WA-NEE Community Schools

Grade Level: 8 Subject: Math

Topic #: 1 Name of Topic Real Numbers Duration: # days (Quarter 1)				
Standard(s)	**Envision Lesson**	**Objective**	**Vocabulary**	**Materials**
8.NS.1 Give examples of rational and irrational numbers, and explain the difference between them. State decimal equivalents for any number. For rational numbers, show that the decimal equivalent terminates or repeats, and convert a repeating decimal into a rational number.	1-1: Rational Numbers as Decimals	SWBAT write repeating decimals as fractions. Language Objective: SWBAT explain how to write repeating decimals as fractions.		• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:
8.NS.1 Give examples of rational and irrational numbers, and explain the difference between them. State decimal equivalents for any number. For rational numbers, show that the decimal equivalent terminates or repeats, and convert a repeating decimal into a rational number.	1-2 Understand Irrational Numbers	SWBAT identify an irrational number. Language Objective: SWBAT explain how to identify a number that is irrational.	• Irrational number • Perfect square • Square root	• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:
8.NS.2 Use rational approximations of irrational numbers to compare the size of irrational numbers, plot them approximately on a number line, and estimate the value of expressions involving irrational numbers.	1-3 Compare and Order Real Numbers	SWBAT compare and order rational and irrational numbers. Language Objective: SWBAT describe ways to compare and order rational and irrational numbers		• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:
8.NS.4 Solve real-world problems with rational numbers by using multiple operations. (E)	1-4 Evaluate Square Roots	SWBAT find square roots and cube roots of rational numbers.	• Cube root • Perfect cube	• Online textbook examples and resources

	and Cube Roots	Language Objective: SWBAT show and explain how to find square roots and cube roots of rational numbers.		• PowerPoint/Word Document • Canvas Small Group:
Use square root symbols to represent solutions to equations of the form x2 = p, where p is a positive rational number.	1-5 Solve Equations Using Square Roots and Cube Roots	SWBAT solve equations and problems, in real-world contexts, involving square roots and cube roots. Learning Objective: SWBAT explain how to solve equations involving squares or cubes.		• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:
8.NS.3 Given a numeric expression with common rational number bases and integer exponents, apply the properties of exponents to generate equivalent expressions. 8.NS.4 Solve real-world problems with rational numbers by using multiple operations. (E)	1-6 Use Properties of Integer Exponents	SWBAT • understand the properties of exponents. • generate equivalent expressions with exponents. Language Objective: SWBAT explain how to use the properties of exponents to write equivalent expressions.	• Power of Products Property • Product of Powers Property • Quotient of Powers Property	• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:
8.NS.3 Given a numeric expression with common rational number bases and integer exponents, apply the properties of exponents to generate equivalent expressions.	1-7 More Properties of Integer Exponents	SWBAT • simplify expressions with negative and zero exponents.	• Negative Exponent Property • Zero Exponent Property	• Online textbook examples and resources • PowerPoint/Word Document • Canvas

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8.NS.4 Solve real-world problems with rational numbers by using multiple operations. (E)		• evaluate expressions with negative and zero exponents. Language Objective: SWBAT describe how to write a number with a negative or zero exponent in a different way.		Small Group:
8.C.2 Solve real-world and other mathematical problems involving numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Interpret scientific notation that has been generated by technology, such as a scientific calculator, graphing calculator, or excel spreadsheet.	1-8 Use Powers of 10 to Estimate Quantities	SWBAT estimate very large and very small quantities by rounding and then writing that number as a single digit times a power of 10. Language Objective: SWBAT describe ways to estimate large and small quantities using a power of 10.		• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:
8.C.2 Solve real-world and other mathematical problems involving numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Interpret scientific notation that has been generated by technology, such as a scientific calculator, graphing calculator, or excel spreadsheet.	1-9 Understand Scientific Notation	SWBAT • use scientific notation to write very large or very small quantities. • convert numbers written in scientific notation to standard form. Language Objective: SWBAT explain how to use scientific notation to write very large or very small quantities.	• Scientific notation	• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:
8.NS.4 Solve real-world problems with rational numbers by using multiple operations. (E)	3-Act Mathematical Modeling:	SWBAT • use mathematical modeling to represent a problem		• Online textbook examples and resources

8.C.2 Solve real-world and other mathematical problems involving numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Interpret scientific notation that has been generated by technology, such as a scientific calculator, graphing calculator, or excel spreadsheet.	Hard-Working Organs (Supplemental)	situation and to propose a solution. • test and verify the appropriateness of their math models. • explain why the results from their mathematical models may not align exactly to the problem situation.		• PowerPoint/Word Document • Canvas Small Group:
8.NS.4 Solve real-world problems with rational numbers by using multiple operations. (E) 8.C.2 Solve real-world and other mathematical problems involving numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Interpret scientific notation that has been generated by technology, such as a scientific calculator, graphing calculator, or excel spreadsheet.	1-10 Operations with Numbers in Scientific Notation	SWBAT apply number properties to calculations with numbers in scientific notation. Language Objective: SWBAT explain how to perform operations with numbers in scientific notation.		• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:

Topic #: 2 (Pre-Work, 2-1 to 2-4) Analyze and Solve Linear Equations Duration: # days (Quarter 1)				
Standard(s)	**Envision Lesson**	**Objective**	**Vocabulary**	**Materials**
	X Out of Textbook		•	•

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8.NS.4 Solve real-world problems with rational numbers by using multiple operations. (E) 8.AF.1 Solve linear equations and inequalities with rational number coefficients fluently, including those whose solutions require expanding expressions using the distributive property and collecting like terms. Represent real-world problems using linear equations and inequalities in one variable and solve such problems.	2-1 Combine Like Terms to Solve Equations	SWBAT • combine like terms. • solve equations with like terms on one side of the equation. • make sense of scenarios and represent them with equations. Language Objective: SWBAT explain how to solve equations that have like terms on one side.		• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:
8.NS.4 Solve real-world problems with rational numbers by using multiple operations. (E) 8.AF.1 Solve linear equations and inequalities with rational number coefficients fluently, including those whose solutions require expanding expressions using the distributive property and collecting like terms. Represent real-world problems using linear equations and inequalities in one variable and solve such problems.	2-2 Solve Equations with Variables on Both Sides	SWBAT • solve equations with like terms on both sides of the equation. • make sense of scenarios and represent them with equations. Language Objective: SWBAT explain how to solve equations with variables on both sides of the equal sign.		• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:
8.NS.4 Solve real-world problems with rational numbers by using multiple operations. (E)	2-3 Solve Multistep Equations	SWBAT plan multiple solution pathways and choose one to find the solution to multistep equations.		• Online textbook examples and resources

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8.AF.1 Solve linear equations and inequalities with rational number coefficients fluently, including those whose solutions require expanding expressions using the distributive property and collecting like terms. Represent real-world problems using linear equations and inequalities in one variable and solve such problems.		Language Objective: SWBAT explain and show how to solve multistep equations and pairs of equations using more than one approach.		• PowerPoint/Word Document • Canvas Small Group:
8.NS.4 Solve real-world problems with rational numbers by using multiple operations. (E) . 8.AF.2 Generate linear equations in one variable with one solution, infinitely many solutions, or no solutions. Justify the classification given.	2-4 Equations with No Solutions or Infinitely Many Solutions	SWBAT determine the number of solutions to an equation. Language Objective: SWBAT explain how to determine the number of solutions an equation has.		• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:
8.AF.1 Solve linear equations and inequalities with rational number coefficients fluently, including those whose solutions require expanding expressions using the distributive property and collecting like terms. Represent real-world problems using linear equations and inequalities in one variable and solve such problems.	IN-1 Solve Inequalities	SWBAT • explore the relationship between two-step inequalities and multi-step inequalities. • apply the Distributive Property to simplify and solve multi-step inequalities.		• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:
8.AF.1 Solve linear equations and inequalities with rational number coefficients fluently, including those	3-Act Mathematical Modeling:	SWBAT • use mathematical modeling to represent a problem		• Online textbook examples and resources

whose solutions require expanding expressions using the distributive property and collecting like terms. Represent real-world problems using linear equations and inequalities in one variable and solve such problems. 8.AF.2 Generate linear equations in one variable with one solution, infinitely many solutions, or no solutions. Justify the classification given.	Powering Down (Supplemental)	situation and to propose a solution. • test and verify the appropriateness of their math models. • explain why the results from their mathematical models may not align exactly to the problem situation.		• PowerPoint/Word Document • Canvas Small Group:

Topic #: 2 (2-5 to 2-9) Analyze and Solve Linear Equations Continued			**Duration: # days (Quarter 3)**	
Standard(s)	**Envision Lesson**	**Objective**	**Vocabulary**	**Materials**
8.NS.4 Solve real-world problems with rational numbers by using multiple operations. (E) 8.AF.7 Compare properties of two linear functions given in different forms, such as a table of values, equation, verbal description, and graph (e.g., compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed).	2-5 Compare Proportional Relationships	SWBAT analyze equations, linear graphs, and tables to find unit rates and compare proportional relationships. Language Objective: SWBAT explain how to compare proportional relationships represented in different ways.		• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:
8.AF.7 Compare properties of two linear functions given in different forms, such as a table of values, equation, verbal description, and graph (e.g., compare a	2-6 Connect Proportional Relationships and Slope	SWBAT: • find the slope of a line using different strategies.	• slope	• Online textbook examples and resources

distance-time graph to a distance-time equation to determine which of two moving objects has greater speed).		• interpret a slope in context and relate it to steepness on a graph.		• PowerPoint/Word Document • Canvas Small Group:
8.AF.6 Construct a function to model a linear relationship between two quantities given a verbal description, table of values, or graph. Within the context of a problem, describe the meaning of m (rate of change) and b (y-intercept) in y = mx + b. (E)	2-7 Analyze Linear Equations: $y = mx$	SWBAT: • understand how the constant of proportionality and the slope relate in a linear equation. • write a linear equation in the form $y=mx$ when the slope is given. • graph a linear equation in the form $y=mx$.		• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:
8.AF.6 Construct a function to model a linear relationship between two quantities given a verbal description, table of values, or graph. Within the context of a problem, describe the meaning of m (rate of change) and b (y-intercept) in y = mx + b. (E)	2-8 Understand the *Y*-intercept of a Line	SWBAT: • interpret and extend the table or graph of a linear relationship to find its *y*-intercept. • analyze graphs in context to determine and explain the meaning of the *y*-intercept.	• *y*-intercept	• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:
8.AF.6 Construct a function to model a linear relationship between two quantities given a verbal description, table of values, or graph. Within the	2-9 Analyze Linear Equations: $Y=mx + b$	SWBAT: • graph a line from an equation in the form $y = mx + b$.	• slope-intercept form	• Online textbook examples and resources

context of a problem, describe the meaning of m (rate of change) and b (y-intercept) in y = mx + b. (E) 8.AF.5 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. Describe similarities and differences between linear and nonlinear functions from tables, graphs, verbal descriptions, and equation		• write an equation that represents the given graph of a line.		• PowerPoint/Word Document • Canvas Small Group:

Topic #: 5 Analyze and Solve Systems of Linear Equations Duration: # days (Quarter 3)				
Standard(s)	**Envision Lesson**	**Objective**	**Vocabulary**	**Materials**
8.AF.6 Construct a function to model a linear relationship between two quantities given a verbal description, table of values, or graph. Within the context of a problem, describe the meaning of m (rate of change) and b (y-intercept) in y = mx + b. (E) 8.AF.8 Approximate the solution of a system of equations by graphing and interpreting the reasonableness of the approximation. (E)	5-1 Estimate Solutions by Inspection	SWBAT: • examine the graphs of a linear system of equations to determine the number of solutions of the system. • compare the equations in a linear system to determine the number of solutions of the system. Language Objective: SWBAT explain how to find the number of solutions a system of linear equations by inspecting the equations.	• systems of linear equations • solution of a system of linear equations	• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:

8.AF.6 Construct a function to model a linear relationship between two quantities given a verbal description, table of values, or graph. Within the context of a problem, describe the meaning of m (rate of change) and b (y-intercept) in y = mx + b. (E) 8.AF.8 Approximate the solution of a system of equations by graphing and interpreting the reasonableness of the approximation. (E)	5-2 Solve Systems by Graphing	SWBAT create and examine graphs of linear systems of equations to determine the solution. Language Objective: SWBAT explain how to find the solution to a system of equations using graphs.		• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:
8.AF.6 Construct a function to model a linear relationship between two quantities given a verbal description, table of values, or graph. Within the context of a problem, describe the meaning of m (rate of change) and b (y-intercept) in y = mx + b. (E) 8.AF.8 Approximate the solution of a system of equations by graphing and interpreting the reasonableness of the approximation. (E)	3-Act Mathematical Modeling: Ups and Downs (Supplemental)	SWBAT: • use mathematical modeling to represent a problem situation and to propose a solution. • test and verify the appropriateness of their math models. • explain why the results from their mathematical models may not align exactly to the problem situation.		• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:

Topic #: 3 Use Functions to Model Relationships		**Duration: # days (Quarter 3)**		
Standard(s)	**Envision Lesson**	**Objective**	**Vocabulary**	**Materials**
8.AF.3 Understand that a function assigns to each x-value (independent variable) exactly one y-value (dependent	3-1 Understand	SWBAT: • identify whether a relation is a function.	• relation • function	• Online textbook examples and resources

variable), and that the graph of a function is the set of ordered pairs (x, y).	Relations and Functions	• interpret a function. Language Objective: SWBAT explain how to tell whether a relation is a function.		• PowerPoint/Word Document • Canvas Small Group:
8.AF.6 Construct a function to model a linear relationship between two quantities given a verbal description, table of values, or graph. Within the context of a problem, describe the meaning of m (rate of change) and b (y-intercept) in y = mx + b. (E)	3-2 Connect Representations of Functions	SWBAT: • identify functions by their equations, tables, and graphs. • represent linear and non-linear functions with graphs. Language Objective: SWBAT explain how to identify functions by their equations, tables, and graphs.	• constant rate of change • initial value • linear function • nonlinear function	• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:
8.AF.5 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. Describe similarities and differences between linear and nonlinear functions from tables, graphs, verbal descriptions, and equation. 8.AF.6 Construct a function to model a linear relationship between two quantities given a verbal description, table of values, or graph. Within the context of a problem, describe the	3-3 Compare Linear and Nonlinear Functions	SWBAT use different representations to compare linear and nonlinear functions. Language Objective: SWBAT explain how to compare linear and nonlinear functions.		• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:

meaning of m (rate of change) and b (y-intercept) in y = mx + b. (E)				
8.AF.3 Understand that a function assigns to each x-value (independent variable) exactly one y-value (dependent variable), and that the graph of a function is the set of ordered pairs (x, y). 8.AF.6 Construct a function to model a linear relationship between two quantities given a verbal description, table of values, or graph. Within the context of a problem, describe the meaning of m (rate of change) and b (y-intercept) in y = mx + b. (E) 8.AF.7 Compare properties of two linear functions given in different forms, such as a table of values, equation, verbal description, and graph (e.g., compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed).	3-Act Mathematical Modeling: Every Drop Counts (Supplemental)	SWBAT: • use mathematical modeling to represent a problem situation and to propose a solution. • test and verify the appropriateness of their math models. explain why the results from their mathematical models may not align exactly to the problem situation.		• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:
8.AF.6 Construct a function to model a linear relationship between two quantities given a verbal description, table of values, or graph. Within the context of a problem, describe the meaning of m (rate of change) and b (y-intercept) in y = mx + b. (E) 8.AF.7 Compare properties of two linear functions given in different forms, such as a table of values, equation, verbal description, and graph (e.g., compare a	3-4 Construct Functions to Model Linear Relationships	SWBAT write an equation in the form $y=mx + b$ to describe a linear function. Language Objective: SWBAT explain how to write an equation in the from $y=mx + b$ to describe a linear equation.		• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:

distance-time graph to a distance-time equation to determine which of two moving objects has greater speed).				
8.AF.4 Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear, has a maximum or minimum value). Sketch a graph that exhibits the qualitative features of a function that has been verbally described.	3-5 Intervals of Increase and Decrease	SWBAT describe the behavior of a function in different intervals. Language Objective: SWBAT explain and show the behavior of a function and write a description to go with its graph.	• interval	• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:
8.AF.4 Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear, has a maximum or minimum value). Sketch a graph that exhibits the qualitative features of a function that has been verbally described.	3-6 Sketch Functions From Verbal Descriptions	SWBAT: • draw a sketch of a graph for a function that has been described verbally. • analyze and interpret the sketch of a graph of a function. Language Objective: Explain how to sketch the graph of a function that has been described verbally.		• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:

Topic #: 6 Congruence and Similarity		**Duration: # days (Quarter 2)**		
Standard(s)	**Envision Lesson**	**Objective**	**Vocabulary**	**Materials**

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8.GM.1 Explore dilations, translations, rotations, and reflections on two-dimensional figures in the coordinate plane. (E)	6-1 Analyze Translations	SWBAT • use coordinates to describe the rules of a translation • translate a two-dimensional figure on a coordinate plane by mapping each of its vertices Language Objective: SWBAT explain how to translate two-dimensional figures.	• Transformation • Translation • image	• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:
8.GM.1 Explore dilations, translations, rotations, and reflections on two-dimensional figures in the coordinate plane. (E)	6-2 Analyze Reflections	SWBAT • understand reflections as a type of transformation and how they differ from translations. • use coordinates to describe the image created by a reflection. • reflect a two-dimensional figure on a coordinate plane. Language Objective: SWBAT explain how to reflect two-dimensional figures.	• Reflection • Line of reflection	• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:
8.GM.1 Explore dilations, translations, rotations, and reflections on two-dimensional figures in the coordinate plane. (E)	6-3 Analyze Rotations	SWBAT • identify and perform a rotation. • determine how a rotation affects a two-dimensional figure.	• Rotation • Angle of rotation • Center of rotation	• Online textbook examples and resources • PowerPoint/Word Document • Canvas

		Language Objective: SWBAT explain how to rotation a two-dimensional figure.		Small Group:
8.GM.1 Explore dilations, translations, rotations, and reflections on two-dimensional figures in the coordinate plane. (E)	6-4 Compose Transformations	SWBAT • describe and perform a sequence of transformations. • apply their knowledge of transformations to solve problems. Language Objective: SWBAT explain how to describe and perform a sequence of transformations		• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:
8.GM.1 Explore dilations, translations, rotations, and reflections on two-dimensional figures in the coordinate plane. (E)	3-Act Mathematical Modeling: Tricks of the Trade (Supplemental)	SWBAT: • use mathematical modeling to represent a problem situation and to propose a solution. • test and verify the appropriateness of their math models. • explain why the results from their mathematical models may not align exactly to the problem situation.		• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:
8.GM.1 Explore dilations, translations, rotations, and reflections on two-	6-5 Understand	SWBAT:	• congruent	• Online textbook examples and resources

dimensional figures in the coordinate plane. (E)	Congruent Figures	• use a sequence of transformations to justify the congruence of figures. • understand that reflections, rotations, and translations are actions that produce congruent geometric figures. Language Objective: SWBAT explain how to use a sequence of translations, reflections, and rotations to show that figures are congruent.		• PowerPoint/Word Document • Canvas Small Group:
8.GM.1 Explore dilations, translations, rotations, and reflections on two-dimensional figures in the coordinate plane. (E)	6-6 Describe Dilations	SWBAT: • verify the properties of a dilation. • graph the image of a dilation given a fixed center and a common scale factor. Language Objective: SWBAT describe how to dilate two-dimensional figures.	• Dilation • Scale factor • Enlargement • Reduction	• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:
8.GM.1 Explore dilations, translations, rotations, and reflections on two-dimensional figures in the coordinate plane. (E)	6-7 Understand Similar Figures	SWBAT perform a sequence of transformations to identify similar figures. Language Objective: SWBAT tell how to use a sequence of transformations including dilations to show that figures are similar.	• similar	• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:

8.AF.1 Solve linear equations and inequalities with rational number coefficients fluently, including those whose solutions require expanding expressions using the distributive property and collecting like terms. Represent real-world problems using linear equations and inequalities in one variable and solve such problems.	6-8 Angles, Lines, and Transversals	SWBAT: • identify relationships between angles formed by parallel lines and a transversal. • determine the measures of angles formed by parallel lines and a transversal. • reason about parallel lines. Language Objective: SWBAT explain how to identify and find the measures of angles formed by parallel lines and a transversal.	• transversal • corresponding angles • alternate interior angles • same-side interior angles	• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:

Topic #: 7 Understand and Apply the Pythagorean Theorem Duration: # days (Quarter 2)				
Standard(s)	**Envision Lesson**	**Objective**	**Vocabulary**	**Materials**
8.GM.3 Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and other mathematical problems in two dimensions. (E)	3 Act Math Modeling: Go With the Flow (Supplemental)	SWBAT: • use mathematical modeling to represent a problem situation and to propose a solution. • test and verify the appropriateness of their math models. • explain why the results from their mathematical		• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:

		models may not align exactly to the problem situation		
8.GM.3 Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and other mathematical problems in two dimensions. (E) 8.NS.4 Solve real-world problems with rational numbers by using multiple operations. (E)	7-1 Understand the Pythagorean Theorem	SWBAT: • understand a proof of the Pythagorean Theorem. • use the Pythagorean Theorem to find the length of the hypotenuse or a leg of a right triangle. Language Objective: SWBAT explain how to use the Pythagorean Theorem to find unknown sides of triangles.	• hypotenuse • leg • Pythagorean Theorem • proof	• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:
8.GM.3 Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and other mathematical problems in two dimensions. (E) 8.NS.4 Solve real-world problems with rational numbers by using multiple operations. (E)	7-2 Understand the Converse of the Pythagorean Theorem	SWBAT: • understand and apply the Converse of the Pythagorean Theorem to identify right triangles. • use the Converse of the Pythagorean Theorem to analyze two-dimensional shapes. Language Objective: SWBAT explain how to use the Converse of the Pythagorean Theorem to identify right triangles.	• Converse of the Pythagorean Theorem	• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:
8.GM.3 Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and other	7-3 Apply the Pythagorean Theorem to	SWBAT use the Pythagorean Theorem and its converse to solve problems.		• Online textbook examples and resources

mathematical problems in two dimensions. (E) 8.NS.4 Solve real-world problems with rational numbers by using multiple operations. (E)	Solve Problems	Language Objective: SWBAT explain how to use the Pythagorean Theorem to solve problems.		• PowerPoint/Word Document • Canvas Small Group:
8.GM.3 Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and other mathematical problems in two dimensions. (E) 8.NS.4 Solve real-world problems with rational numbers by using multiple operations. (E)	7-4 Find Distance in the Coordinate Plane	SWBAT: • apply the Pythagorean Theorem to find the distance between two points on a coordinate plane. • use the Pythagorean Theorem to find the perimeter of a figure and to solve problems on the coordinate plane. Language Objective: SWBAT explain how to use the Pythagorean Theorem to find the distance between two points in a coordinate plane.		• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:

Topic #: 8 Solve Problems Involving Surface Area and Volume			**Duration: # days (Quarter 2)**	
Standard(s)	**Envision Lesson**	**Objective**	**Vocabulary**	**Materials**
8.GM.2 Solve real-world and other mathematical problems involving volume of cones, spheres, and pyramids and surface area of spheres. (E)	IN-5 Attributes of 3-Dimensional Figures	SWBAT describe attributes of 3-dimensional figures, including the number of bases, faces, edges, and vertices.	•	• Online textbook examples and resources

				• PowerPoint/Word Document • Canvas Small Group:
8.GM.2 Solve real-world and other mathematical problems involving volume of cones, spheres, and pyramids and surface area of spheres. (E)	IN-6 Cross Sections	SWBAT • describe and sketch cross sections of three-dimensional figures. • solve problems involving cross sections.	•	• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:
8.NS.4 Solve real-world problems with rational numbers by using multiple operations. (E) 8.GM.2 Solve real-world and other mathematical problems involving volume of cones, spheres, and pyramids and surface area of spheres. (E)	8-1 Find Surface Area of Three-Dimensional Figures	SWBAT calculate the surface areas of cylinders, cones, and spheres. Language Objective: SWBAT explain how to find the surface area of cylinders, cones, and spheres.	• cone • cylinder • sphere	• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:
8.NS.4 Solve real-world problems with rational numbers by using multiple operations. (E) 8.GM.2 Solve real-world and other mathematical problems involving volume of cones, spheres, and pyramids and surface area of spheres. (E)	8-2 Find Volume of Cylinders	SWBAT: • identify and use the correct formula to calculate the volume of cylinder. • recognize the relationship between the formulas for the volume of a rectangular		• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:

		prism and the volume of a cylinder. Language Objective: SWBAT explain how to use what I know about finding volumes of rectangular prisms to find the volume of a cylinder.		
8.NS.4 Solve real-world problems with rational numbers by using multiple operations. (E) 8.GM.2 Solve real-world and other mathematical problems involving volume of cones, spheres, and pyramids and surface area of spheres. (E)	8-3 Find Volume of Cones	SWBAT: • find the volume of a cone. • recognize the relationship between volume of a cylinder and volume of a cone. Language Objective: SWBAT explain how to find the volume of cones.		• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:
8.GM.2 Solve real-world and other mathematical problems involving volume of cones, spheres, and pyramids and surface area of spheres. (E)	IN-7 Find Volume of Pyramids	SWBAT: • find the volume of pyramids. • solve problems involving the volume of pyramids.		• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:
8.NS.4 Solve real-world problems with rational numbers by using multiple operations. (E)	8-4 Find Volume of Spheres	SWBAT: • calculate the volume of a sphere. • recognize the relationship between the formula for	• composite figure	• Online textbook examples and resources • PowerPoint/Word Document

8.GM.2 Solve real-world and other mathematical problems involving volume of cones, spheres, and pyramids and surface area of spheres. (E)		the volume of a cone and the volume of a sphere. Language Objective: SWBAT explain how to find the volume of a sphere and tell how to use it to solve problems.		• Canvas Small Group:
8.GM.2 Solve real-world and other mathematical problems involving volume of cones, spheres, and pyramids and surface area of spheres. (E)	3-Act Mathematical Modeling: Measuring Up (Supplemental)	SWBAT: • use mathematical modeling to represent a problem situation and to propose a solution. • test and verify the appropriateness of their math models. • explain why the results from their mathematical models may not align to the problem situation.		• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:

Topic #: 4 Investigate Bivariate Data		**Duration: # days (Quarter 4)**		
Standard(s)	**Envision Lesson**	**Objective**	**Vocabulary**	**Materials**
8.DSP.1 Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantitative variables. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.	4-1 Construct and Interpret Scatter Plots	SWBAT: • construct a scatter plot to model paired data. • utilize a scatter plot to identify and interpret the relationship between paired data.	• cluster • gap • measurement • data • negative • association	• Online textbook examples and resources • PowerPoint/Word Document • Canvas

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		Language Objective: SWBAT explain how to construct a scatter plot and how to use it to understand the relationship between paired data.	• outlier • positive • scatter plot	Small Group:
8.DSP.1 Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantitative variables. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.	4-2 Analyze Linear Association	SWBAT: • recognize whether the paired data have a linear association, a nonlinear association, or no association. • draw a trend line to determine whether a linear association is positive or negative and strong or weak. Language Objective: SWBAT explain how to use a line to represent the relationship between paired data.	• trend line	• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:
8.DSP.1 Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantitative variables. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.	4-3 Use Linear Models to Make Predictions	SWBAT: • use the slope and *y*-intercept of a trend line to make a prediction. • make a prediction when no equation is given by drawing trend lines and writing the equation of the linear model.		• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:

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8.DSP.2 Write and use equations that model linear relationships to make predictions, including interpolation and extrapolation, in real-world situations involving bivariate measurement data. Interpret the slope and y-intercept in context. (E)		Language Objective: SWBAT describe how to make a prediction using the equation of a line that closely fits a set of data.		
8.DSP.2 Write and use equations that model linear relationships to make predictions, including interpolation and extrapolation, in real-world situations involving bivariate measurement data. Interpret the slope and y-intercept in context. (E)	4-4 Interpret Two-Way Frequency Tables	SWBAT: • organize paired categorical data into a two-way frequency table. • compare and make conjectures about data displayed in a two-way frequency table. Language Objective: SWBAT explain how to display and interpret relationships between paired categorical data.	• categorical data	• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:
8.DSP.2 Write and use equations that model linear relationships to make predictions, including interpolation and extrapolation, in real-world situations involving bivariate measurement data. Interpret the slope and y-intercept in context. (E)	4-5 Interpret Two-Way Relative Frequency Tables	SWBAT: • construct two-way relative frequency tables. • compare and make conjectures about data displayed in a two-way relative frequency table.	• relative • frequency table	• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:
8.DSP.3 Represent sample spaces and find probabilities of compound events(independent and dependent)	IN-2 Outcomes of	SWBAT: • use a tree diagram, a table, or an organized list to	•	• Online textbook examples and resources

using organized lists, tables, and tree diagrams 8.DSP.5 For events with a large number of outcomes, understand the use of the multiplication counting principle. Develop the multiplication counting principle and apply it to situations with a large number of outcomes.	Compound Events	represent the sample space for a compound event. • use the Multiplication Counting Principle to find the total number of outcomes.		• PowerPoint/Word Document • Canvas Small Group:
8.DSP.3 Represent sample spaces and find probabilities of compound events(independent and dependent) using organized lists, tables, and tree diagrams 8.DSP.4 Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs. Understand and use appropriate terminology to describe independent, dependent, complementary, and mutually exclusive events.	IN-3 Find Probabilities of Independent Events	SWBAT • organize information about a compound event on a table, a tree diagram, or an organized list. • find the probability of compound independent events.	•	• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:
8.DSP.3 Represent sample spaces and find probabilities of compound events (independent and dependent) using organized lists, tables, and tree diagrams 8.DSP.4 Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which	IN-4 Find Probabilities of Dependent Events	SWBAT find the probability of dependent events.		• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group:

the compound event occurs. Understand and use appropriate terminology to describe independent, dependent, complementary, and mutually exclusive events.				
8.DSP.1 Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantitative variables. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association. 8.DSP.3 Write and use equations that model linear relationships to make predictions, including interpolation and extrapolation, in real-world situations involving bivariate measurement data. Interpret the slope and y-intercept in context.	3-Act Mathematical Modeling: Reach Out (Supplemental)	SWBAT: • use mathematical modeling to represent a problem situation and to propose a solution. • test and verify the appropriateness of their math models. • explain why the results from their mathematical models may not align exactly to the problem situation.		• Online textbook examples and resources • PowerPoint/Word Document • Canvas Small Group: