

Scope and Sequence: Grade Level Map

8: Ratios and Linearity

Module 1 Scientific Notation, Exponents, and Irrational Numbers	Module 2 Rigid Motions and Congruent Figures	Module 3 Dilations and Similar Figures	Module 4 Linear Equations in One and Two Variables	Module 5 Functions and Bivariate Statistics	Module 6 Systems of Linear Equations
<p>Topic A: Introduction to Scientific Notation</p> <p>Lesson 1: Large and Small Positive Numbers</p> <ul style="list-style-type: none"> Write very large and very small numbers in a form that uses exponents to prepare students for scientific notation. Approximate very large and very small quantities. <p>NY-8.EE.3, MP2, 8.Mod1.AD8</p> <p>Lesson 2: Comparing Large Numbers</p> <ul style="list-style-type: none"> Write numbers as a single digit times a power of 10 in exponential form to approximate quantities. Compare large and small positive numbers by using <i>times as much as</i> language. <p>NY-8.EE.3, NY-8.EE.4, MP7, 8.Mod1.AD9, 8.Mod1.AD11, 8.Mod1.AD12</p> <p>Lesson 3: Time to Be More Precise—Scientific Notation</p> <ul style="list-style-type: none"> Write numbers given in standard form in scientific notation. <p>NY-8.EE.3, MP3, 8.Mod1.AD8</p>	<p>Topic A: Rigid Motions and Their Properties</p> <p>Lesson 1: Motions of the Plane</p> <ul style="list-style-type: none"> Informally describe how to map a figure to its image. Demonstrate that the distance between two points stays the same under rigid motions. <p>NY-8.G.1, NY-8.G.1a, NY-8.G.1b, NY-8.G.1c, MP5, 8.Mod2.AD1</p> <p>Lesson 2: Translations</p> <ul style="list-style-type: none"> Apply translations to the plane. Identify the basic properties of translations. <p>NY-8.G.1, NY-8.G.1a, NY-8.G.1b, NY-8.G.1c, MP6, 8.Mod2.AD1</p> <p>Lesson 3: Reflections</p> <ul style="list-style-type: none"> Apply reflections to the plane. Identify the basic properties of reflections. <p>NY-8.G.1, NY-8.G.1a, NY-8.G.1b, NY-8.G.1c, MP8, 8.Mod2.AD1</p>	<p>Topic A: Dilations</p> <p>Lesson 1: Exploring Dilations</p> <ul style="list-style-type: none"> Informally describe the effects of dilations. Classify a dilation as a transformation that is not a rigid motion. <p>NY-8.G.3, MP8, 8.Mod3.AD2</p> <p>Lesson 2: Enlargements</p> <ul style="list-style-type: none"> Apply a dilation with a whole-number scale factor greater than 1. Describe the effects of a dilation with a whole-number scale factor greater than 1. <p>NY-8.G.3, MP6, 8.Mod3.AD2</p> <p>Lesson 3: Reductions and More Enlargements</p> <ul style="list-style-type: none"> Apply a dilation with a scale factor greater than 0. Describe the effects of a dilation with a scale factor greater than 0. <p>NY-8.G.3, MP8, 8.Mod3.AD2</p>	<p>Topic A: Linear Equations in One Variable</p> <p>Lesson 1: Equations</p> <ul style="list-style-type: none"> Analyze an equation to make sense of how to solve it. Identify whether an equation is a linear equation. <p>NY-8.EE.7b, MP7, 8.Mod4.AD11</p> <p>Lesson 2: Solving Linear Equations</p> <ul style="list-style-type: none"> Identify the properties of equality. Solve multi-step linear equations in one variable with variables on both sides of the equations. <p>NY-8.EE.7, NY-8.EE.7b, MP6, 8.Mod4.AD9, 8.Mod4.AD11</p> <p>Lesson 3: Solving Linear Equations with Rational Coefficients</p> <ul style="list-style-type: none"> Solve multi-step linear equations in one variable with rational coefficients. <p>NY-8.EE.7, NY-8.EE.7b, MP7, 8.Mod4.AD9, 8.Mod4.AD11</p>	<p>Topic A: Functions</p> <p>Lesson 1: Motion and Speed</p> <ul style="list-style-type: none"> Calculate the average speed of linear and nonlinear motion. Understand that a function is a special type of rule. <p>NY-8.F.1, MP8, 8.Mod5.AD6</p> <p>Lesson 2: Definition of a Function</p> <ul style="list-style-type: none"> Determine that a function is a rule that assigns to each input one and only one output. Identify functions that can be represented by an equation and those that cannot. <p>NY-8.F.1, MP2, 8.Mod5.AD6</p> <p>Lesson 3: Linear Functions and Proportionality</p> <ul style="list-style-type: none"> Write equations that represent linear functions. Determine what inputs make sense in the context of a linear function. <p>NY-8.F.3, MP2, 8.Mod5.AD8</p>	<p>Topic A: Solving Systems of Linear Equations Graphically</p> <p>Lesson 1: Solving Problems with Equations and Their Graphs</p> <ul style="list-style-type: none"> Formulate a problem from a context. Apply different mathematical tools to model, analyze, and answer a real-world question. <p>NY-8.EE.8a, NY-8.EE.8b, NY-8.EE.8c, MP4, 8.Mod6.AD14, 8.Mod6.AD16, 8.Mod6.AD18</p> <p>Lesson 2: Introduction to Systems of Linear Equations</p> <ul style="list-style-type: none"> Graph a system of linear equations to identify the solution. Recognize that the ordered pair representing the intersection point of the lines is the solution to the system of linear equations. <p>NY-8.EE.8a, MP6, 8.Mod6.AD14</p>

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<p>Lesson 4: Adding and Subtracting Numbers Written in Scientific Notation (Optional)</p> <ul style="list-style-type: none"> Add and subtract numbers written in scientific notation. Rewrite sums and differences in scientific notation. <p>NY-8.EE.4, MP6, 8.Mod1.AD12</p>	<p>Lesson 4: Translations and Reflections on the Coordinate Plane</p> <ul style="list-style-type: none"> Apply translations and reflections on the coordinate plane. Use coordinates to describe the location of an image under a translation or a reflection. <p>NY-8.G.3, MP6, 8.Mod2.AD4</p>	<p>Topic B: Properties of Dilations</p> <p>Lesson 4: Using Lined Paper to Explore Dilations</p> <ul style="list-style-type: none"> Draw the image of a segment under a dilation. Learn the properties of dilations. <p>NY-8.G.3, MP8, 8.Mod3.AD2</p>	<p>Lesson 4: Using Linear Equations to Solve Problems</p> <ul style="list-style-type: none"> Define variables and write equations that represent a given situation. <p>NY-8.EE.7, MP1, 8.Mod4.AD9</p>	<p>Lesson 4: More Examples of Functions</p> <ul style="list-style-type: none"> Determine that not all functions have numerical inputs and outputs. Determine what inputs make sense for a variety of functions. <p>NY-8.F.1, MP7, 8.Mod5.AD6</p>	<p>Lesson 3: Identifying Solutions</p> <ul style="list-style-type: none"> Recognize that a system of linear equations that represents parallel lines has no solution. Analyze a system of linear equations to determine whether a solution exists. <p>NY-8.EE.8a, NY-8.EE.8b, MP7, 8.Mod6.AD14, 8.Mod6.AD17</p>
<p>Topic B: Properties and Definitions of Exponents</p> <p>Lesson 5: Products of Exponential Expressions with Whole-Number Exponents</p> <ul style="list-style-type: none"> Apply understanding of exponential notation to write equivalent expressions for $x^m \cdot x^n$. <p>NY-8.EE.1, MP8, 8.Mod1.AD5</p> <p>Lesson 6: More Properties of Exponents</p> <ul style="list-style-type: none"> Encounter and apply properties of exponents, including raising powers to powers, raising products to powers, and raising quotients to powers. <p>NY-8.EE.1, MP8, 8.Mod1.AD5</p>	<p>Lesson 5: Rotations</p> <ul style="list-style-type: none"> Apply rotations to the plane. Identify the basic properties of rotations. <p>NY-8.G.1, NY-8.G.1a, NY-8.G.1b, NY-8.G.1c, MP6, 8.Mod2.AD1</p> <p>Lesson 6: Rotations on the Coordinate Plane</p> <ul style="list-style-type: none"> Apply rotations around the origin on the coordinate plane. Use coordinates to describe the location of an image under a rotation around the origin. <p>NY-8.G.3, MP8, 8.Mod2.AD4</p>	<p>Lesson 5: Figures and Dilations</p> <ul style="list-style-type: none"> Draw images of figures under dilations with various scale factors. <p>NY-8.G.3, MP5, 8.Mod3.AD2</p> <p>Lesson 6: The Shadowy Hand</p> <ul style="list-style-type: none"> Use a mathematical model to explain a real-world situation. Apply properties of dilations to make and test predictions. <p>NY-8.G.3, MP4, 8.Mod3.AD2</p> <p>Lesson 7: Dilations on a Grid</p> <ul style="list-style-type: none"> Apply dilations on a grid. <p>NY-8.G.3, MP7, 8.Mod3.AD2</p>	<p>Lesson 5: An Interesting Application of Linear Equations, Part 1</p> <ul style="list-style-type: none"> Informally show that every rational number has a decimal form that repeats or terminates. Use linear equations to write the fraction form of a decimal with one repeating digit. <p>NY-8.EE.7b, NY-8.NS.1, MP8, 8.Mod4.AD11, 8.Mod4.AD12</p> <p>Lesson 6: An Interesting Application of Linear Equations, Part 2 (Optional)</p> <ul style="list-style-type: none"> Use linear equations to write the fraction form of any repeating decimal. <p>NY-8.EE.7b, MP8, 8.Mod4.AD11</p>	<p>Lesson 5: Graphs of Functions and Equations</p> <ul style="list-style-type: none"> Determine that if a function can be represented by an equation, then the graph of the function is the same as or some part of the graph of the equation. Determine whether a given graph represents a function. <p>NY-8.F.1, MP6, 8.Mod5.AD6</p>	<p>Lesson 4: More Than One Solution</p> <ul style="list-style-type: none"> Recognize that a system of linear equations that represents the same line has infinitely many solutions. Analyze whether a system of linear equations has only one solution, no solution, or infinitely many solutions. <p>NY-8.EE.8a, NY-8.EE.8b, MP7, 8.Mod6.AD14, 8.Mod6.AD16, 8.Mod6.AD17</p> <p>Lesson 5: Estimating Solutions</p> <ul style="list-style-type: none"> Recognize and describe the limitations of solving a system of linear equations by graphing. <p>NY-8.EE.8a, NY-8.EE.8b, MP1, 8.Mod6.AD14, 8.Mod6.AD16</p>
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<p>Lesson 7: Making Sense of the Exponent of 0</p> <ul style="list-style-type: none"> Define x^0 by confirming that the definition upholds the properties of exponents. Evaluate powers with an exponent of 0. <p>NY-8.EE.1, NY-8.EE.3, MP3, 8.Mod1.AD5, 8.Mod1.AD8</p> <p>Lesson 8: Making Sense of Integer Exponents</p> <ul style="list-style-type: none"> Explore and develop an understanding of negative exponents. Write equivalent expressions given an expression of the form $\frac{x^m}{x^n}$. <p>NY-8.EE.1, MP6, 8.Mod1.AD5</p> <p>Lesson 9: Writing Equivalent Expressions</p> <ul style="list-style-type: none"> Write equivalent expressions by using all the properties and definitions of exponents. <p>NY-8.EE.1, MP7, 8.Mod1.AD5</p> <p>Lesson 10: Evaluating Numerical Expressions by Using Properties of Exponents (Optional)</p> <ul style="list-style-type: none"> Simplify and evaluate exponential expressions by using the properties and definitions of exponents. <p>NY-8.EE.1, MP3, 8.Mod1.AD5</p>	<p>Topic B: Rigid Motions and Congruent Figures</p> <p>Lesson 7: Working Backward</p> <ul style="list-style-type: none"> Precisely describe the rigid motion required to map an image back onto its original figure. <p>NY-8.G.1, NY-8.G.1a, NY-8.G.1b, NY-8.G.1c, NY-8.G.2, MP8, 8.Mod2.AD1, 8.Mod2.AD3</p> <p>Lesson 8: Sequencing the Rigid Motions</p> <ul style="list-style-type: none"> Describe a sequence of rigid motions that maps one figure onto another. Determine that the properties of individual rigid motions also apply for a sequence of rigid motions. <p>NY-8.G.1, NY-8.G.1a, NY-8.G.1b, NY-8.G.1c, NY-8.G.2, MP1, 8.Mod2.AD1, 8.Mod2.AD3</p> <p>Lesson 9: Ordering Sequences of Rigid Motions</p> <ul style="list-style-type: none"> Determine whether the order in which a sequence of rigid motions is applied matters. <p>NY-8.G.2, NY-8.G.3, MP8, 8.Mod2.AD2, 8.Mod2.AD4</p> <p>Lesson 10: Congruent Figures</p> <ul style="list-style-type: none"> Describe a sequence of rigid motions that maps one figure onto a congruent figure. <p>NY-8.G.2, MP6, 8.Mod2.AD3</p>	<p>Topic C: Similar Figures</p> <p>Lesson 9: Describing Dilations</p> <ul style="list-style-type: none"> Precisely describe a dilation given a figure and its image. <p>NY-8.G.3, MP8, 8.Mod3.AD2</p> <p>Lesson 10: Sequencing Transformations</p> <ul style="list-style-type: none"> Apply sequences of transformations. Recognize a sequence that involves a dilation and a translation as a single dilation. <p>NY-8.G.3, MP1, 8.Mod3.AD2</p> <p>Lesson 11: Similar Figures</p> <ul style="list-style-type: none"> Describe a sequence of rigid motions or dilations, or both, to show that two figures are similar. Identify properties of similar figures. <p>NY-8.G.4, MP6, 8.Mod3.AD4, 8.Mod3.AD5</p> <p>Lesson 12: Exploring Angles in Similar Triangles</p> <ul style="list-style-type: none"> Recognize that triangles with two pairs of congruent angles are similar. <p>NY-8.G.4, NY-8.G.5, MP7, 8.Mod3.AD4, 8.Mod3.AD5, 8.Mod3.AD6</p> <p>Lesson 13: Similar Triangles</p> <ul style="list-style-type: none"> Determine whether two triangles are similar by the angle-angle criterion. <p>NY-8.G.4, NY-8.G.5, MP3, 8.Mod3.AD4, 8.Mod3.AD6</p>	<p>Topic B: The Structure of Linear Equations in One Variable</p> <p>Lesson 7: Linear Equations with More Than One Solution</p> <ul style="list-style-type: none"> Identify that linear equations in one variable with infinitely many solutions are equivalent to the equation $a = a$. Solve linear equations in one variable that have only one solution or infinitely many solutions. <p>NY-8.EE.7a, NY-8.EE.7b, MP7, 8.Mod4.AD10, 8.Mod4.AD11</p> <p>Lesson 8: Another Possible Number of Solutions</p> <ul style="list-style-type: none"> Identify that linear equations in one variable with no solution are equivalent to the equation $a = b$, where a and b are different numbers. Solve linear equations in one variable that have only one solution, infinitely many solutions, or no solution. <p>NY-8.EE.7a, NY-8.EE.7b, MP7, 8.Mod4.AD10, 8.Mod4.AD11</p> <p>Lesson 9: Writing Linear Equations</p> <ul style="list-style-type: none"> Write equations with only one solution, infinitely many solutions, or no solution. Classify equations based on their number of solutions. <p>NY-8.EE.7a, MP7, 8.Mod4.AD10</p>	<p>Lesson 7: Interpreting Rate of Change and Initial Value</p> <ul style="list-style-type: none"> Interpret the rate of change and initial value of a linear function in context. Use rate of change to compare two linear functions. <p>NY-8.F.2, NY-8.F.4, NY-8.SP.3, MP2, 8.Mod5.AD7, 8.Mod5.AD9, 8.Mod5.AD10</p> <p>Lesson 8: Comparing Functions</p> <ul style="list-style-type: none"> Compare two functions represented in different ways. <p>NY-8.F.2, MP5, 8.Mod5.AD7</p> <p>Lesson 9: Increasing and Decreasing Functions</p> <ul style="list-style-type: none"> Describe qualitative features of a function by analyzing a graph. Sketch the graph of a function given a description. <p>NY-8.F.5, MP6, 8.Mod5.AD11, 8.Mod5.AD12</p> <p>Lesson 10: Graphs of Nonlinear Functions</p> <ul style="list-style-type: none"> Sketch the graph of a function with certain qualitative features based on a description. Classify linear and nonlinear functions given a context, an equation, or a graph. <p>NY-8.F.3, NY-8.F.5, MP3, 8.Mod5.AD8, 8.Mod5.AD11, 8.Mod5.AD12</p>	<p>Topic B: Solving Systems of Linear Equations Algebraically</p> <p>Lesson 6: Solving Systems of Linear Equations without Graphing</p> <ul style="list-style-type: none"> Solve systems of linear equations by using the substitution method to write the systems as linear equations in one variable. <p>NY-8.EE.8b, MP6, MP8, 8.Mod6.AD15</p> <p>Lesson 7: The Substitution Method</p> <ul style="list-style-type: none"> Solve a system of linear equations by using the substitution method. Apply the multiplication property of equality as part of the substitution method. <p>NY-8.EE.8a, NY-8.EE.8b, MP1, 8.Mod6.AD14, 8.Mod6.AD15</p> <p>Lesson 8: Using Tape Diagrams to Solve Systems of Equations (Optional)</p> <ul style="list-style-type: none"> Find the solution to a system of linear equations by using tape diagrams. Create tape diagrams to represent a system of linear equations. <p>NY-8.EE.8.b, MP7, 8.Mod6.AD15</p>

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<p>Topic C: Applications of the Properties and Definitions of Exponents</p> <p>Lesson 11: Small Positive Numbers in Scientific Notation</p> <ul style="list-style-type: none"> Write small positive numbers in scientific notation. Order numbers written in scientific notation. <p>NY-8.EE.3, MP3, 8.Mod1.AD8</p> <p>Lesson 12: Operations with Numbers in Scientific Notation</p> <ul style="list-style-type: none"> Interpret numbers in scientific notation displayed on digital devices. Operate with numbers written in scientific notation. <p>NY-8.EE.4, MP5, 8.Mod1.AD11, 8.Mod1.AD14</p> <p>Lesson 13: Applications with Numbers in Scientific Notation</p> <ul style="list-style-type: none"> Operate with numbers written in standard form and scientific notation. <p>NY-8.EE.4, MP1, 8.Mod1.AD11</p> <p>Lesson 14: Choosing Units of Measurement</p> <ul style="list-style-type: none"> Choose appropriate units of measurement and convert units of measurement. <p>NY-8.EE.4, MP2, 8.Mod1.AD13</p>	<p>Lesson 11: Showing Figures Are Congruent</p> <ul style="list-style-type: none"> Show figures are congruent by describing a sequence of rigid motions that maps one figure onto the other. <p>NY-8.G.2, MP1, 8.Mod2.AD2</p> <p>Topic C: Angle Relationships</p> <p>Lesson 12: Lines Cut by a Transversal</p> <ul style="list-style-type: none"> Use informal arguments to establish facts about the angles created when pairs of lines are cut by a transversal. <p>NY-8.G.2, NY-8.G.5, MP6, 8.Mod2.AD2, 8.Mod2.AD3, 8.Mod2.AD6</p> <p>Lesson 13: Angle Sum of a Triangle</p> <ul style="list-style-type: none"> Use informal arguments to verify that the sum of the interior angle measures of a triangle is 180°. <p>NY-8.G.5, MP3, 8.Mod2.AD5</p> <p>Lesson 14: Showing Lines Are Parallel</p> <ul style="list-style-type: none"> Use informal arguments to conclude that lines cut by a transversal are parallel when angle pairs are congruent. <p>NY-8.G.5, MP3, 8.Mod2.AD6</p>	<p>Topic D: Applications of Similar Figures</p> <p>Lesson 14: Using Similar Figures to Find Unknown Side Lengths</p> <ul style="list-style-type: none"> Use properties of similar figures to find unknown side lengths. <p>NY-8.G.5, MP1, 8.Mod3.AD6</p> <p>Lesson 15: Applications of Similar Figures</p> <ul style="list-style-type: none"> Use properties of similar figures to solve problems. <p>NY-8.G.5, MP2, 8.Mod3.AD6</p> <p>Lesson 16: Similar Right Triangles</p> <ul style="list-style-type: none"> Apply dilations to create similar right triangles. Find unknown side lengths in similar right triangles. <p>NY-8.G.3, NY-8.G.5, NY-8.G.7, MP7, 8.Mod3.AD2, 8.Mod3.AD6, 8.Mod3.AD7</p> <p>Lesson 17: Similar Triangles on a Line</p> <ul style="list-style-type: none"> Determine that right triangles with horizontal and vertical legs and with hypotenuses that lie on the same line are similar triangles. <p>NY-8.EE.6, NY-8.G.3, MP8, 8.Mod3.AD1, 8.Mod3.AD3</p>	<p>Lesson 10: Using Linear Equations to Solve Real-World Problems</p> <ul style="list-style-type: none"> Solve real-world problems by using linear equations in one variable. <p>NY-8.EE.7, NY-8.EE.7a, NY-8.EE.7b, MP2, 8.Mod4.AD9, 8.Mod4.AD10, 8.Mod4.AD11</p> <p>Lesson 11: Planning a Trip</p> <ul style="list-style-type: none"> Solve a real-world problem by using linear equations in one variable. <p>NY-8.EE.7, NY-8.EE.7b, MP4, 8.Mod4.AD9, 8.Mod4.AD11</p> <p>Topic C: Linear Equations in Two Variables</p> <p>Lesson 12: Solutions to Linear Equations in Two Variables</p> <ul style="list-style-type: none"> Find solutions to linear equations in two variables. Graph the solutions in the coordinate plane. <p>NY-8.EE.B, MP8, 8.Mod4.AD3</p> <p>Lesson 13: The Graph of a Linear Equation in Two Variables</p> <ul style="list-style-type: none"> Identify that the graph of a linear equation of the form $Ax + By = C$ is a line. <p>NY-8.EE.B, MP6, 8.Mod4.AD2, 8.Mod4.AD3</p>	<p>Topic C: Bivariate Numerical Data</p> <p>Lesson 11: Scatter Plots</p> <ul style="list-style-type: none"> Construct scatter plots and identify those that show an association between two variables. Describe the difference between an association and a cause and effect relationship for numerical variables. <p>NY-8.SP.1, MP2, 8.Mod5.AD13</p> <p>Lesson 12: Patterns in Scatter Plots</p> <ul style="list-style-type: none"> Identify and describe patterns of association between two variables represented in scatter plots. Identify and describe outliers and clusters in context. <p>NY-8.SP.1, MP2, 8.Mod5.AD13</p> <p>Lesson 13: Informally Fitting a Line to Data</p> <ul style="list-style-type: none"> Informally fit a line to data displayed in a scatter plot. Make predictions based on the graph of a line fit to data. <p>NY-8.SP.2, MP3, 8.Mod5.AD14</p>	<p>Lesson 9: A New Way to Solve Systems of Linear Equations</p> <ul style="list-style-type: none"> Solve a system of linear equations by using the elimination method. <p>NY-8.EE.8a, NY-8.EE.8b, MP7, 8.Mod6.AD14, 8.Mod6.AD15</p> <p>Lesson 10: Choosing a Solution Method</p> <ul style="list-style-type: none"> Analyze graphs and systems of equations to determine the number of solutions. Construct and critique arguments about the most efficient solution method. <p>NY-8.EE.8a, NY-8.EE.8b, MP3, MP5, 8.Mod6.AD14, 8.Mod6.AD15, 8.Mod6.AD17</p> <p>Topic C: Writing and Solving Systems of Linear Equations</p> <p>Lesson 11: Writing and Solving Systems of Equations for Mathematical Problems</p> <ul style="list-style-type: none"> Write and solve systems of linear equations for mathematical problems. <p>NY-8.EE.8b, NY-8.EE.8c, MP2, 8.Mod6.AD15, 8.Mod6.AD18</p>

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<p>Lesson 15: Get to the Point</p> <ul style="list-style-type: none"> Model a situation by operating with numbers in scientific notation. <p>NY-8.EE.4, MP4, 8.Mod1.AD12</p> <p>Topic D: Perfect Squares, Perfect Cubes, and the Pythagorean Theorem</p> <p>Lesson 16: Perfect Squares and Perfect Cubes</p> <ul style="list-style-type: none"> Recognize perfect squares from 1 to 225 and perfect cubes from 1 to 125. Determine all numbers that square or cube to a given number. <p>NY-8.EE.2, MP8, 8.Mod1.AD7</p> <p>Lesson 17: Solving Equations with Squares and Cubes</p> <ul style="list-style-type: none"> Solve equations of the forms $x^2 = p$ and $x^3 = p$, where p is a rational number and the solutions are rational numbers. <p>NY-8.EE.2, MP3, 8.Mod1.AD6, 8.Mod1.AD7</p> <p>Lesson 18: The Pythagorean Theorem</p> <ul style="list-style-type: none"> Describe the Pythagorean theorem and the conditions required to use it. <p>NY-8.G.7, MP2, 8.Mod1.AD15</p>	<p>Lesson 15: Exterior Angles of Triangles</p> <ul style="list-style-type: none"> Use informal arguments to establish facts about the exterior angles of triangles. Determine the unknown measure of an interior or exterior angle of a triangle. <p>NY-8.G.5, MP7, 8.Mod2.AD5, 8.Mod2.AD6</p> <p>Lesson 16: Find Unknown Angle Measures</p> <ul style="list-style-type: none"> Use facts about angle relationships to write and solve equations. <p>NY-8.G.5, MP1, 8.Mod2.AD5, 8.Mod2.AD6</p> <p>Topic D: Congruent Figures and the Pythagorean Theorem</p> <p>Lesson 17: Proving the Pythagorean Theorem</p> <ul style="list-style-type: none"> Explain a proof of the Pythagorean theorem. <p>NY-8.G.6, MP3, 8.Mod2.AD7</p> <p>Lesson 18: Proving the Converse of the Pythagorean Theorem</p> <ul style="list-style-type: none"> Explain a proof of the converse of the Pythagorean theorem. <p>NY-8.G.6, MP3, 8.Mod2.AD7</p>		<p>Lesson 14: Lines with Special Characteristics</p> <ul style="list-style-type: none"> Graph linear equations of the form $Ax = C$ and $By = C$ where A and B are nonzero. <p>NY-8.EE.8, MP8, 8.Mod4.AD2, 8.Mod4.AD3</p> <p>Topic D: Slope of a Line</p> <p>Lesson 15: Comparing Proportional Relationships</p> <ul style="list-style-type: none"> Graph two proportional relationships and use unit rate to compare the steepness of each line. Compare proportional relationships represented in different ways. <p>NY-8.EE.5, MP2, 8.Mod4.AD6</p> <p>Lesson 16: Proportional Relationships and Slope</p> <ul style="list-style-type: none"> Relate the unit rate of a proportional relationship to the slope of the associated line. Find the slope of a line through the origin. <p>NY-8.EE.5, NY-8.EE.6, MP6, 8.Mod4.AD5, 8.Mod4.AD7</p> <p>Lesson 17: Slopes of Rising Lines</p> <ul style="list-style-type: none"> Find slopes of rising lines by using slope triangles. Graph a rising line given the slope and a point on the line. <p>NY-8.EE.6, MP1, 8.Mod4.AD7</p>	<p>Lesson 14: Determining an Equation of a Line Fit to Data</p> <ul style="list-style-type: none"> Determine an equation of a line informally fit to data displayed in a scatter plot and interpret the slope and y-intercept in context. <p>NY-8.SP.3, MP6, 8.Mod5.AD15</p> <p>Lesson 15: Linear Models</p> <ul style="list-style-type: none"> Use a linear function to model the association between two numerical variables. Informally assess the fit of a line to data in a scatter plot by judging the closeness of the data points to the line. <p>NY-8.SP.2, NY-8.SP.3, MP7, 8.Mod5.AD14, 8.Mod5.AD15</p> <p>Lesson 16: Using the Investigative Process</p> <ul style="list-style-type: none"> Use the investigative process to explore claims about proportional relationships in the human body. <p>NY-8.SP.2, NY-8.SP.3, MP4, 8.Mod5.AD14, 8.Mod5.AD15</p> <p>Lesson 17: Analyzing the Model</p> <ul style="list-style-type: none"> Present the results of a statistical investigation. Critique the statistical investigations presented by others. <p>NY-8.SP.2, NY-8.SP.3, MP2, 8.Mod5.AD14, 8.Mod5.AD15</p>	<p>Lesson 12: Solving Historical Problems with Systems of Equations (Optional)</p> <ul style="list-style-type: none"> Write and solve a system of linear equations given a historical situation. <p>NY-8.EE.8b, NY-8.EE.8c, MP2, 8.Mod6.AD15, 8.Mod6.AD18</p> <p>Lesson 13: Writing and Solving Systems of Equations for Real-World Problems</p> <ul style="list-style-type: none"> Write and solve a system of linear equations given a real-world situation. <p>NY-8.EE.8b, NY-8.EE.8c, MP2, 8.Mod6.AD15, 8.Mod6.AD18</p> <p>Lesson 14: Back to the Coordinate Plane</p> <ul style="list-style-type: none"> Write and solve systems of linear equations when given information about two lines to identify intersection points. <p>NY-8.EE.8a, NY-8.EE.8b, MP1, 8.Mod6.AD14, 8.Mod6.AD15, 8.Mod6.AD16</p> <p>■</p>

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<p>Lesson 19: Using the Pythagorean Theorem</p> <ul style="list-style-type: none"> Apply the Pythagorean theorem to find the unknown length of the hypotenuse of a right triangle. Find two consecutive whole numbers which the length of the hypotenuse is between when the length is not rational. Use square root notation to express lengths that are not rational. <p>NY-8.G.7, MP2, 8.Mod1.AD15</p> <p>Lesson 20: Square Roots</p> <ul style="list-style-type: none"> Place square roots on a number line. <p>NY-8.EE.2, NY-8.G.7, MP8, 8.Mod1.AD6, 8.Mod1.AD15</p>	<p>Lesson 19: Using the Pythagorean Theorem and Its Converse</p> <ul style="list-style-type: none"> Use the converse of the Pythagorean theorem to determine whether a triangle is a right triangle. Use the Pythagorean theorem to find unknown side lengths of right triangles. <p>NY-8.G.6, NY-8.G.7, MP7, 8.Mod2.AD7, 8.Mod2.AD8</p> <p>Lesson 20: Distance in the Coordinate Plane</p> <ul style="list-style-type: none"> Find the distance between two points in the coordinate plane by using the Pythagorean theorem. <p>NY-8.G.8, MP7, 8.Mod2.AD9</p>		<p>Lesson 18: Slopes of Falling Lines</p> <ul style="list-style-type: none"> Find slopes of falling lines by using slope triangles. Graph a falling line given the slope and a point on the line. <p>NY-8.EE.6, MP3, 8.Mod4.AD7</p> <p>Lesson 19: Using Coordinates to Find Slope</p> <ul style="list-style-type: none"> Develop a formula for the slope of a line. Find the slope of a line given the coordinates of at least two points on the line. <p>NY-8.EE.6, MP8, 8.Mod4.AD7</p>	<p>Topic D: Volume</p> <p>Lesson 18: Volumes of Prisms and Pyramids</p> <ul style="list-style-type: none"> Find the volume of prisms. Develop and use the formula for the volume of a pyramid. <p>NY-8.G.9, MP6, 8.Mod5.AD16</p> <p>Lesson 19: Volume of Cylinders</p> <ul style="list-style-type: none"> Develop and use the formula for the volume of a cylinder. Find volumes of oblique cylinders and prisms. <p>NY-8.G.9, MP8, 8.Mod5.AD16</p> <p>Lesson 20: Volume of Cones</p> <ul style="list-style-type: none"> Develop and use the formula for the volume of a cone. Solve problems involving volumes of cylinders, cones, prisms, and pyramids. <p>NY-8.G.9, MP7, 8.Mod5.AD16</p>	
<p>Topic E: Irrational Numbers</p> <p>Lesson 21: Approximating Values of Roots and π^2</p> <ul style="list-style-type: none"> Approximate values of square roots, cube roots, and π^2. <p>NY-8.NS.2, MP8, 8.Mod1.AD3, 8.Mod1.AD4</p>	<p>Lesson 21: Applying the Pythagorean Theorem</p> <ul style="list-style-type: none"> Apply the Pythagorean theorem to solve real-world and mathematical problems. Evaluate square roots. <p>NY-8.G.7, MP2, 8.Mod2.AD8</p> <p>Lesson 22: On the Right Path</p> <ul style="list-style-type: none"> Model a situation by using the Pythagorean theorem and the distance on a grid to solve a problem. <p>NY-8.G.7, NY-8.G.8, MP4, 8.Mod2.AD8, 8.Mod2.AD9</p> <p>■</p>		<p>Topic E: Different Forms of Linear Equations</p> <p>Lesson 20: Slope-Intercept Form of the Equation of a Line</p> <ul style="list-style-type: none"> Use similar triangles to develop the slope-intercept form of the equation of a line. Write equations in slope-intercept form from graphs and graph equations given in slope-intercept form. <p>NY-8.EE.B, NY-8.EE.6, MP7, 8.Mod4.AD2, 8.Mod4.AD8</p>	<p>Lesson 21: Volume of Spheres</p> <ul style="list-style-type: none"> Develop and use the formula for the volume of a sphere. Solve problems involving volumes of cylinders, cones, and spheres. <p>NY-8.G.9, MP6, 8.Mod5.AD16</p>	

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<p>Lesson 22: Familiar and Not So Familiar Numbers</p> <ul style="list-style-type: none"> Identify numbers as rational, irrational, and real by their decimal form. Compare the characteristics of rational and irrational numbers. <p>NY-8.NS.1, NY-8.EE.2, MP3, 8.Mod1.AD1</p> <p>Lesson 23: Ordering Irrational Numbers</p> <ul style="list-style-type: none"> Order irrational numbers. Approximate the value of expressions with irrational numbers. <p>NY-8.NS.2, MP7, 8.Mod1.AD2, 8.Mod1.AD3, 8.Mod1.AD4</p> <p>Lesson 24: Revisiting Equations with Squares and Cubes</p> <ul style="list-style-type: none"> Solve equations of the forms $x^2 = p$ and $x^3 = p$, where p is a rational number and the solutions are real numbers. <p>NY-8.EE.2, MP6, 8.Mod1.AD6</p> <p>■</p>			<p>Lesson 21: Slope and Parallel Lines</p> <ul style="list-style-type: none"> Determine the relationship between slope and parallel lines. Determine whether lines are parallel. <p>NY-8.EE.B, MP3, 8.Mod4.AD2</p> <p>Lesson 22: Point-Slope Form of the Equation of a Line</p> <ul style="list-style-type: none"> Use similar triangles to develop the point-slope form of the equation of a line. Graph equations given in point-slope form and write equations in point-slope form given graphs. <p>NY-8.EE.B, MP7, 8.Mod4.AD2</p> <p>Lesson 23: Comparing Equations in Different Forms</p> <ul style="list-style-type: none"> Determine whether linear equations in different forms represent the same line. Write linear equations from tables. <p>NY-8.EE.B, MP7, 8.Mod4.AD2</p>	<p>Lesson 22: Applications of Volume</p> <ul style="list-style-type: none"> Use functions to solve problems involving volumes of cylinders, cones, and spheres. <p>NY-8.F.4, NY-8.G.9, MP1, 8.Mod5.AD9, 8.Mod5.AD16</p> <p>■</p>	



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			<p>Topic F: Graphing and Writing Linear Equations</p> <p>Lesson 24: The Patterns, the Pops, and the Pastries</p> <ul style="list-style-type: none"> • Write an equation of a line given a graph. • Write an equation of a line given information about the line. <p>NY-8.EE.B, MP1, 8.Mod4.AD2</p> <p>Lesson 25: Lines, Lines, and More Lines</p> <ul style="list-style-type: none"> • Graph linear equations given in various forms. <p>NY-8.EE.B, MP5, 8.Mod4.AD2</p> <p>Lesson 26: Linear Equations from Word Problems</p> <ul style="list-style-type: none"> • Use linear equations to solve problems with real-world contexts. <p>NY-8.EE.B, MP2, 8.Mod4.AD4</p> <p>Lesson 27: Get to Work</p> <ul style="list-style-type: none"> • Model a real-world situation with linear equations and use the equations to answer questions about the situation. • Interpret the meaning of different components of the linear equations in context. <p>NY-8.EE.B, MP1, 8.Mod4.AD4</p> <p>■</p>		