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Pacing Guide

Mathematics 8 Grade

Unit 1 – Real Numbers and Exponents

Total Number of Instructional Days 30

	Common Core Standard Covered	Major Topics/Concepts	Number of days
1-1	**Rational Numbers** CCSS.MATH.CONTENT.8.NS.A.1	• Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.	2
1-2	**Operations with Rational Numbers** CCSS.MATH.CONTENT.8.NS.A.1	• Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.	2
1-3	**Converting Fractions and Decimals** CCSS.MATH.CONTENT.8.NS.A.1	• Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.	2

1-4	**Identifying Irrational Numbers** CCSS.MATH.CONTENT.8.NS.A.2 CCSS.MATH.CONTENT.8.NS.A.1	• Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π2). • Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.	**3**
1-5	**Properties of Irrational Numbers** CCSS.MATH.CONTENT.8.NS.A.1 CCSS.MATH.CONTENT.8.NS.A.2	• Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number. • Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π2).	**3**
1-6	**Comparing and Ordering Irrational Numbers on a Number Line** CCSS.MATH.CONTENT.8.NS.A.2	• Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π2).	**3**
1-7	**Evaluation and Approximation of Square and Cube Roots** CCSS.MATH.CONTENT.8.NS.A.2 CCSS.MATH.CONTENT.8.EE.A.2	• Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π2). • Use square root and cube root symbols to represent solutions to equations of the form x2 = p and x3 = p, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that √2 is irrational.	**3**

1-8	**Negative Exponents** CCSS.MATH.CONTENT.8.EE.A.1	• Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, 32 × 3-5 = 3-3 = 1/33 = 1/27.	**3**
1-9	**Negative Exponent Operations** CCSS.MATH.CONTENT.8.EE.A.1	• Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, 32 × 3-5 = 3-3 = 1/33 = 1/27.	**3**
1-10	**Scientific Notation** CCSS.MATH.CONTENT.8.EE.A.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. For example, estimate the population of the United States as 3 times 108 and the population of the world as 7 times 109, and determine that the world population is more than 20 times larger.	**3**
1-11	**Operations with Numbers in Scientific Notation** CCSS.MATH.CONTENT.8.EE.A.4 .	• Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology	**3**

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Unit 2 – Equations and Expressions

Total Number of Instructional Days 24

	Common Core Standard Covered	Major Topics/Concepts	Number of Days
2-1	**Expressions with Radicals Exponents.** CCSS.MATH.CONTENT.8.EE.A.2	• Use square root and cube root symbols to represent solutions to equations of the form x2 = p and x3 = p, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that √2 is irrational.	3
2-2	**Expressions with Integer Exponents** CCSS.MATH.CONTENT.8.EE.A.1	• Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, 32 × 3-5 = 3-3 = 1/33 = 1/27.	3
2-3	**Creating Linear Equations** CCSS.MATH.CONTENT.8.EE.B.5 CCSS.MATH.CONTENT.8.EE.B.6	• Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. • 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.	3
2-4	**Solving Equations with Variables on Both Sides** CCSS.MATH.CONTENT.8.EE.C.7 CCSS.MATH.CONTENT.8.EE.C.7.A CCSS.MATH.CONTENT.8.EE.C.7.B	• Solve linear equations in one variable. • Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form x = a, a = a, or a = b results (where a and b are different numbers). • Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.	3

2-5	**Solving Equations with Distributive Property** CCSS.MATH.CONTENT.8.EE.C.7 CCSS.MATH.CONTENT.8.EE.C.7.A CCSS.MATH.CONTENT.8.EE.C.7.B	• Solve linear equations in one variable. • Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form x = a, a = a, or a = b results (where a and b are different numbers). • Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.	**3**
2-6	**Solving Equations by Combining Like Term** CCSS.MATH.CONTENT.8.EE.C.7 CCSS.MATH.CONTENT.8.EE.C.7.A CCSS.MATH.CONTENT.8.EE.C.7.B	• Solve linear equations in one variable. • Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form x = a, a = a, or a = b results (where a and b are different numbers). • Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.	**3**
2-7	**One/Infinite/No solutions of Equation** CCSS.MATH.CONTENT.8.EE.C.7 CCSS.MATH.CONTENT.8.EE.C.7.A CCSS.MATH.CONTENT.8.EE.C.7.B	• Solve linear equations in one variable. • Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form x = a, a = a, or a = b results (where a and b are different numbers). • Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.	**3**

2-8 Solving Exponent Equations

CCSS.MATH.CONTENT.8.EE.C.7
CCSS.MATH.CONTENT.8.EE.C.7.A
CCSS.MATH.CONTENT.8.EE.C.7.B

- Solve linear equations in one variable.
- Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form x = a, a = a, or a = b results (where a and b are different numbers).
- Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.

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Unit 3 – Linear and Functional Relationships

Total Number of Instructional Days 26

	Common Core Standard Covered	Major Topics/Concepts	Number of Days
3-1	**Intro to Functions/Graphing and Writing a Function Rule** CCSS.MATH.CONTENT.8.F.A.1 CCSS.MATH.CONTENT.8.F.B.4 CCSS.MATH.CONTENT.8.F.B.5	• 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.1 • 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. • Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.	**2**
3-2	**Graphing Functions** CCSS.MATH.CONTENT.8.F.A.1 CCSS.MATH.CONTENT.8.F.A.2 CCSS.MATH.CONTENT.8.F.A.3 CCSS.MATH.CONTENT.8.F.B.4 CCSS.MATH.CONTENT.8.F.B.5	• 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.1 • Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). • Interpret the equation y = mx + b as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. • 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	**2**

its graph or a table of values.

- Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

3-3 Linear or Non Linear Functions

CCSS.MATH.CONTENT.8.F.A.1
CCSS.MATH.CONTENT.8.F.A.3
CCSS.MATH.CONTENT.8.F.B.4
CCSS.MATH.CONTENT.8.F.B.5

- 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.1
- Interpret the equation y = mx + b as defining a linear function, whose graph is a straight line; give examples of functions that are not linear.
- 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.
- Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

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3-4 Exploring Linear Functions

CCSS.MATH.CONTENT.8.F.A.2
CCSS.MATH.CONTENT.8.F.A.3
CCSS.MATH.CONTENT.8.F.B.4
CCSS.MATH.CONTENT.8.F.B.5

- Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).
- Interpret the equation y = mx + b as defining a linear function, whose graph is a straight line; give examples of functions that are not linear.
- 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

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its graph or a table of values.

- Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

3-5 Equations of Linear Functions

CCSS.MATH.CONTENT.8.F.A.1
CCSS.MATH.CONTENT.8.F.A.2
CCSS.MATH.CONTENT.8.F.A.3
CCSS.MATH.CONTENT.8.F.B.4
CCSS.MATH.CONTENT.8.F.B.5

- 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.1
- Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).
- Interpret the equation y = mx + b as defining a linear function, whose graph is a straight line; give examples of functions that are not linear.
- 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.
- Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

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3-6 Graphs of Linear Functions

CCSS.MATH.CONTENT.8.F.A.1
CCSS.MATH.CONTENT.8.F.A.2
CCSS.MATH.CONTENT.8.F.A.3
CCSS.MATH.CONTENT.8.F.B.4
CCSS.MATH.CONTENT.8.F.B.5

- 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.1
- Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).
- Interpret the equation y = mx + b as defining a linear function, whose graph is a straight line; give examples of functions that are not linear.

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- 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.
- Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

3-7 Tables of Linear Functions

CCSS.MATH.CONTENT.8.F.A.1
CCSS.MATH.CONTENT.8.F.A.2
CCSS.MATH.CONTENT.8.F.B.4
CCSS.MATH.CONTENT.8.F.B.5

- 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.1
- Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).
- 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.
- Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

3-8	**Increasing, Decreasing, Max and Min** CCSS.MATH.CONTENT.8.F.A.1 CCSS.MATH.CONTENT.8.F.A.2 CCSS.MATH.CONTENT.8.F.A.3 CCSS.MATH.CONTENT.8.F.B.4 CCSS.MATH.CONTENT.8.F.B.5	• 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.1 • Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). • Interpret the equation y = mx + b as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. • 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. • Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.	**2**
3-9	**Interpret the Rate of Change** CCSS.MATH.CONTENT.8.F.A.2 CCSS.MATH.CONTENT.8.F.B.4 CCSS.MATH.CONTENT.8.F.B.5	• Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). • 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. • Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.	**2**

3-10 Contextualizing Function Qualities

CCSS.MATH.CONTENT.8.F.A.1
CCSS.MATH.CONTENT.8.F.A.2
CCSS.MATH.CONTENT.8.F.A.3
CCSS.MATH.CONTENT.8.F.B.4
CCSS.MATH.CONTENT.8.F.B.5

- 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.
- Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).
- Interpret the equation y = mx + b as defining a linear function, whose graph is a straight line; give examples of functions that are not linear.
- 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.
- Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

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3-11 Sketching a Piecewise Function

CCSS.MATH.CONTENT.8.F.A.2
CCSS.MATH.CONTENT.8.F.B.4
CCSS.MATH.CONTENT.8.F.B.5

- Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).
- 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.
- Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

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Unit 4– Systems of Linear Equations

Total Number of Instructional Days 23

	Common Core Standard Covered	Major Topics/Concepts	Number of Days
4-1	**Graphing with Slope – Intercept Form** CCSS.MATH.CONTENT.8.F.A.3 CCSS.MATH.CONTENT.8.EE.C.8 CCSS.MATH.CONTENT.8.EE.C.8.A CCSS.MATH.CONTENT.8.EE.C.8.B CCSS.MATH.CONTENT.8.EE.C.8.C	• Interpret the equation y = mx + b as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. • Analyze and solve pairs of simultaneous linear equations. • 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. • Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. • Solve real-world and mathematical problems leading to two linear equations in two variables.	**3**
4-2	**Solving Systems by Graphing** CCSS.MATH.CONTENT.8.EE.C.8 CCSS.MATH.CONTENT.8.EE.C.8.A CCSS.MATH.CONTENT.8.EE.C.8.B CCSS.MATH.CONTENT.8.EE.C.8.C	• Analyze and solve pairs of simultaneous linear equations. • 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. • Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. • Solve real-world and mathematical problems leading to two linear equations in two variables.	**4**

4-3	**Solving Systems Using Substitution** CCSS.MATH.CONTENT.8.EE.C.8 CCSS.MATH.CONTENT.8.EE.C.8.A CCSS.MATH.CONTENT.8.EE.C.8.B CCSS.MATH.CONTENT.8.EE.C.8.C	• Analyze and solve pairs of simultaneous linear equations. • 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. • Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. • Solve real-world and mathematical problems leading to two linear equations in two variables.	**4**
4-4	**Solving Systems Using Elimination** CCSS.MATH.CONTENT.8.EE.C.8 CCSS.MATH.CONTENT.8.EE.C.8.A CCSS.MATH.CONTENT.8.EE.C.8.B CCSS.MATH.CONTENT.8.EE.C.8.C	• Analyze and solve pairs of simultaneous linear equations. • 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. • Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. • Solve real-world and mathematical problems leading to two linear equations in two variables.	**4**
4-5	**Solving Systems via Inspection** CCSS.MATH.CONTENT.8.EE.C.8 CCSS.MATH.CONTENT.8.EE.C.8.A CCSS.MATH.CONTENT.8.EE.C.8.B CCSS.MATH.CONTENT.8.EE.C.8.C	• Analyze and solve pairs of simultaneous linear equations. • 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. • Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. • Solve real-world and mathematical problems leading to two linear equations in two variables.	**4**

4-6 Applications of Systems of Linear Equations

CCSS.MATH.CONTENT.8.EE.C.8
CCSS.MATH.CONTENT.8.EE.C.8.C

- Analyze and solve pairs of simultaneous linear equations.
- Solve real-world and mathematical problems leading to two linear equations in two variables.

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Unit 5 – Patterns and Bivariate Data

Total Number of Instructional Days 20

	Common Core Standard Covered	Major Topics/Concepts	Number of Days
5-1	**Constructing Scatter Plots** CCSS.MATH.CONTENT.8.SP.A.1 CCSS.MATH.CONTENT.8.SP.A.2 CCSS.MATH.CONTENT.8.SP.A.3 CCSS.MATH.CONTENT.8.SP.A.4	• 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. • 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. • Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. • Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables.	**3**
5-2	**Analyzing Scatter Plots** CCSS.MATH.CONTENT.8.SP.A.1 CCSS.MATH.CONTENT.8.SP.A.2 CCSS.MATH.CONTENT.8.SP.A.3 CCSS.MATH.CONTENT.8.SP.A.4	• 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. • 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.	**3**

- Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.
- Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables.

5-3 Linear or Nonlinear Correlation

CCSS.MATH.CONTENT.8.SP.A.1
CCSS.MATH.CONTENT.8.SP.A.2
CCSS.MATH.CONTENT.8.SP.A.3
CCSS.MATH.CONTENT.8.SP.A.4

- 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.
- 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.
- Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.
- Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables.

5-4	**The Line of Best Fit** CCSS.MATH.CONTENT.8.SP.A.1 CCSS.MATH.CONTENT.8.SP.A.2 CCSS.MATH.CONTENT.8.SP.A.3 CCSS.MATH.CONTENT.8.SP.A.4	• 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. • 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. • Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. • Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables.	**3**
5-5	**Constructing a Two-Way Tables** CCSS.MATH.CONTENT.8.SP.A.1 CCSS.MATH.CONTENT.8.SP.A.2 CCSS.MATH.CONTENT.8.SP.A.3 CCSS.MATH.CONTENT.8.SP.A.4	• 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. • 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. • Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. • Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing	**4**

data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables.

5-6 Interpret a Two-Way Tables

CCSS.MATH.CONTENT.8.SP.A.1
CCSS.MATH.CONTENT.8.SP.A.2
CCSS.MATH.CONTENT.8.SP.A.3
CCSS.MATH.CONTENT.8.SP.A.4

- 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.
- 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.
- Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.
- Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables.

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Unit 6 – Congruency and Similarity

Total Number of Instructional Days 27

	Common Core Standard Covered	Major Topics/Concepts	Number of Days
6-1	**Identifying Transformations** CCSS.MATH.CONTENT.8.G.A.1 CCSS.MATH.CONTENT.8.G.A.1.A CCSS.MATH.CONTENT.8.G.A.1.B CCSS.MATH.CONTENT.8.G.A.1.C CCSS.MATH.CONTENT.8.G.A.2	• Verify experimentally the properties of rotations, reflections, and translations. • Lines are taken to lines, and line segments to line segments of the same length, angles are taken to angles of the same measure, parallel lines are taken to parallel lines. • Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.	**3**
6-2	**Constructing Rotations/Properties of Rotations** CCSS.MATH.CONTENT.8.G.A.1 CCSS.MATH.CONTENT.8.G.A.1.A CCSS.MATH.CONTENT.8.G.A.1.B CCSS.MATH.CONTENT.8.G.A.1.C CCSS.MATH.CONTENT.8.G.A.2 CCSS.MATH.CONTENT.8.G.A.3 CCSS.MATH.CONTENT.8.G.A.4	• Verify experimentally the properties of rotations, reflections, and translations. • Lines are taken to lines, and line segments to line segments of the same length, angles are taken to angles of the same measure, parallel lines are taken to parallel lines. • Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them. • Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates. • Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.	**3**

6-3 Constructing Reflections/Properties of Reflections

CCSS.MATH.CONTENT.8.G.A.1
CCSS.MATH.CONTENT.8.G.A.1.A
CCSS.MATH.CONTENT.8.G.A.1.B
CCSS.MATH.CONTENT.8.G.A.1.C
CCSS.MATH.CONTENT.8.G.A.2
CCSS.MATH.CONTENT.8.G.A.3
CCSS.MATH.CONTENT.8.G.A.4

- Verify experimentally the properties of rotations, reflections, and translations.
- Lines are taken to lines, and line segments to line segments of the same length, angles are taken to angles of the same measure, parallel lines are taken to parallel lines.
- Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.
- Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.
- Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.

6-4	**Constructing Translations/Properties of Translations** CCSS.MATH.CONTENT.8.G.A.1 CCSS.MATH.CONTENT.8.G.A.1.A CCSS.MATH.CONTENT.8.G.A.1.B CCSS.MATH.CONTENT.8.G.A.1.C .CCSS.MATH.CONTENT.8.G.A.2 CCSS.MATH.CONTENT.8.G.A.3 CCSS.MATH.CONTENT.8.G.A.4	• Verify experimentally the properties of rotations, reflections, and translations. • Lines are taken to lines, and line segments to line segments of the same length, angles are taken to angles of the same measure, parallel lines are taken to parallel lines. • Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them. • Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates. • Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.	**3**
6-5	**Constructing Dilatations/Properties of Dilatations** CCSS.MATH.CONTENT.8.G.A.3 CCSS.MATH.CONTENT.8.G.A.4	• Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates. • Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.	**3**
6-6	**Identifying a Series and Determining Congruence or Similarity** CCSS.MATH.CONTENT.8.G.A.2 CCSS.MATH.CONTENT.8.G.A.4	• Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them. • Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional	**3**

figures, describe a sequence that exhibits the similarity between them.

6-7	**The Sum of Angles in a Triangle** CCSS.MATH.CONTENT.8.G.A.4 CCSS.MATH.CONTENT.8.G.A.5	• Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them. • 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. For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.	**3**
6-8	**Similar Triangles** CCSS.MATH.CONTENT.8.G.A.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. For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.	**3**
6-9	**Parallel Lines Cut by a Transversal** CCSS.MATH.CONTENT.8.G.A.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. For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.	**3**

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Unit 7 - Geometry

Total Number of Instructional Days 25

	Common Core Standard Covered	Major Topics/Concepts	Number of Days
7-1	**Pythagorean Theorem and its Converse** CCSS.MATH.CONTENT.8.G.B.6	• Explain a proof of the Pythagorean Theorem and its converse.	4
7-2	**2D Applications of Pythagorean Theorem** CCSS.MATH.CONTENT.8.G.B.7	• Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.	4
7-3	**3D Applications of Pythagorean Theorem** CCSS.MATH.CONTENT.8.G.B.7	• Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.	4
7-4	**Pythagorean Theorem and Distance Between Points in a Coordinate System** CCSS.MATH.CONTENT.8.G.B.8	• Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	4
7-5	**Volume of Cylinders, Cones, and Spheres** CCSS.MATH.CONTENT.8.G.C.9	• Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.	3

7-6	**Solving for a Missing Dimension** CCSS.MATH.CONTENT.8.G.C.9	• Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.	**3**
7-7	**Volume of Composite Shapes** CCSS.MATH.CONTENT.8.G.C.9	• Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.	**3**