See, for example: **What Do You Expect?:** 1.1: Choosing Cereal; 1.2: Tossing Paper Cups; 1.3 One More Try; 1.4 Analyzing Events; 2.1 Predicting to Win; 2.2 Choosing Marbles; 2.3: Designing a Fair Game; 2.4: Winning the Bonus Prize; 3.1: Designing a Spinner to Find Probabilities; 3.2: Making Decisions; 3.3: Roller Derby; 3.4: Scratching Spots
Math Practices	
MP.1 Make sense of problems and persevere in solving them.	**Prime Time:** 1.4: Rectangles and Factor Pairs; 2.3: Bagging Snacks; 3.4: Unraveling the Locker Problem; 4.1: Reasoning With Even and Odd Numbers **Comparing Bits and Pieces:** 2: Connecting Ratios and Rates (ACE 31-33) **Let's Be Rational:** 4.3: Becoming an Operations Sleuth **Covering and Surrounding:** 1.1: Designing Bumper-Car Rides; 1.2: Building Storm Shelters; 1.3 Fencing in Spaces; 4.3 Designing Gift Boxes

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MP.2 Reason abstractly and quantitatively.	**Prime Time:** 1.3: The Product Game; 1.4: Rectangles and Factor Pairs; 1: Building on Factors and Multiples (ACE 42, Common Core Mathematical Practices); 2: Common Multiples and Common Factors (ACE 46-53); 3: Factorizations: Searching for Factor Strings (ACE 47) **Let's Be Rational:** 4.3: Becoming an Operations Sleuth; 4: Wrapping Up the Operations (Common Core Mathematical Practices) **Covering and Surrounding:** 4: Measuring Surface Area and Volume (Common Core Mathematical Practices) **Decimal Ops:** 1.3: Take a Hike **Variables and Patterns:** 4.1: Taking the Plunge
MP.3 Construct viable arguments and critique the reasoning of others.	**Prime Time:** 1.2: Playing to Win; 1: Building on Factors and Multiples (ACE 1a, 49d); 2: Common Multiples and Common Factors (ACE 60); 3: Factorizations: Searching for Factor Strings (Common Core Mathematical Practices) **Comparing Bits and Pieces:** 3: Extending the Number Line (Common Core Mathematical Practices) **Let's Be Rational:** 3: Dividing With Fractions (ACE 54); 4: Wrapping up the Operations (ACE 47-55) **Covering and Surrounding:** 1.2: Building Storm Shelters; 1.3: Fencing in Spaces; 2.4: Designing Triangles Under Constraints

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MP.4 Model with mathematics.	**Prime Time:** 4.1: Reasoning with Even and Odd Numbers; 4.2: Using the Distributive Property **Comparing Bits and Pieces:** 1.3: Equivalent Fractions on the Line; 2.3: Making Comparisons with Rate Models; 3.1: Extending the Number Line **Let's Be Rational:** 1.3: Land Sections; 2.1: How Much of the Pan Have We Sold?; 2.2: Modeling Multiplication Situations; 3.2: Into Pieces **Covering and Surrounding:** 1.1: Designing Bumper-Car Rides
MP.5 Use appropriate tools strategically.	**Comparing Bits and Pieces:** 1.3: Equivalent Fractions on the Line; 4: Working With Percents (Common Core Mathematical Practices) **Covering and Surrounding:** 2.1: Triangles on Grids; 3.4: Polygons on Coordinate Grids; 3: Measuring Parallelograms (Common Core Mathematical Practices) **Decimal Ops:** 4.1: What's the Tax on This Item?; 4.2: Computing Tips; 4.3: Percent Discounts; 4.4: Putting Operations Together **Data About Us:** 3.3: Is It Worth the Wait?
MP.6 Attend to precision.	**Prime Time:** 1.2: Playing to Win; 1.3: The Product Game; 1: Building on Factors and Multiples (ACE 43-44); 3: Factorizations Searching for Factor Strings (ACE 51b); 4: Linking Multiplication and Addition: The Distributive Property (Common Core Mathematical Practices) **Let's Be Rational:** 1.1: Getting Close; 1.2: Estimating Sums and Differences; 1: Extending Addition and Subtraction of Fractions (Common Core Mathematical Practices) **Covering and Surrounding:** 1: Designing Bumper Cars: Extending and Building on Area and Perimeter (ACE 75-77) **Decimal Ops:** 1.2: Getting Close

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MP.7 Look for and make use of structure.	**Prime Time:** 1.1: Playing the Factor Game; 1.2: Playing to Win; 1.4: Rectangles and Factor Pairs; 1: Building on Factors and Multiples (ACE 37-38, 48); 3.3: Using Prime Factorizations **Comparing Bits and Pieces:** 2: Connecting Ratios and Rates (Common Core Mathematical Practices) **Let's Be Rational:** 4.1: Just the Facts **Covering and Surrounding:** 1: Designing Bumper Cars: Extending and Building on Area and Perimeter (Common Core Mathematical Practices) **Decimal Ops:** 3.1: Multiplying Decimals I; 3.4: Going the Long Way
MP.8 Look for and express regularity in repeated reasoning.	**Prime Time:** 1.3: The Product Game; 2: Common Multiples and Common Factors (Common Core Mathematical Practices); 4.3: Ordering Operations **Let's Be Rational:** 3: Dividing With Fractions (ACE 6, Common Core Mathematical Practices); 4.1: Just the Facts; 4.2: Multiplication and Division Fact Families **Covering and Surrounding:** 2.3: Making Families of Triangles; 3.2: Making Families of Parallelograms **Decimal Ops:** 1.3: Take a Hike; 2.3: Connecting Operations

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Ratios and Proportional Relationships NY-7.RP	
Analyze proportional relationships and use them to solve real-world and mathematical problems.	
1. Compute unit rates associated with ratios of fractions.	**Comparing and Scaling:** 1.1: Surveying Opinions; 1.2: Mixing Juice; 1.3: Time to Concentrate; 2.2: Comparing Pizza Prices; 2.3: Finding Costs; 3.2: Measuring to the Unit **Moving Straight Ahead:** 1.1: Walking Marathons; 1.2: Walking Rates and Linear Relationships; 1.3: Raising Money; 2.1: Henri and Emile's Race; 2.2: Crossing the Line; 2.3: Comparing Costs; 2.4: Connecting Tables; Graphs, and Equations; 2.3: Comparing Costs
2. Recognize and represent proportional relationships between quantities.	**Stretching and Shrinking:** 1.2: Scaling Up and Down; 2.3: Mouthing Off and Nosing Around; 3.1: Rep-Tile Quadrilaterals; 3.3: Designing Under Constraints; 3.4: Out of Reach; 4.1: Ratios Within Similar Parallelograms; 4.2: Ratios Within Similar Triangles; 4.3: Finding Missing Parts; 4.4: Using Shadows to Find Heights **Comparing and Scaling:** 1.4: Keeping Things in Proportion; 2.1: Sharing Pizza; 2.2: Comparing Pizza Prices; 2.3: Finding Costs; 3.1: Commissions, Markups, and Discounts; 3.2: Measuring to the Unit; 3.3: Mixing it Up **Moving Straight Ahead:** 1.1: Walking Marathons; 1.2: Walking Rates and Linear Relationships
a. Decide whether two quantities are in a proportional relationship.	**Stretching and Shrinking:** 2.3: Mouthing Off and Nosing Around; 3.1: Rep-Tile Quadrilaterals; 3.3: Designing Under Constraints; 4.1: Ratios Within Similar Parallelograms; 4.2: Ratios Within Similar Triangles **Comparing and Scaling:** 1.4: Keeping Things in Proportion; 2.1: Sharing Pizza

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b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.	**Comparing and Scaling:** 2.2: Comparing Pizza Prices; 2.3: Finding Costs; 3.2: Measuring to the Unit **Moving Straight Ahead:** 1.1: Walking Marathons; 1.2: Walking Rates and Linear Relationships
c. Represent a proportional relationship using an equation.	**Stretching and Shrinking:** 4.3: Finding Missing Parts; 4.4: Using Shadows to Find Heights **Comparing and Scaling:** 1.4: Keeping Things in Proportion; 2.2: Comparing Pizza Prices; 2.3: Finding Costs; 3.2: Measuring to the Unit; 3.3: Mixing it Up
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.	**Moving Straight Ahead:** 2.1: Henri and Emile's Race; 2.2: Crossing the Line
3. Use proportional relationships to solve multistep ratio and percent problems.	**Stretching and Shrinking:** 1.2: Scaling Up and Down; 3.1: Rep-Tile Quadrilaterals; 3.4: Out of Reach; 4.1: Ratios Within Similar Parallelograms; 4.2: Ratios Within Similar Triangles; 4.3: Finding Missing Parts; 4.4: Using Shadows to Find Heights **Comparing and Scaling:** 1.1: Surveying Opinions; 1.4: Keeping Things in Proportion; 2.1: Sharing Pizza; 2.2: Comparing Pizza Prices; 2.3: Finding Costs; 3.1: Commissions, Markups, and Discounts; 3.2: Measuring to the Unit; 3.3: Mixing it Up
The Number System NY-7.NS	
Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	
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.	**Accentuate the Negative:** 1.1: Playing Math Fever; 1.2: Extending the Number Line; 1.3 From Sauna to Snowbank; 1.4: In the Chips; 2.1: Extending Addition to Rational Numbers; 2.2 Extending Subtraction to Rational Numbers; 2.3: The "+/-" Connection; 2.4: Fact Families; 4.1: Order of Operations

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a. Describe situations in which opposite quantities combine to make 0.	**Accentuate the Negative:** 1.2: Extending the Number Line; 1.4: In the Chips; 2.2 Extending Subtraction to Rational Numbers; 2.3: The “+/-“ Connection; 2.4: Fact Families; 4.1: Order of Operations
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.	**Accentuate the Negative:** 1.2: Extending the Number Line; 1.3 From Sauna to Snowbank; 1.4: In the Chips; 2.1: Extending Addition to Rational Numbers; 2.2 Extending Subtraction to Rational Numbers; 2.3: The "+/-" Connection; 2.4: Fact Families; 4.1: Order of Operations
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.	**Accentuate the Negative:** 1.2: Extending the Number Line; 1.3 From Sauna to Snowbank; 1.4: In the Chips; 2.2 Extending Subtraction to Rational Numbers; 2.3: The "+/-" Connection; 2.4: Fact Families; 4.1: Order of Operations
d. Apply properties of operations as strategies to add and subtract rational numbers.	**Accentuate the Negative:** 1.1: Playing Math Fever; 1.2: Extending the Number Line; 1.3 From Sauna to Snowbank; 1.4: In the Chips; 2.1: Extending Addition to Rational Numbers; 2.2 Extending Subtraction to Rational Numbers; 2.3: The "+/-" Connection; 2.4: Fact Families; 4.1: Order of Operations
2. Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.	**Accentuate the Negative:** 3.1: Multiplication Patterns; 3.2: Multiplication of Rational Numbers; 3.3 Division of Rational Numbers; 3.4: Playing the Integer Product Game; 4.1: Order of Operations; 4.2: The Distributive Property; 4.3: What Operations Are Needed? **Comparing and Scaling:** 3.1: Commissions, Markups, and Discounts; 3.2: Measuring to the Unit: Measurement Conversions

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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.	**Accentuate the Negative:** 3.1: Multiplication Patterns; 3.2: Multiplication of Rational Numbers; 3.4: Playing the Integer Product Game; 4.1: Order of Operations; 4.2: The Distributive Property; 4.3: What Operations Are Needed? **Comparing and Scaling:** 3.1: Commissions, Markups, and Discounts; 3.2: Measuring to the Unit: Measurement Conversions
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.	**Accentuate the Negative:** 3.3 Division of Rational Numbers; 3.4: Playing the Integer Product Game; 4.1: Order of Operations; 4.2: The Distributive Property; 4.3: What Operations Are Needed? **Comparing and Scaling:** 3.1: Commissions, Markups, and Discounts; 3.2: Measuring to the Unit: Measurement Conversions
c. Apply properties of operations as strategies to multiply and divide rational numbers.	**Accentuate the Negative:** 3.1: Multiplication Patterns; 3.2: Multiplication of Rational Numbers; 3.3 Division of Rational Numbers; 3.4: Playing the Integer Product Game; 4.1: Order of Operations; 4.2: The Distributive Property; 4.3: What Operations Are Needed? **Comparing and Scaling:** 3.1: Commissions, Markups, and Discounts; 3.2: Measuring to the Unit: Measurement Conversions
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.	**Accentuate the Negative:** 3.3 Division of Rational Numbers; 4.2: The Distributive Property **Comparing and Scaling:** 3.1: Commissions, Markups, and Discounts

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3. Solve real-world and mathematical problems involving the four operations with rational numbers.	**Accentuate the Negative:** 1.1: Playing Math Fever; 1.2: Extending the Number Line; 1.3 From Sauna to Snowbank; 1.4: In the Chips; 2.1: Extending Addition to Rational Numbers; 2.2 Extending Subtraction to Rational Numbers; 2.3: The "+/-" Connection; 2.4: Fact Families; 3.1: Multiplication Patterns; 3.2: Multiplication of Rational Numbers; 3.3 Division of Rational Numbers; 3.4: Playing the Integer Product Game; 4.1: Order of Operations; 4.2: The Distributive Property; 4.3: What Operations Are Needed? **Comparing and Scaling:** 3.1: Commissions, Markups, and Discounts; 3.2: Measuring to the Unit: Measurement Conversions
Expressions and Equations NY-7.EE	
Use properties of operations to generate equivalent expressions.	
1. Add, subtract, factor, and expand linear expressions with rational coefficients by applying the properties of operations.	**Moving Straight Ahead:** 3.3: From Pouches to Variables: Writing Equations; 3.4: Solving Linear Equations **Filling and Wrapping:** 3.4: Connecting Circumference and Area
2. Understand that rewriting an expression in different forms in real-world and mathematical problems can reveal and explain how the quantities are related.	**Shapes and Designs:** 2.1: Angle Sums of Regular Polygons; 2.2: Angle Sums of Any Polygon; 2.4: The Ins and Outs of Polygons **Moving Straight Ahead:** 3.3: From Pouches to Variables: Writing Equations; 3.4: Solving Linear Equations **Filling and Wrapping:** 3.4: Connecting Circumference and Area

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Solve real-life and mathematical problems using numerical and algebraic expressions and equations.	
3. Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate. Assess the reasonableness of answers using mental computation and estimation strategies.	**Accentuate the Negative:** 2.1: Extending Addition to Rational Numbers; 2.2 Extending Subtraction to Rational Numbers; 2.3: The "+/-" Connection; 2.4: Fact Families; 3.1: Multiplication Patterns; 3.2: Multiplication of Rational Numbers; 3.3 Division of Rational Numbers; 3.4: Playing the Integer Product Game; 4.1: Order of Operations; 4.2: The Distributive Property; 4.3: What Operations Are Needed? **Stretching and Shrinking:** 4.3: Finding Missing Parts: Using Similarity to Find Measurements; 4.4: Using Shadows to Find Heights: Using Similar Triangles **Comparing and Scaling:** 3.1: Commissions, Markups, and Discounts; 3.2: Measuring to the Unit: Measurement Conversions **Moving Straight Ahead:** 1.1: Walking Marathons; 1.2: Walking Rates and Linear Relationships; 1.3: Raising Money; 1.4: Using the Walkathon Money; 2.1: Henri and Emile's Race; 2.2: Crossing the Line; 2.3: Comparing Costs; 2.4: Connecting Tables; Graphs, and Equations; 3.1: Solving Equations Using Tables and Graphs; 3.2: Mystery Pouches in the Kingdom of Montarek; 3.3: From Pouches to Variables; 3.4: Solving Linear Equations; 3.5: Finding the Points of Intersection; 4.1: Climbing Stairs; 4.2: Finding the Slope of a Line; 4.3: Exploring Patterns With Lines; 4.4: Pulling it All Together

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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.	**Accentuate the Negative:** 1.2: Extending the Number Line; 1.3 From Sauna to Snowbank **Shapes and Designs:** 2.1: Angle Sums of Regular Polygons; 2.2: Angle Sums of Any Polygon; 2.4: The Ins and Outs of Polygons **Stretching and Shrinking:** 4.3: Finding Missing Parts: Using Similarity to Find Measurements; 4.4: Using Shadows to Find Heights: Using Similar Triangles **Comparing and Scaling:** 1.3: Time to Concentrate: Scaling Ratios; 1.4: Keeping Things in Proportion: Scaling to Solve Proportions; 2.3: Finding Costs: Unit Rate and Constant of Proportionality; 3.1: Commissions, Markups, and Discounts; 3.2: Measuring to the Unit: Measurement Conversions; 3.3: Mixing It Up: Connecting Ratios, Rates, Percents, and Proportions **Moving Straight Ahead:** 1.1: Walking Marathons; 1.2: Walking Rates and Linear Relationships; 1.3: Raising Money; 1.4: Using the Walkathon Money; 2.1: Henri and Emile's Race; 2.2: Crossing the Line; 2.3: Comparing Costs; 2.4: Connecting Tables; Graphs, and Equations; 3.1: Solving Equations Using Tables and Graphs; 3.2: Mystery Pouches in the Kingdom of Montarek; 3.3: From Pouches to Variables; 3.4: Solving Linear Equations; 3.5: Finding the Points of Intersection; 4.1: Climbing Stairs; 4.2: Finding the Slope of a Line; 4.3: Exploring Patterns With Lines; 4.4: Pulling it All Together

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a. Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.	**Comparing and Scaling:** 2.3: Finding Costs: Unit Rate and Constant of Proportionality; 3.1: Commissions, Markups, and Discounts; 3.2: Measuring to the Unit: Measurement Conversions; 3.3: Mixing It Up: Connecting Ratios, Rates, Percents, and Proportions **Moving Straight Ahead:** 3.1: Solving Equations Using Tables and Graphs; 3.2: Mystery Pouches in the Kingdom of Montarek; 3.3: From Pouches to Variables; 3.4: Solving Linear Equations
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.	**Accentuate the Negative:** 1.2: Extending the Number Line **Moving Straight Ahead:** 3.5: Finding the Point of Intersection: Equations and Inequalities
Geometry NY-7.G	
Draw, construct, and describe geometrical figures and describe the relationships between them.	
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.	**Stretching and Shrinking:** 1.1: Solving a Mystery; 1.2: Scaling Up and Down; 2.1: Drawing Wumps; 2.2: Hats Off to the Wumps; 2.3: Mouthing Off and Nosing Around; 3.1: Rep-Tile Quadrilaterals; 3.2: Rep-Tile Triangles; 3.3: Designing Under Constraints; 3.4: Out of Reach; 4.1: Ratios Within Similar Parallelograms; 4.2: Ratios Within Similar Triangles; 4.3: Finding Missing Parts; 4.4: Using Shadows to Find Heights **Filling and Wrapping:** 1.4: Compost Containers: Scaling Up Prisms

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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.	**Shapes and Designs:** 1.1: Sorting and Sketching Polygons; 1.2: In a Spin: Angles and Rotations; 1.3: Estimating Measures of Rotations and Angles; 1.4: Measuring Angles; 1.5: Design Challenge I: Drawing with Tools—Ruler and Protractor; 2.2: Angle Sums of Any Polygon; 2.3: The Bees Do It: Polygons in Nature; 2.4: The Ins and Outs of Polygons; 3.1: Building Triangles; 3.2: Design Challenge II: Drawing Triangles; 3.3: Building Quadrilaterals **Stretching and Shrinking:** 1.1: Solving a Mystery; 2.1: Drawing Wumps; 2.2: Hats Off to the Wumps; 2.3: Mouthing Off and Nosing Around; 3.1: Rep-Tile Quadrilaterals; 3.2: Rep-Tile Triangles; 3.3: Designing Under Constraints; 4.4: Using Shadows to Find Heights
3. Describe the two-dimensional shapes that result from slicing three dimensional solids parallel or perpendicular to the base.	**Filling and Wrapping:** 2.3: Slicing Prisms and Pyramids
Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.	
4. Apply the formulas for the area and circumference of a circle to solve problems.	**Filling and Wrapping:** 3.1: Going Around in Circles; 3.2: Pricing Pizza; 3.3: Squaring a Circle to Find Its Area; 3.4: Connecting Circumference and Area
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.	**Shapes and Designs:** 1.4: Measuring Angles; 2.4: The Ins and Outs of Polygons; 3.4: Parallel Lines and Transversals

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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.	**Stretching and Shrinking:** 1.2: Scaling Up and Down; 3.1: Rep-Tile Quadrilaterals; 3.2: Rep-Tile Triangles; 3.3: Designing Under Constraints **Filling and Wrapping:** 1.1: How Big Are Those Boxes?; 1.2: Optimal Containers I; 1.3: Optimal Containers II; 1.4: Compost Containers; 2.1: Folding Paper; 2.2: Packing A Prism; 2.3: Slicing Prisms and Pyramids; 3.1: Going Around in Circles; 3.2: Pricing Pizza; 3.3: Squaring a Circle to Find Its Area; 3.4: Connecting Circumference and Area; 4.1: Networking; 4.2: Wrapping Paper; 4.3: Comparing Juice Containers; 4.4: Filling Cones and Spheres; 4.5: Comparing Volumes of Spheres, Cylinders, and Cones
Statistics and Probability NY-7.SP	
Draw informal comparative inferences about two populations	
1. Construct and interpret box-plots, find the interquartile range, and determine if a data point is an outlier.	**Samples and Populations:** .4: Are Steel-Frame Coasters Faster Than Wood-Frame Coasters?
3. Informally assess the degree of visual overlap of two quantitative data distributions.	**Samples and Populations:** 1.1: Comparing Performances; 1.2: Which Team Is Most Successful?; 1.4: Are Steel-Frame Coasters Faster Than Wood-Frame Coasters?; 3.1: Solving an Archeological Mystery; 3.2: Comparing Heights of Basketball Players; 3.3: Five Chocolate Chips in Every Cookie; 3.4: Estimating a Deer Population
4. Use measures of center and measures of variability for quantitative data from random samples to draw informal comparative inferences about two populations.	**Samples and Populations:** 1.1: Comparing Performances; 1.2: Which Team Is Most Successful?; 1.4: Are Steel-Frame Coasters Faster Than Wood-Frame Coasters?; 3.1: Solving an Archeological Mystery; 3.2: Comparing Heights of Basketball Players; 3.3: Five Chocolate Chips in Every Cookie; 3.4: Estimating a Deer Population

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Investigate chance processes and develop, use, and evaluate probability models.	
8. Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.	**What Do You Expect?:** 2.3: Designing a Fair Game; 3.4: Scratching Spots: Designing and Using a Simulation; 4.1: Drawing Area Models to Find the Sample Space; 4.4: Finding Expected Value; 5.2: Ortonville: Binomial Probability
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.	**What Do You Expect?:** 3.2: Making Decisions; 3.3: Roller Derby; 3.4: Scratching Spots; 4.1: Drawing Area Models to Find the Sample Space; 4.2: Making Purple; 4.3: One-and-One Free Throws: Simulating a Probability Situation; 4.4: Finding Expected Value; 5.1: Guessing Answers: Finding More Expected Values
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.	**What Do You Expect?:** 2.3: Designing a Fair Game; 3.4: Scratching Spots: Designing and Using a Simulation; 4.1: Drawing Area Models to Find the Sample Space; 4.4: Finding Expected Value; 5.2: Ortonville: Binomial Probability
c. Design and use a simulation to generate frequencies for compound events.	**What Do You Expect?:** 2.3: Designing a Fair Game; 3.4: Scratching Spots: Designing and Using a Simulation; 4.1: Drawing Area Models to Find the Sample Space

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Math Practices	
MP.1 Make sense of problems and persevere in solving them.	**Shapes and Designs:** 3.2: Design Challenge II: Drawing Triangles **Accentuate the Negative:** 4.3: What Operations are Needed? **Stretching and Shrinking:** Unit Project: Shrinking and Enlarging Pictures **Comparing and Scaling:** Unit Project: Paper Pool; 2.1: Sharing Pizza: Comparison Strategies; 3.3: Mixing It Up: Connecting Ratios, Rates, Percents, and Proportions **Moving Straight Ahead:** Unit Project: Conducting an Experiment; 3.2: Mystery Pouches in the Kingdom of Montarek: Exploring Equality
MP.2 Reason abstractly and quantitatively.	**Shapes and Designs:** 2.2: Angle Sums of Any Polygon; 2.4: The Ins and Outs of Polygons **Accentuate the Negative:** 3.1: Multiplication Patterns With Integers; 4.2: The Distributive Property **Stretching and Shrinking:** 4.3: Finding Missing Parts: Using Similarity to Find Measurements **Comparing and Scaling:** 1.4: Keeping Things in Proportion: Scaling to Solve Proportions **Moving Straight Ahead:** 3.4: Solving Linear Equations **What Do You Expect?:** 4.4: Finding Expected Value **Filling and Wrapping:** 1.2: Optimal Containers II: Finding the Least Surface Area **Samples and Populations:** 3.2: Comparing Heights of Basketball Players: Using Means and MADs.

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MP.3 Construct viable arguments and critique the reasoning of others.	**Shapes and Designs:** 2: Designing Polygons: The Angle Connection (ACE 21) **Accentuate the Negative:** Unit Project: Dealing Down **Stretching and Shrinking:** 1: Enlarging and Reducing Shapes (ACE 23-24); 3: Scaling Perimeter and Area (ACE 22-24); 4: Similarity and Ratios (ACE 18, 50) **Comparing and Scaling:** 1.4: Keeping Things in Proportion: Scaling to Solve Proportions; 2.1: Sharing Pizza: Comparison Strategies **Moving Straight Ahead:** 3.2: Mystery Pouches in the Kingdom of Montarek: Exploring Equality **Filling and Wrapping:** 1.2: Optimal Containers I: Finding Surface Area **Samples and Populations:** 1.2: Which Team Is Most Successful?: Using the MAD to compare samples
MP.4 Model with mathematics.	**Shapes and Designs:** 3.4: Parallel Lines and Transversals **Accentuate the Negative:** 1.3: From Sauna to Snowbank: Using a Number Line; 1.4: In the Chips: Using a Chip Model **Stretching and Shrinking:** 2: Similar Figures (ACE 19) **Moving Straight Ahead:** 3.2: Mystery Pouches in the Kingdom of Montarek: Exploring Equality; 3.3: From Pouches to Variables: Writing Equations **What Do You Expect?:** 3.1: Designing a Spinner to Find Probabilities; 4.1: Drawing Area Models to Find the Sample Space **Filling and Wrapping:** 4.1: Networking: Surface Area of Cylinders **Samples and Populations:** 3.3: Five Chocolate Chips in Every Cookie: Using Sampling in a Simulation

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MP.5 Use appropriate tools strategically.	**Shapes and Designs:** 1.5: Design Challenge I: Drawing With Tools—Ruler and Protractor; 3.1: Building Triangles; 3.2: Design Challenge II: 3.3: Building Quadrilaterals; 3.5: Design Challenge III: The Quadrilateral Game **Stretching and Shrinking:** Unit Project: Shrinking or Enlarging Pictures; 3.1: Rep-Tile Quadrilaterals: Forming Rep-Tiles With Similar Quadrilaterals; 3.2: Rep-Tile Triangles: Forming Rep-Tiles With Similar Triangles **Moving Straight Ahead:** Unit Project: Conducting an Experiment **Filling and Wrapping:** 4.4: Filling Cones and Spheres
MP.6 Attend to precision.	**Shapes and Designs:** 1.3: Estimating Measures of Rotations and Angles **Accentuate the Negative:** 4.2: The Distributive Property **Stretching and Shrinking:** 4.4: Using Shadows to Find Heights: Using Similar Triangles **Comparing and Scaling:** 2.3: Finding Costs: Unit Rate and Constant of Proportionality; 3.1: Commissions, Markups, and Discounts: Proportions With Percents; 3.2: Measuring to the Unit: Measurement Conversions; 3.3: Mixing It Up: Connecting Ratios, Rates, Percents, and Proportions **What Do You Expect?:** 4.4: Finding Expected Value **Filling and Wrapping:** 3.3: Squaring a Circle to Find Its Area: Did You Know?; 3.4: Connecting Circumference and Area

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MP.7 Look for and make use of structure.	**Shapes and Designs:** 2.2: Angle Sums of Any Polygon; 2.4: The Ins and Outs of Polygons **Accentuate the Negative:** 1.2: Extending the Number Line; 2.3: The "+/-" Connection; 4.1: Order of Operations **Stretching and Shrinking:** 1.2: Scaling up and Down: Corresponding Sides and Angles **Comparing and Scaling:** 2.3: Finding Costs: Unit Rate and Constant of Proportionality; 3.3: Mixing It Up: Connecting Ratios, Rates, Percents, and Proportions **Moving Straight Ahead:** 4.4: Pulling It All Together: Writing Equations for Linear Relationships **Filling and Wrapping:** 3.3: Squaring a Circle to Find Its Area: Did You Know?
MP.8 Look for and express regularity in repeated reasoning.	**Shapes and Designs:** 2.2: Angle Sums of Any Polygon; 2.3: The Bees Do It: Polygons in Nature; 2.4: The Ins and Outs of Polygons **Accentuate the Negative:** 1.2: Extending the Number Line; 2.1: Extending Addition to Rational Numbers; 2.2: Extending Subtraction to Rational Numbers; 2.4: Fact Families; 3.1: Multiplication Patterns with Integers **Stretching and Shrinking:** 3.1: Rep-Tile Quadrilaterals: Forming Rep-Tiles with Similar Quadrilaterals; 3.2: Rep-Tile Triangles: Forming Rep-Tiles with Similar Triangles

New York State Next Generation Mathematics Learning Standards Grade 8	Connected Mathematics Project 3 (CMP3), ©2018 Grade 8
The Number System NY-8.NS	
Know that there are numbers that are not rational, and approximate them by rational numbers.	
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.	**Looking for Pythagoras:** 4.1: Analyzing the Wheel of Theodorus; 4.4: Getting Real
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.	**Looking for Pythagoras:** 4.1: Analyzing the Wheel of Theodorus; 4.4: Getting Real; 5.1: Stopping Sneaky Sally
Expressions and Equations NY-8.EE	
Work with radicals and integer exponents.	
1. Know and apply the properties of integer exponents to generate equivalent numerical expressions.	**Growing, Growing, Growing:** 5.1: Looking For Patterns Among Exponents; 5.2: Rules of Exponents; 5.3: Extending the Rules of Exponents; 5.4: Operations With Scientific Notation
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.	**Looking for Pythagoras:** 2.2: Square Roots; 2.3: Using Squares; 2.4: Cube Roots; 5.1: Stopping Sneaky Sally
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.	**Growing, Growing, Growing:** 1.2: Requesting a Reward: Representing Exponential Functions; 5.4: Operations With Scientific Notation
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.	**Growing, Growing, Growing:** 5.4: Operations With Scientific Notation

ACE = Applications Connections – Extensions
INV = Investigations
MR = Mathematical Reflections

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Understand the connections between proportional relationships, lines, and linear equations.	
5. Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.	**Thinking with Mathematical Models:** 2.2: Up and Down the Staircase; 3.2: Distance, Speed, and Time
6. Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation y = mx for a line through the origin and the equation y = mx + b for a line intercepting the vertical axis at b.	**Thinking with Mathematical Models:** 2.2: Up and Down the Staircase
Analyze and solve linear equations and pairs of simultaneous linear equations.	
7. Solve linear equations in one variable.	**Thinking with Mathematical Models:** 2.4: Boat Rental Business; 2.5: Amusement Park or Movies **Say It with Symbols:** 3.1: Selling Greeting Cards; 3.2: Comparing Costs; 5.1: Using Algebra to Solve a Puzzle
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.	**Thinking with Mathematical Models:** 2.4: Boat Rental Business **Say It with Symbols:** 3.1: Selling Greeting Cards; 3.2: Comparing Costs; 5.1: Using Algebra to Solve a Puzzle
b. Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and combining like terms.	**Thinking with Mathematical Models:** 2.4: Boat Rental Business **Say It with Symbols:** 3.1: Selling Greeting Cards; 3.2: Comparing Costs; 5.1: Using Algebra to Solve a Puzzle

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8. Analyze and solve pairs of simultaneous linear equations.	**Thinking with Mathematical Models:** 2.5: Amusement Park or Movies **It's In The System:** 1.1: Shirts and Caps; 1.2: Connecting Ax + By = C and y = mx + b; 1.3: Booster Club Members; 2.1: Shirts and Caps Again; 2.2: Taco Truck Lunch; 2.1: Shirts and Caps Again; 2.2: Taco Truck Lunch; 2.3: Solving Systems by Combining Equations II; 4.4: Miles of Emissions
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.	**Thinking with Mathematical Models:** 2.5: Amusement Park or Movies **It's in The System:** 2.1: Shirts and Caps Again; 2.2: Taco Truck Lunch; 2.3: Solving Systems by Combining Equations II; 4.4: Miles of Emissions
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.	**Thinking with Mathematical Models:** 2.5: Amusement Park or Movies **It's In The System:** 1.1: Shirts and Caps; 1.2: Connecting Ax + By = C and y = mx + b; 1.3: Booster Club Members; 2.1: Shirts and Caps Again; 2.2: Taco Truck Lunch; 2.3: Solving Systems by Combining Equations II; 4.4: Miles of Emissions
c. Solve real-world and mathematical problems involving systems of two linear equations in two variables with integer coefficients.	**Thinking with Mathematical Models:** 2.5: Amusement Park or Movies **It's in The System:** 1.1: Shirts and Caps; 1.2: Connecting Ax + By = C and y = mx + b; 1.3: Booster Club Members; 2.1: Shirts and Caps Again; 2.2: Taco Truck Lunch; 2.3: Solving Systems by Combining Equations II; 4.4: Miles of Emissions

New York State Next Generation Mathematics Learning Standards Grade 8	Connected Mathematics Project 3 (CMP3), ©2018 Grade 8
Functions NY-8.F	
Define, evaluate, and compare functions.	
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.	**Thinking with Mathematical Models:** 2.1: Modeling Linear Data Patterns; 2.2: Up and Down the Staircase; 2.3: Tree Top Fun; 2.4: Boat Rental Business; 2.5: Amusement Park or Movies; 3.2: Distance, Speed and Time; 3.3: Planning a Field Trip; 3.4: Modeling Data Patterns **Growing, Growing, Growing:** 1.1: Making Ballots; 1.2: Requesting a Reward; 1.3: Making a New Offer; 2.1: Killer Plant Strikes Lake Victoria; 2.2: Growing Mold; 2.3: Studying Snake Populations; 3.1: Reproducing Rabbits; 3.2: Investing for the Future; 3.3: Making a Difference; 4.1: Making Smaller Ballots; 4.2: Fighting Fleas; 4.3: Cooling Water; 5.5: Revisiting Exponential Functions **Say It with Symbols:** 2.1: Walking Together; 2.2: Predicting Profit; 3.1: Selling Greeting Cards; 3.2: Comparing Costs; 3.3: Factoring Quadratic Equations; 3.4: Solving Quadratic Equations; 4.3: Generating Patterns; 4.4: What's the Function?
2. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).	**Say It with Symbols:** 2.1: Walking Together; 2.2: Predicting Profit; 4.3: Generating Patterns; 4.4: What's the Function? **It's in The System:** 4.3: Feasible Points
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.	**Thinking with Mathematical Models:** 2.1: Modeling Linear Data Patterns; 2.2: Up and Down the Staircase; 2.3: Tree Top Fun; 2.4: Boat Rental Business; 2.5: Amusement Park or Movies

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Use functions to model relationships between quantities.	
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.	**Thinking with Mathematical Models:** 1.3: Custom Construction Parts; 2.1: Modeling Linear Data Patterns; 2.2: Up and Down the Staircase; 2.3: Tree Top Fun; 2.4: Boat Rental Business; 2.5: Amusement Park or Movies **Say It with Symbols:** 3.1: Selling Greeting Cards; 3.2: Comparing Costs
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.	**Thinking with Mathematical Models:** 1.3: Custom Construction Parts; 2.2: Up and Down the Staircase; 2.3: Tree Top Fun; 2.4: Boat Rental Business; 2.5: Amusement Park or Movies; 3.2: Distance, Speed and Time; 3.3: Planning a Field Trip; 3.4: Modeling Data Patterns **Growing, Growing, Growing:** 1.3: Making a New Offer; 2.1: Killer Plant Strikes Lake Victoria; 2.3: Studying Snake Populations; 3.3: Making a Difference; 4.2: Fighting Fleas; 5.5: Revisiting Exponential Functions **Say It with Symbols:** 3.3: Factoring Quadratic Equations
Geometry NY-8.G	
Understand congruence and similarity using physical models, transparencies, or geometry software.	
1. Verify experimentally the properties of rotations, reflections, and translations:	**Butterflies, Pinwheels, and Wallpaper:** 1.1: Butterfly Symmetry; 1.2: In a Spin; 1.3: Sliding Around; 1.4: Properties of Transformations; 2.1: Connecting Congruent Polygons; 2.2: Supporting the World; 2.3: Minimum Measurement; 3.1: Flipping on a Grid; 3.2: Sliding on a Grid; 3.3: Spinning on a Grid; 3.4: A Special Property of Translations and Half-Turns; 3.5: Parallel Lines, Transversals, and Angle Sums

New York State Next Generation Mathematics Learning Standards Grade 8	Connected Mathematics Project 3 (CMP3), ©2018 Grade 8
a. Verify experimentally lines are mapped to lines, and line segments to line segments of the same length.	**Butterflies, Pinwheels, and Wallpaper:** 1.1: Butterfly Symmetry; 1.2: In a Spin; 1.3: Sliding Around; 1.4: Properties of Transformations; 3.1: Flipping on a Grid; 3.2: Sliding on a Grid; 3.3: Spinning on a Grid; 3.4: A Special Property of Translations and Half-Turns; 3.5: Parallel Lines, Transversals, and Angle Sums
b. Verify experimentally angles are mapped to angles of the same measure.	**Looking for Pythagoras:** 5.2: Analyzing Triangles **Butterflies, Pinwheels, and Wallpaper:** 1.1: Butterfly Symmetry; 1.2: In a Spin; 1.3: Sliding Around; 1.4: Properties of Transformations; 3.1: Flipping on a Grid; 3.2: Sliding on a Grid; 3.3: Spinning on a Grid; 3.4: A Special Property of Translations and Half-Turns; 4.1: Focus on Dilations; 4.2: Return of Super Sleuth; 4.3: Checking Similarity Without Transformations; 4.4: Using Similar Triangles
c. Verify experimentally parallel lines are mapped to parallel lines.	**Butterflies, Pinwheels, and Wallpaper:** 1.1: Butterfly Symmetry; 1.3: Sliding Around; 1.4: Properties of Transformations; 3.1: Flipping on a Grid; 3.2: Sliding on a Grid
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.	**Looking for Pythagoras:** 5.2: Analyzing Triangles **Butterflies, Pinwheels, and Wallpaper:** 1.1: Butterfly Symmetry; 1.2: In a Spin; 1.3: Sliding Around; 1.4: Properties of Transformations; 2.1: Connecting Congruent Polygons; 2.2: Supporting the World; 3.1: Flipping on a Grid; 3.2: Sliding on a Grid; 3.3: Spinning on a Grid; 3.4: A Special Property of Translations and Half-Turns
3. Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.	**Butterflies, Pinwheels, and Wallpaper:** 4.1: Focus on Dilations; 4.2: Return of Super Sleuth; 4.3: Checking Similarity Without Transformations; 4.4: Using Similar Triangles

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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.	**Looking for Pythagoras:** 5.2: Analyzing Triangles **Butterflies, Pinwheels, and Wallpaper:** 4.2: Return of Super Sleuth; 4.3: Checking Similarity Without Transformations; 4.4: Using Similar Triangles
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.	**Looking for Pythagoras:** 5.2: Analyzing Triangles **Butterflies, Pinwheels, and Wallpaper:** 3.5: Parallel Lines, Transversals, and Angle Sums; 4.3: Checking Similarity Without Transformations; 4.4: Using Similar Triangles
Understand and apply the Pythagorean Theorem.	
6. Explain a proof of the Pythagorean Theorem and its converse.	**Looking for Pythagoras:** 1.2: Planning Parks; 3.1: Discovering the Pythagorean Theorem; 3.2: A Proof of the Pythagorean Theorem; 3.3: Finding Distances; 3.4: Measuring the Egyptian Way; 4.1: Analyzing the Wheel of Theodorus; 5.1: Stopping Sneaky Sally; 5.3: Analyzing Circles
7. Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.	**Looking for Pythagoras:** 1.2: Planning Parks; 3.1: Discovering the Pythagorean Theorem; 3.2: A Proof of the Pythagorean Theorem; 3.3: Finding Distances; 3.4: Measuring the Egyptian Way; 4.1: Analyzing the Wheel of Theodorus; 5.1: Stopping Sneaky Sally; 5.3: Analyzing Circles
8. Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	**Looking for Pythagoras:** 3.1: Discovering the Pythagorean Theorem; 3.2: A Proof of the Pythagorean Theorem; 3.3: Finding Distances; 3.4: Measuring the Egyptian Way; 4.1: Analyzing the Wheel of Theodorus; 5.1: Stopping Sneaky Sally; 5.3: Analyzing Circles

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Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.	
9. Given the formulas for the volumes of cones, cylinders, and spheres, solve mathematical and real-world problems.	**Say It with Symbols:** 2.3: Making Candles; 2.4: Selling Ice Cream
Statistics and Probability NY-8.SP	
Investigate patterns of association in bivariate data.	
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.	**Thinking with Mathematical Models:** 1.3: Custom Construction Parts; 2.1: Modeling Linear Data Patterns; 3.4: Modeling Data Patterns; 4.1: Vitruvian Man; 4.2: Older and Faster; 4.3: Correlation Coefficients and Outliers
2. Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.	**Thinking with Mathematical Models:** 1.3: Custom Construction Parts; 2.1: Modeling Linear Data Patterns; 3.4: Modeling Data Patterns; 4.1: Vitruvian Man; 4.2: Older and Faster; 4.3: Correlation Coefficients and Outliers
3. Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.	**Thinking with Mathematical Models:** 1.3: Custom Construction Parts; 2.1: Modeling Linear Data Patterns; 3.4: Modeling Data Patterns; 4.1: Vitruvian Man; 4.2: Older and Faster; 4.3: Correlation Coefficients and Outliers

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Math Practices	
MP.1 Make sense of problems and persevere in solving them.	**Thinking with Mathematical Models:** 3.2: Distance, Speed and Time; 3.3: Planning a Field Trip; 3.4: Modeling Data Patterns **Growing, Growing, Growing:** 1.3: Making a New Offer; 2.1: Killer Plant Strikes Lake Victoria; 2.3: Studying Snake Populations; 3.3: Making a Difference **Butterflies, Pinwheels, and Wallpaper:** 2.1: Connecting Congruent Polygons; 2.2: Supporting the World; 2.3: Minimum Measurement **Say It with Symbols:** 3.3: Factoring Quadratic Equations **It's in the System:** 1.1: Shirts and Caps; 1.2: Connecting Ax + By = C and y = mx + b; 1.3: Booster Club Members; 2.2: Taco Truck Lunch; 2.3: Solving Systems by Combining Equations II; 4.4: Miles of Emissions
MP.2 Reason abstractly and quantitatively.	**Thinking with Mathematical Models:** 1.3: Custom Construction Parts; 2.1: Modeling Linear Data Patterns; 2.2: Up and Down the Staircase; 2.3: Tree Top Fun; 2.4: Boat Rental Business; 2.5: Amusement Park or Movies **Growing, Growing, Growing:** 3.1: Reproducing Rabbits; 3.2: Investing for the Future; 3.3: Making a Difference **Butterflies, Pinwheels, and Wallpaper:** 4.1: Focus on Dilations; 4.2: Return of Super Sleuth; 4.3: Checking Similarity; 4.4: Using Similar Triangles **Say It with Symbols:** 3.1: Selling Greeting Cards; 3.2: Comparing Costs; 3.3: Factoring Quadratic Equations; 3.4: Solving Quadratic Equations **It's in the System:** 2.1: Shirts and Caps Again; 2.2: Taco Truck Lunch; 2.3: Solving Systems by Combining Equations II

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MP.3 Construct viable arguments and critique the reasoning of others.	**Thinking with Mathematical Models:** 2.1: Modeling Linear Data Patterns; 2.2: Up and Down the Staircase; 2.3: Tree Top Fun; 2.4: Boat Rental Business; 2.5: Amusement Park or Movies; 4.1: Vitruvian Man; 4.2: Older and Faster; 4.3: Correlation Coefficients and Outliers; 4.4: Measuring Variability **Looking for Pythagoras:** 1.2: Planning Parks **Growing, Growing, Growing:** 1.1: Making Ballots; 1.2: Requesting a Reward; 1.3: Making a New Offer **Say It with Symbols:** 5.1: Using Algebra to Solve a Puzzle **It's In The System: 1**.1: Shirts and Caps; 1.2: Connecting Ax + By = C and y = mx + b; 1.3: Booster Club Members
MP.4 Model with mathematics.	**Growing, Growing, Growing:** 1.1: Making Ballots; 1.2: Requesting a Reward; 1.3: Making a New Offer; 2.1: Killer Plant Strikes Lake Victoria; 2.2: Growing Mold; 2.3: Studying Snake Populations; 3.1: Reproducing Rabbits; 3.2: Investing for the Future; 3.3: Making a Difference; 4.1: Making Smaller Ballots; 4.2: Fighting Fleas; 4.3: Cooling Water; 5.1: Looking For Patterns Among Exponents; 5.2: Rules of Exponents; 5.3: Extending the Rules of Exponents; 5.4: Operations With Scientific Notation; 5.5: Revisiting Exponential Functions **Butterflies, Pinwheels, and Wallpaper:** 4.1: Focus on Dilations; 4.2: Return of Super Sleuth; 4.3: Checking Similarity; 4.4: Using Similar Triangles **Say It with Symbols:** 2.3: Making Candles; 2.4: Selling Ice Cream **It's in the System: 2**.1: Shirts and Caps Again; 2.2: Taco Truck Lunch; 2.3: Solving Systems by Combining Equations II

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MP.5 Use appropriate tools strategically.	**Thinking with Mathematical Models:** 2.1: Modeling Linear Data Patterns; 2.2: Up and Down the Staircase; 2.3: Tree Top Fun; 2.4: Boat Rental Business; 2.5: Amusement Park or Movies **Looking for Pythagoras:** 5.1: Stopping Sneaky Sally; 5.2: Analyzing Triangles; 5.3: Analyzing Circles **Growing, Growing, Growing:** 1.1: Making Ballots; 1.2: Requesting a Reward; 1.3: Making a New Offer; 5.1: Looking For Patterns Among Exponents; 5.2: Rules of Exponents; 5.3: Extending the Rules of Exponents; 5.4: Operations With Scientific Notation; 5.5: Revisiting Exponential Functions **Butterflies, Pinwheels, and Wallpaper:** 1.1: Butterfly Symmetry; 1.2: In a Spin; 1.3: Sliding Around; 1.4: Properties of Transformations; 2.3: Minimum Measurement; 3.1: Flipping on a Grid; 3.2: Sliding on a Grid; 3.3: Spinning on a Grid; 3.4: A Special Property of Translations and Half-Turns; 3.5: Parallel Lines, Transversals, and Angle Sums; 4.1: Focus on Dilations; 4.3: Checking Similarity; 4.4: Using Similar Triangles **Say It with Symbols:** 2.3: Making Candles; 2.4: Selling Ice Cream **It's In The System:** 2.1: Shirts and Caps Again; 2.2: Taco Truck Lunch; 2.3: Solving Systems by Combining Equations II

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MP.6 Attend to precision.	**Looking for Pythagoras:** 4.1: Analyzing the Wheel of Theodorus; 4.4: Getting Real **Growing, Growing, Growing:** 1.1: Making Ballots; 1.2: Requesting a Reward; 1.3: Making a New Offer; 5.1: Looking For Patterns Among Exponents; 5.2: Rules of Exponents; 5.3: Extending the Rules of Exponents; 5.4: Operations With Scientific Notation; 5.5: Revisiting Exponential Functions **Butterflies, Pinwheels, and Wallpaper:** 2.1: Connecting Congruent Polygons; 2.2: Supporting the World; 2.3: Minimum Measurement **Say It With Symbols:** 4.3: Generating Patterns; 4.4: What's the Function?; 5.1: Using Algebra to Solve a Puzzle **It's In The System:** 4.3: Feasible Points; 4.4: Miles of Emissions

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MP.7 Look for and make use of structure.	**Thinking with Mathematical Models:** 1.3: Custom Construction Parts; 3.2: Distance, Speed and Time; 3.3: Planning a Field Trip; 3.4: Modeling Data Patterns **Looking for Pythagoras:** 4.1: Analyzing the Wheel of Theodorus; 4.4: Getting Real **Growing, Growing, Growing:** 1.1: Making Ballots; 1.2: Requesting a Reward; 1.3: Making a New Offer; 2.1: Killer Plant Strikes Lake Victoria; 2.2: Growing Mold; 2.3: Studying Snake Populations; 3.1: Reproducing Rabbits; 3.2: Investing for the Future; 3.3: Making a Difference; 4.1: Making Smaller Ballots; 4.2: Fighting Fleas; 5.3: Extending the Rules of Exponents; 5.4: Operations With Scientific Notation; 5.5: Revisiting Exponential Functions **Butterflies, Pinwheels, and Wallpaper:** 1.1: Butterfly Symmetry; 1.2: In a Spin; 1.3: Sliding Around; 1.4: Properties of Transformations; 2.1: Connecting Congruent Polygons; 2.2: Supporting the World; 2.3: Minimum Measurement; 3.3: Spinning on a Grid; 3.4: A Special Property of Translations and Half-Turns; 3.5: Parallel Lines, Transversals, and Angle Sums **Say It with Symbols:** 3.1: Selling Greeting Cards; 3.2: Comparing Costs; 3.3: Factoring Quadratic Equations; 3.4: Solving Quadratic Equations **It's In The System:** 1.1: Shirts and Caps; 1.2: Connecting Ax + By = C and y = mx + b; 1.3: Booster Club Members

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MP.8 Look for and express regularity in repeated reasoning.	**Thinking with Mathematical Models:** 3.2: Distance, Speed and Time; 3.3: Planning a Field Trip; 3.4: Modeling Data Patterns **Growing, Growing, Growing:** 1.1: Making Ballots; 1.2: Requesting a Reward; 1.3: Making a New Offer; 2.1: Killer Plant Strikes Lake Victoria; 2.2: Growing Mold; 2.3: Studying Snake Populations; 3.1: Reproducing Rabbits; 3.2: Investing for the Future; 3.3: Making a Difference; 4.1: Making Smaller Ballots; 4.2: Fighting Fleas; 4.3: Cooling Water **Butterflies, Pinwheels, and Wallpaper:** 2.1: Connecting Congruent Polygons; 2.2: Supporting the World; 2.3: Minimum Measurement **Say It with Symbols:** 3.1: Selling Greeting Cards; 3.2: Comparing Costs; 3.3: Factoring Quadratic Equations; 3.4: Solving Quadratic Equations **It's In The System:** 4.3: Feasible Points; 4.4: Miles of Emissions