

Eureka Math² Year at a Glance

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 Systems of Linear Equations	Module 6 Functions and Bivariate Statistics
<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>8.EE.A.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>8.EE.A.3, 8.EE.A.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>8.EE.A.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>8.G.A.1, 8.G.A.1.a, 8.G.A.1.b, 8.G.A.1.c, 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>8.G.A.1, 8.G.A.1.a, 8.G.A.1.b, 8.G.A.1.c, 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>8.G.A.1, 8.G.A.1.a, 8.G.A.1.b, 8.G.A.1.c, MP8, 8.Mod2.AD1</p> <p>Lesson 4: Translations and Reflections on the Coordinate Plane</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>8.G.A.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>8.G.A.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>8.G.A.3, MP8, 8.Mod3.AD2</p> <hr/> <p>Topic B: Properties of Dilations</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>8.EE.C.7.b, 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>8.EE.C.7, 8.EE.C.7.b, 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>8.EE.C.7, 8.EE.C.7.b, MP7, 8.Mod4.AD9, 8.Mod4.AD11</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>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>8.EE.C.8.a, 8.EE.C.8.b, 8.EE.C.8.c, MP4, 8.Mod5.AD1, 8.Mod5.AD3, 8.Mod5.AD5</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>8.EE.C.8.a, MP6, 8.Mod5.AD1</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>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>8.F.A.1, MP8, 8.Mod6.AD1</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>8.F.A.1, MP2, 8.Mod6.AD1</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>8.F.A.3, MP2, 8.Mod6.AD3</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.

Module 1

Lesson 4: Adding and Subtracting Numbers Written in Scientific Notation

- Add and subtract numbers written in scientific notation.
- Rewrite sums and differences in scientific notation.

8.EE.A.4, MP6, 8.Mod1.AD10, 8.Mod1.AD12

Topic B: Properties and Definitions of Exponents

Lesson 5: Products of Exponential Expressions with Whole-Number Exponents

- Apply understanding of exponential notation to write equivalent expressions for $x^m \cdot x^n$.

8.EE.A.1, MP8, 8.Mod1.AD5

Lesson 6: More Properties of Exponents

- Encounter and apply properties of exponents, including raising powers to powers, raising products to powers, and raising quotients to powers.

8.EE.A.1, 8.Mod1.AD5

Lesson 7: Making Sense of the Exponent of 0

- Define x^0 by confirming that the definition upholds the properties of exponents.
- Evaluate powers with an exponent of 0.

8.EE.A.1, 8.EE.A.3, MP3, 8.Mod1.AD5, 8.Mod1.AD8

Lesson 8: Making Sense of Integer Exponents

- Explore and develop an understanding of negative exponents.

Module 2

- Apply translations and reflections on the coordinate plane.

- Use coordinates to describe the location of an image under a translation or a reflection.

8.G.A.3, MP6, 8.Mod2.AD4

Lesson 5: Rotations

- Apply rotations to the plane.
- Identify the basic properties of rotations.

8.G.A.1, 8.G.A.1.a, 8.G.A.1.b, 8.G.A.1.c, MP6, 8.Mod2.AD1

Lesson 6: Rotations on the Coordinate Plane

- Apply rotations around the origin on the coordinate plane.
- Use coordinates to describe the location of an image under a rotation around the origin.

8.G.A.3, MP8, 8.Mod2.AD4

Topic B: Rigid Motions and Congruent Figures

Lesson 7: Working Backward

- Precisely describe the rigid motion required to map an image back onto its original figure.

8.G.A.1, 8.G.A.1.a, 8.G.A.1.b, 8.G.A.1.c, 8.G.A.2, MP8, 8.Mod2.AD1, 8.Mod2.AD3

Lesson 8: Sequencing the Rigid Motions

- 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.

8.G.A.1, 8.G.A.1.a, 8.G.A.1.b, 8.G.A.1.c, 8.G.A.2, MP1, 8.Mod2.AD1, 8.Mod2.AD3

Module 3

Lesson 4: Using Lined Paper to Explore Dilations

- Draw the image of a segment under a dilation.
- Learn the properties of dilations.

8.G.A.3, MP8, 8.Mod3.AD2

Lesson 5: Figures and Dilations

- Draw images of figures under dilations with various scale factors.

8.G.A.3, MP5, 8.Mod3.AD2

Lesson 6: The Shadowy Hand

- Use a mathematical model to explain a real-world situation.
- Apply properties of dilations to make and test predictions.

8.G.A.3, MP4, 8.Mod3.AD2

Lesson 7: Dilations on a Grid

- Apply dilations on a grid.

8.G.A.3, MP7, 8.Mod3.AD2

Lesson 8: Dilations on the Coordinate Plane

- Apply dilations centered at the origin on the coordinate plane.
- Determine the scale factor of a dilation centered at the origin.

8.G.A.3, MP8, 8.Mod3.AD2, 8.Mod3.AD3

Topic C: Similar Figures

Lesson 9: Describing Dilations

- Precisely describe a dilation given a figure and its image.

8.G.A.3, MP8, 8.Mod3.AD2

Lesson 10: Sequencing Transformations

- Apply sequences of transformations.

Module 4

8.EE.C.7, MP1, 8.Mod4.AD9

Lesson 5: An Interesting Application of Linear Equations, Part 1

- 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.

8.NS.A.1, 8.EE.C.7.b, MP8, 8.Mod4.AD1, 8.Mod4.AD11

Lesson 6: An Interesting Application of Linear Equations, Part 2

- Use linear equations to write the fraction form of any repeating decimal.

8.NS.A.1, 8.EE.C.7.b, MP8, 8.Mod4.AD1, 8.Mod4.AD11

Topic B: The Structure of Linear Equations in One Variable

Lesson 7: Linear Equations with More Than One Solution

- 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.

8.EE.C.7.a, 8.EE.C.7.b, MP7, 8.Mod4.AD10, 8.Mod4.AD11

Lesson 8: Another Possible Number of Solutions

- Identify that linear equations in one variable with no solution are

Module 5

8.EE.C.8.a, 8.EE.C.8.b, MP7, 8.Mod5.AD1, 8.Mod5.AD4

Lesson 4: More Than One Solution

- 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.

8.EE.C.8.a, 8.EE.C.8.b, MP7, 8.Mod5.AD1, 8.Mod5.AD3, 8.Mod5.AD4

Lesson 5: Estimating Solutions

- Recognize and describe the limitations of solving a system of linear equations by graphing.

8.EE.C.8.a, 8.EE.C.8.b, MP1, 8.Mod5.AD1, 8.Mod5.AD3

Topic B: Solving Systems of Linear Equations Algebraically

Lesson 6: Solving Systems of Linear Equations without Graphing

- Solve systems of linear equations by using the substitution method to write the systems as linear equations in one variable.

8.EE.C.8.b, MP6, MP8, 8.Mod5.AD2

Lesson 7: The Substitution Method

- Solve a system of linear equations by using the substitution method.
- Apply the multiplication property of equality as part of the substitution method.

8.EE.C.8.a, 8.EE.C.8.b, MP1, 8.Mod5.AD1, 8.Mod5.AD2

Module 6

- Determine what inputs make sense for a variety of functions.

8.F.A.1, MP7, 8.Mod6.AD1

Lesson 5: Graphs of Functions and Equations

- 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.

8.F.A.1, MP6, 8.Mod6.AD1

Topic B: Linear and Nonlinear Functions

Lesson 6: Linear Functions and Rate of Change

- Calculate rates on a given interval to determine whether a function is a linear function.
- Determine the rate of change for a linear function and interpret the rate of change in context.

8.F.A.3, 8.F.A.4, 8.SP.A.3, MP2, 8.Mod6.AD3, 8.Mod6.AD4, 8.Mod6.AD5

Lesson 7: Interpreting Rate of Change and Initial Value

- Interpret the rate of change and initial value of a linear function in context.
- Use rate of change to compare two linear functions.

8.F.A.2, 8.F.A.4, 8.SP.A.3, MP2, 8.Mod6.AD2, 8.Mod6.AD4, 8.Mod6.AD5

Lesson 8: Comparing Functions

- Compare two functions represented in different ways.

8.F.A.2, MP5, 8.Mod6.AD2

Module 1

- Write equivalent expressions given an expression of the form $\frac{x^m}{x^n}$.

8.EE.A.1, MP6, 8.Mod1.AD5

Lesson 9: Writing Equivalent Expressions

- Write equivalent expressions by using all the properties and definitions of exponents.

8.EE.A.1, MP7, 8.Mod1.AD5

Lesson 10: Evaluating Numerical Expressions by Using Properties of Exponents (Optional)

- Simplify and evaluate exponential expressions by using the properties and definitions of exponents.

8.EE.A.1, MP3, 8.Mod1.AD5

Topic C: Applications of the Properties and Definitions of Exponents

Lesson 11: Small Positive Numbers in Scientific Notation

- Write small positive numbers in scientific notation.
- Order numbers written in scientific notation.

8.EE.A.3, MP3, 8.Mod1.AD8

Lesson 12: Operations with Numbers in Scientific Notation

- Interpret numbers in scientific notation displayed on digital devices.
- Operate with numbers written in scientific notation.

8.EE.A.4, MP5, 8.Mod1.AD10, 8.Mod1.AD11, 8.Mod1.AD14

Lesson 13: Applications with Numbers in Scientific Notation

Module 2

Lesson 9: Ordering Sequences of Rigid Motions

- Determine whether the order in which a sequence of rigid motions is applied matters.

8.G.A.2, 8.G.A.3, MP8, 8.Mod2.AD2, 8.Mod2.AD4

Lesson 10: Congruent Figures

- Describe a sequence of rigid motions that maps one figure onto a congruent figure.

8.G.A.2, MP6, 8.Mod2.AD3

Lesson 11: Showing Figures Are Congruent

- Show figures are congruent by describing a sequence of rigid motions that maps one figure onto the other.

8.G.A.2, MP1, 8.Mod2.AD2

Topic C: Angle Relationships

Lesson 12: Lines Cut by a Transversal

- Use informal arguments to establish facts about the angles created when pairs of lines are cut by a transversal.

8.G.A.2, 8.G.A.5, MP6, 8.Mod2.AD2, 8.Mod2.AD3, 8.Mod2.AD6

Lesson 13: Angle Sum of a Triangle

- Use informal arguments to verify that the sum of the interior angle measures of a triangle is 180° .

8.G.A.5, MP3, 8.Mod2.AD5

Lesson 14: Showing Lines Are Parallel

- Use informal arguments to conclude that lines cut by a transversal are parallel when angle pairs are congruent.

Module 3

- Recognize a sequence that involves a dilation and a translation as a single dilation.

8.G.A.3, MP1, 8.Mod3.AD2

Lesson 11: Similar Figures

- Describe a sequence of rigid motions or dilations, or both, to show that two figures are similar.
- Identify properties of similar figures.

8.G.A.4, MP6, 8.Mod3.AD4, 8.Mod3.AD5

Lesson 12: Exploring Angles in Similar Triangles

- Recognize that triangles with two pairs of congruent angles are similar.

8.G.A.4, 8.G.A.5, MP7, 8.Mod3.AD4, 8.Mod3.AD5, 8.Mod3.AD6

Lesson 13: Similar Triangles

- Determine whether two triangles are similar by the angle-angle criterion.

8.G.A.4, 8.G.A.5, MP3, 8.Mod3.AD4, 8.Mod3.AD6

Topic D: Applications of Similar Figures

Lesson 14: Using Similar Figures to Find Unknown Side Lengths

- Use properties of similar figures to find unknown side lengths.

8.G.A.5, MP1, 8.Mod3.AD6

Lesson 15: Applications of Similar Figures

- Use properties of similar figures to solve problems.

8.G.A.5, MP2, 8.Mod3.AD6

Module 4

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.

8.EE.C.7.a, 8.EE.C.7.b, MP7, 8.Mod4.AD10, 8.Mod4.AD11

Lesson 9: Writing Linear Equations

- Write equations with only one solution, infinitely many solutions, or no solution.
- Classify equations based on their number of solutions.

8.EE.C.7.a, MP7, 8.Mod4.AD10

Lesson 10: Using Linear Equations to Solve Real-World Problems

- Solve real-world problems by using linear equations in one variable.

8.EE.C.7, 8.EE.C.7.a, 8.EE.C.7.b, MP2, 8.Mod4.AD9, 8.Mod4.AD10, 8.Mod4.AD11

Lesson 11: Planning a Trip

- Solve a real-world problem by using linear equations in one variable.

8.EE.C.7, 8.EE.C.7.b, MP4, 8.Mod4.AD9, 8.Mod4.AD11

Topic C: Linear Equations in Two Variables

Lesson 12: Solutions to Linear Equations in Two Variables

- Find solutions to linear equations in two variables.
- Graph the solutions in the coordinate plane.

8.EE.B, MP8, 8.Mod4.AD3

Lesson 13: The Graph of a Linear Equation in Two Variables

Module 5

Lesson 8: Using Tape Diagrams to Solve Systems of Equations (Optional)

- Find the solution to a system of linear equations by using tape diagrams.
- Create tape diagrams to represent a system of linear equations.

8.EE.C.8.b, MP7, 8.Mod5.AD2, 8.EE.C.8.b, MP7, 8.Mod5.AD2,

Lesson 9: Rewriting Equations to Solve a System of Equations

- Solve a system of linear equations by using the substitution method.

8.EE.C.8.b, MP7, 8.Mod5.AD2, 8.Mod5.AD4

Lesson 10: Choosing a Solution Method

- Analyze graphs and systems of equations to determine the number of solutions.
- Construct and critique arguments about the most efficient solution method.

8.EE.C.8.a, 8.EE.C.8.b, MP3, MP5, 8.Mod5.AD1, 8.Mod5.AD2, 8.Mod5.AD4

Topic C: Writing and Solving Systems of Linear Equations

Lesson 11: Writing and Solving Systems of Equations for Mathematical Problems

- Write and solve systems of linear equations for mathematical problems.

8.EE.C.8.b, 8.EE.C.8.c, MP2, 8.Mod5.AD2, 8.Mod5.AD5

Lesson 12: Solving Historical Problems with Systems of Equations

- Write and solve a system of linear equations given a historical situation.

Module 6

Lesson 9: Increasing and Decreasing Functions

- Describe qualitative features of a function by analyzing a graph.
- Sketch the graph of a function given a description.

8.F.B.5, MP6, 8.Mod6.AD6, 8.Mod6.AD7

Lesson 10: Graphs of Nonlinear Functions

- 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.

8.F.A.3, 8.F.B.5, MP3, 8.Mod6.AD3, 8.Mod6.AD6, 8.Mod6.AD7

Topic C: Bivariate Numerical Data

Lesson 11: Scatter Plots

- 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.

8.SP.A.1, MP2, 8.Mod6.AD8

Lesson 12: Patterns in Scatter Plots

- Identify and describe patterns of association between two variables represented in scatter plots.
- Identify and describe outliers and clusters in context.

8.SP.A.1, MP2, 8.Mod6.AD8

Lesson 13: Informally Fitting a Line to Data

Module 1

- Operate with numbers written in standard form and scientific notation.

8.EE.A.4, MP1, 8.Mod1.AD10, 8.Mod1.AD11

Lesson 14: Choosing Units of Measurement

- Choose appropriate units of measurement and convert units of measurement.

8.EE.A.4, MP2, 8.Mod1.AD13

Lesson 15: Get to the Point

- Model a situation by operating with numbers in scientific notation.

8.EE.A.4, MP4, 8.Mod1.AD12

Topic D: Perfect Squares, Perfect Cubes, and the Pythagorean Theorem

Lesson 16: Perfect Squares and Perfect Cubes

- 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.

8.EE.A.2, MP8, 8.Mod1.AD7

Lesson 17: Solving Equations with Squares and Cubes

- Solve equations of the forms $x^2 = p$ and $x^3 = p$, where p is a rational number and the solutions are rational numbers.

8.EE.A.2, MP3, 8.Mod1.AD6, 8.Mod1.AD7

Lesson 18: The Pythagorean Theorem

- Describe the Pythagorean theorem and the conditions required to use it.

8.G.B.7, 8.Mod1.AD15

Module 2

8.G.A.5, MP3, 8.Mod2.AD6

Lesson 15: Exterior Angles of Triangles

- 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.

8.G.A.5, MP7, 8.Mod2.AD5, 8.Mod2.AD6

Lesson 16: Find Unknown Angle Measures

- Use facts about angle relationships to write and solve equations.

8.G.A.5, MP1, 8.Mod2.AD5, 8.Mod2.AD6

Topic D: Congruent Figures and the Pythagorean Theorem

Lesson 17: Proving the Pythagorean Theorem

- Explain a proof of the Pythagorean theorem.

8.G.B.6, MP3, 8.Mod2.AD7

Lesson 18: Proving the Converse of the Pythagorean Theorem

- Explain a proof of the converse of the Pythagorean theorem.

8.G.B.6, MP3, 8.Mod2.AD7

Lesson 19: Using the Pythagorean Theorem and Its Converse

- 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.

Module 3

Lesson 16: Similar Right Triangles

- Apply dilations to create similar right triangles.
- Find unknown side lengths in similar right triangles.

8.G.A.3, 8.G.A.5, 8.G.B.7, MP7, 8.Mod3.AD2, 8.Mod3.AD6, 8.Mod3.AD7

Lesson 17: Similar Triangles on a Line

- Determine that right triangles with horizontal and vertical legs and with hypotenuses that lie on the same line are similar triangles.

8.EE.B.6, 8.G.A.4, MP8, 8.Mod3.AD1, 8.Mod3.AD3



Module 4

- Identify that the graph of a linear equation of the form $Ax + By = C$ is a line.

8.EE.B, MP6, 8.Mod4.AD2, 8.Mod4.AD3

Lesson 14: Lines with Special Characteristics

- Graph linear equations of the form $Ax = C$ and $By = C$ where A and B are nonzero.

8.EE.B, MP8, 8.Mod4.AD2, 8.Mod4.AD3

Topic D: Slope of a Line

Lesson 15: Comparing Proportional Relationships

- Graph two proportional relationships and use unit rate to compare the steepness of each line.
- Compare proportional relationships represented in different ways.

8.EE.B.5, MP2, 8.Mod4.AD6

Lesson 16: Proportional Relationships and Slope

- Relate the unit rate of a proportional relationship to the slope of the associated line.
- Find the slope of a line through the origin.

8.EE.5, 8.EE.6, MP6, 8.Mod4.AD5, 8.Mod4.AD7

Lesson 17: Slopes of Rising Lines

- Find slopes of rising lines by using slope triangles.
- Graph a rising line given the slope and a point on the line.

8.EE.B.6, MP1, 8.Mod4.AD7

Lesson 18: Slopes of Falling Lines

Module 5

8.EE.C.8.b, 8.EE.C.8.c, MP2, 8.Mod5.AD2, 8.Mod5.AD5

Lesson 13: Writing and Solving Systems of Equations for Real-World Problems

- Write and solve a system of linear equations given a real-world situation.

8.EE.C.8.b, 8.EE.C.8.c, MP2, 8.Mod5.AD2, 8.Mod5.AD5

Lesson 14: Back to the Coordinate Plane

- Write and solve systems of linear equations when given information about two lines to identify intersection points.

8.EE.C.8.a, 8.EE.C.8.b, 8.EE.C.8.c, MP1, 8.Mod5.AD1, 8.Mod5.AD2, 8.Mod5.AD3



Module 6

- Informally fit a line to data displayed in a scatter plot.
- Make predictions based on the graph of a line fit to data.

8.SP.A.2, MP3, 8.Mod6.AD9

Lesson 14: Determining an Equation of a Line Fit to Data

- Determine an equation of a line informally fit to data displayed in a scatter plot and interpret the slope and y -intercept in context.

8.SP.A.3, MP6, 8.Mod6.AD10

Lesson 15: Linear Models

- 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.

8.SP.A.2, 8.SP.A.3, MP7, 8.Mod6.AD9, 8.Mod6.AD10

Lesson 16: Using the Investigative Process

- Use the investigative process to explore claims about proportional relationships in the human body.

8.SP.A.2, 8.SP.A.3, MP4, 8.Mod6.AD9, 8.Mod6.AD10

Lesson 17: Analyzing the Model

- Present the results of a statistical investigation.
- Critique the statistical investigations presented by others.

8.SP.A.2, 8.SP.A.3, MP2, 8.Mod6.AD9, 8.Mod6.AD10

Topic D: Bivariate Categorical Data

Module 1

Lesson 19: Using the Pythagorean Theorem

- 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.

8.G.B.7, MP2, 8.Mod1.AD15

Lesson 20: Square Roots

- Place square roots on a number line.
- 8.EE.A.2, 8.G.B.7, MP8, 8.Mod1.AD6, 8.Mod1.AD15**

Topic E: Irrational Numbers

Lesson 21: Approximating Values of Roots and π^2

- Approximate values of square roots, cube roots, and π^2 .

8.NS.A.2, 8.Mod1.AD3, 8.Mod1.AD4

Lesson 22: Familiar and Not So Familiar Numbers

- Identify numbers as rational, irrational, and real by their decimal form.
- Compare the characteristics of rational and irrational numbers.

8.NS.A.1, 8.EE.A.2, MP3, 8.Mod1.AD1

Lesson 23: Ordering Irrational Numbers

- Order irrational numbers.
- Approximate the value of expressions with irrational numbers.

8.NS.A.2, MP7, 8.Mod1.AD2, 8.Mod1.AD3, 8.Mod1.AD4

Module 2

8.G.B.6, 8.G.B.7, MP7, 8.Mod2.AD7, 8.Mod2.AD8

Lesson 20: Distance in the Coordinate Plane

- Find the distance between two points in the coordinate plane by using the Pythagorean theorem.

8.G.B.8, MP7, 8.Mod2.AD9

Lesson 21: Applying the Pythagorean Theorem

- Apply the Pythagorean theorem to solve real-world and mathematical problems.
- Evaluate square roots.

8.G.B.7, MP2, 8.Mod2.AD8

Lesson 22: On the Right Path

- Model a situation by using the Pythagorean theorem and the distance on a grid to solve a problem.

8.G.B.7, 8.G.B.8, MP4, 8.Mod2.AD8, 8.Mod2.AD9



Module 3

Module 4

- Find slopes of falling lines by using slope triangles.
- Graph a falling line given the slope and a point on the line.

8.EE.B.6, MP3, 8.Mod4.AD7

Lesson 19: Using Coordinates to Find Slope

- 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.

8.EE.B.6, MP8, 8.Mod4.AD7

Topic E: Different Forms of Linear Equations

Lesson 20: Slope-Intercept Form of the Equation of a Line

- 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.

8.EE.B, 8.EE.B.6, MP7, 8.Mod4.AD2, 8.Mod4.AD8

Lesson 21: Slope and Parallel Lines

- Determine the relationship between slope and parallel lines.
- Determine whether lines are parallel.

8.EE.B, MP3, 8.Mod4.AD2

Lesson 22: Point-Slope Form of the Equation of a Line

- 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.

8.EE.B, MP7, 8.Mod4.AD2

Module 5

Module 6

Lesson 18: Bivariate Categorical Data

- Construct and interpret a two-way table summarizing a bivariate categorical data set.

8.SP.A.4, MP7, 8.Mod6.AD11

Lesson 19: Association in Bivariate Categorical Data

- Determine whether there is evidence of an association between categorical variables that have two possible values.
- Compare and contrast evidence of an association represented in two-way tables and segmented bar graphs.

8.SP.A.4, MP6, 8.Mod6.AD11, 8.Mod6.AD12

Lesson 20: Analyzing Bivariate Categorical Data

- Determine whether there is evidence of an association between categorical variables that have two or more possible values.
- Describe the difference between an association and a cause and effect relationship for categorical variables.

8.SP.A.4, MP5, 8.Mod6.AD11, 8.Mod6.AD12

Topic E: Volume

Lesson 21: Volumes of Prisms and Pyramids

- Find the volume of prisms.
- Develop and use the formula for the volume of a pyramid.

8.G.C.9, MP6, 8.Mod6.AD13

Lesson 22: Volume of Cylinders

- Develop and use the formula for the volume of a cylinder.
- Find volumes of oblique cylinders and prisms.

8.G.C.9, MP8, 8.Mod6.AD13

Module 1

Lesson 24: Revisiting Equations with Squares and Cubes

- Solve equations of the forms $x^2 = p$ and $x^3 = p$, where p is a rational number and the solutions are real numbers.

8.EE.A.2, MP6, 8.Mod1.AD6



Module 2

Module 3

Module 4

Lesson 23: Comparing Equations in Different Forms

- Determine whether linear equations in different forms represent the same line.
- Write linear equations from tables.

8.EE.B, MP7, 8.Mod4.AD2

Topic F: Graphing and Writing Linear Equations

Lesson 24: The Patterns, the Pops, and the Pastries

- Write an equation of a line given a graph.
- Write an equation of a line given information about the line.

8.EE.B, MP1, 8.Mod4.AD2

Lesson 25: Lines, Lines, and More Lines

- Graph linear equations given in various forms.

8.EE.B, MP5, 8.Mod4.AD2

Lesson 26: Linear Equations from Word Problems

- Use linear equations to solve problems with real-world contexts.

8.EE.B, MP2, 8.Mod4.AD4

Lesson 27: Get to Work

- 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.

8.EE.B, MP1, 8.Mod4.AD4



Module 5

Module 6

Lesson 23: Volume of Cones

- Develop and use the formula for the volume of a cone.
- Solve problems involving volumes of cylinders, cones, prisms, and pyramids.

8.G.C.9, MP7, 8.Mod6.AD13

Lesson 24: Volume of Spheres

- Develop and use the formula for the volume of a sphere.
- Solve problems involving volumes of cylinders, cones, and spheres.

8.G.C.9, MP6, 8.Mod6.AD13

Lesson 25: Applications of Volume

- Use functions to solve problems involving volumes of cylinders, cones, and spheres.

8.F.B.4, 8.G.C.9, MP1, 8.Mod6.AD4, 8.Mod6.AD13

