EIGHTH GRADE MATHEMATICS CURRICULUM

Course 17001

Seventh grade students will deepen their understanding of the use of ratios in problem solving as well as multiply and divide fractions. They will continue to extend their fluency or mathematical operations with multi-digit numbers. The course will cover the relationships between dependent and independent variables. Students will extend their previous understanding to algebraic expressions and the process of solving one-variable equations. They will solve problems of area, surface, and volume. Coordinate graphing in all 4 quadrants will be used to solve problems. Students will also learn about statistical variability and be able to summarize a distribution of data.

EIGHTH GRADE MATHEMATICS OUTLINE:

Goals	Skills	Summative Assessments	Time Frame	Main Resources
• Analyze proportional relationships and use them to model and solve real-world and mathematical problems. • Model and solve real-world and mathematical problems by using and connecting numerical, algebraic, and/or graphical representations. • Visualize and represent geometric figures and describe the relationships between them. • Draw inferences about populations based on random sampling concepts. • Draw informal comparative inferences about two populations. • Investigate chance processes and develop, use, and evaluate probability models.	• Apply and extend previous understandings of operations with fractions to operations with rational numbers. • Apply properties of operations to generate equivalent expressions. • Solve real-world and mathematical problems involving angle measure, area, surface area, circumference, and volume.	Mid-year and End of Year Benchmark Assessments, PSSA	1-year	Glencoe Math: Course 2 ©2015

EIGHTH GRADE MATHEMATICS MAP:

TIME FRAME	BIG IDEAS	CONCEPTS	ESSENTIAL QUESTIONS	STANDARDS	OBJECTIVES	DIFFERENTIATION	ASSESSMENT
Chapter 1 (Weeks 1-4)	• Real Numbers	1. Write fractions as decimals and decimals as fractions. 2. Write and evaluate expressions involving powers and exponents. 3. Simplify a real number expressions by multiplying and dividing monomials. 4. Use the Laws of Exponents to find powers of monomials. 5. Simplify expressions involving negative exponents. 6. Use scientific notation to write large and small numbers. 7. Compute with numbers written in scientific notation. 8. Find square roots and cube roots. 9. Estimate square and cube roots. 10. Compare mathematical expressions.	• Why is it helpful to write numbers in different ways?	A1.1.1.1.1 Compare and/or order any real numbers (rational and irrational may be mixed). A1.1.1.1.2 Simplify square roots (e.g., √24 = 2√6). CC.2.1.8.E.1 Distinguish between rational and irrational numbers using their properties. CC.2.1.8.E.4 Estimate irrational numbers by comparing them to rational numbers. M08.A-N.1.1.1 Determine whether a number is rational or irrational. For rational numbers, show that the decimal expansion terminates or repeats (limit repeating decimals to thousandths). M08.A-N.1.1.2 Convert a terminating or repeating decimal to a rational number (limit repeating decimals to thousandths). M08.A-N.1.1.2a Convert a fraction to a decimal up to the hundredths place. M08.A-N.1.1.3 Estimate the value of	**Lesson 1** Rational numbers are numbers that can be written as fractions. These include numbers such as the following: 0, −8, 3, $-4\frac{1}{3}$, $\frac{5}{6}$, $-3.$ 2.6, −3.175, 45% Both terminating and repeating decimals can be written as fractions, but non-terminating, non-repeating numbers such as π and $\sqrt{2}$ cannot be written as fractions. So, these number are not rational. The rules and properties for adding, subtracting, multiplying, and dividing rational numbers are the same as those for integers and fractions. **Lessons 2 through 4** A product of repeated factors can be expressed as a power, using an exponent and a base. $3 \times 3 \times 3 \times 3 = 3^4$ ← ↑ Base	Additional time Additional practice Partner/group work	Homework Classwork and Activities Quizzes Mid-Chapter Check Vocabulary Test Test

				irrational numbers without a calculator (limit whole number radicand to less than 144). Example: √5 is between 2 and 3 but closer to 2. M08.A-N.1.1.4 Use rational approximations of irrational numbers to compare and order irrational numbers. M08.A-N.1.1.5 Locate/identify rational and irrational numbers at their approximate locations on a number line. M08.A-N.1.1.5a Locate a non-terminating decimal at its approximate location on the number line.	• From this definition comes the Laws of Exponents, which include: • Product of Powers: To multiply powers with the same base, add their exponents. • $5^2 \cdot 5^4 = 5^{2+4} = 5^6$ • Quotient of Powers: To divide powers with the same base, subtract their exponents. $\frac{3^6}{3^4} = 3^{6-4} = 3^2$ • • Power of a Power: To find the power of a power, multiply the exponents. • $(4^2)^3 = 4^{2 \cdot 3} = 4^6$ • Power of a Product: To find the power of a product, find the power of each factor and multiply. • $(2 \cdot 4)^5 = 2^5 \cdot 4^5$ **Lessons 5 through 7** By definition, • any nonzero number to the zero power is 1. • $5^0 = 1$ $24^0 = 1$ $100^0 = 1$ $1^0 = 1$ • any nonzero number to a negative *n* power is the multiplicative inverse of its *n*th power. $3^{-5} = \frac{1}{3^5}$ $\frac{1}{4}$ - • It is often helpful to express very large numbers such as		

					5,000,000,000 and very small numbers such as 0.000034 in scientific notation, where a number is written as the product of a number (greater than or equal to 1 and less than 10) and a power of 10. • $2.1 \times 10^4 = 21{,}000$ $2.1 \times 10^{-4} = 0.00021$ • When the exponent of the power of 10 is positive, the number is greater than 1. When the exponent of the power of 10 is negative, the number is between 0 and 1. **Lessons 8 through 10** Squaring a number and finding a square root are inverse operations. • Every positive number has two square roots, one positive and one negative. The positive square root is called the principal square root. • The square root of a perfect square is an integer. $\sqrt{16} = 4$ because $4 \times 4 = 16$ • The square root of a non-perfect square is not an integer, but it can be estimated. To estimate a square		

					root of a non-perfect square, find two perfect squares between which the non-perfect square lies. For example, $\sqrt{11}$ must be between 3 and 4 since $\sqrt{11}$ lies between $\sqrt{9}$ (3) and $\sqrt{16}$ (4). • Cubing a number and finding a cube root are inverse operations. • To find a cube root, find the number that is used as a factor three times. $\sqrt[3]{125}=5$ because 5 × 5 × 5 = 125 • To estimate a cube root to the nearest whole number, find two perfect cubes between which the non-perfect cube root lies. For example, $\sqrt[3]{30}$ is between 3 and 4. Since 3 × 3 × 3 = 27 and 4 × 4× 4 = 64 , and 27 is closer to 30 than 64, $\sqrt[3]{30}$ is closer to 3 than it is to 4.		
Chapter 2 (Weeks 5-	• Equations in One Variable	1. Solve equations with rational	• What is equivalence?	A1.1.1.3.1 Simplify/evaluate	Lesson 1-3 • The numerical	Additional time	Homework

8)		coefficients. 2. Solve two-step equations. 3. Write two-step equations that represent situations. 4. Solve equations with variables on each side. 5. Solve multi-step equations.		expressions involving properties/laws of exponents, roots and/or absolute value to solve problems (exponents should be integers from -10 to 10). CC.2.2.8.B.1 Apply concepts of radicals and integer exponents to generate equivalent expressions. M08.B-E.1.1.1 Apply one or more properties of integer exponents to generate equivalent numerical expressions without a calculator (with final answers expressed in exponential form with positive exponents). Properties will be provided. Example: 3^12 x 3^-15 = 3^-3 = 1/(3^3) M08.B-E.1.1.2 Use square root and cube root symbols to represent solutions to equations of the form x^2 = p and x^3 = p, where p is a positive rational number. Evaluate square roots of perfect squares (up to and including 12^2) and cube roots of perfect cubes (up to and including 5^3) without a calculator. Example: If x^2 = 25 then x = ±√25. M08.B-E.1.1.2a Identify the meaning	factor of a term that contains a variable is called the coefficient of the variable. When the coefficient is a fraction, multiply each side by the multiplicative inverse of the fraction. • A two-step equation is an equation that contains two operations. To solve two-step equations, use inverse operations to undo each operation in reverse order of the order of operations. Lessons 4-5 • Solving equations sometimes requires several steps. •	Additional practice Partner/group work	Classwork and Activities Quizzes Mid-Chapter Check Vocabulary Test Test

				of an exponent (limited to exponents of 2 and 3). M08.B-E.1.1.3 Estimate very large or very small quantities by using numbers expressed in the form of a single digit times an integer power of 10 and express how many times larger or smaller one number is than another. Example: Estimate the population of the United States as 3 × 10^8 and the population of the world as 7 × 10^9 and determine that the world population is more than 20 times larger than the United States' population. M08.B-E.1.1.4 Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Express answers in 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 (e.g., interpret 4.7EE9 displayed on a calculator as 4.7 × 10^9).			

Chapter 3 (Weeks 9-12)	• Equations in Two Variables	1. Identify proportional and nonproportional linear relationships by finding a constant rate of change. 2. Use tables and graphs to find to slope of a line. 3. Use direct variation to solve problems. 4. Graph linear equations using the slope and y-intercept. 5. Graph an equation using the x- and y-intercepts. 6. Write an equation of a line. 7. Solve systems of linear equations by graphing. 8. Solve systems of equations algebraically.	• Why are graphs helpful?	A1.1.2.1.1 Write, solve and/or apply a linear equation (including problem situations). A1.1.2.1.2 Use and/or identify an algebraic property to justify any step in an equation solving process (linear equations only). A1.1.2.1.3 Interpret solutions to problems in the context of the problem situation (linear equations only). A1.1.2.2.1 Write and/or solve a system of linear equations (including problem situations) using graphing, substitution and/or elimination (limit systems to 2 linear equations). A1.1.2.2.2 Interpret solutions to problems in the context of the problem situation (systems of 2 linear equations only). A1.2.1.2.1 Create, interpret and/or use the equation, graph or table of a linear function. A1.2.1.2.2 Translate from one representation of a linear function to another (graph, table and equation).	Lessons 1 through 3 • A linear relationship has a constant rate of change. In the situation below, the constant rate of change is 4. • packages 1 2 3 4 • pens 4 8 12 16 • In a proportional linear relationship between the quantities a and b: the ratio is constant is constant the graph passes through the origin • The slope of a line is the ratio of the vertical change (rise) between any two points on a line and the horizontal change (run) between the same two points. The slope formula can be used to find the slope of the line between any two points on the line. For example, the slope of the line with the points (−2, −1) and (2, 2) is . • A linear equation that describes a constant rate of change is called direct variation. In a direct variation relationship, the ratio of is a constant k. The variable y is said to vary directly with x. This relationship can be represented	Additional time Additional practice Partner/group work	Homework Classwork and Activities Quizzes Mid-Chapter Check Vocabulary Test Test

				CC.2.2.8.B.2
				Understand the connections between proportional relationships, lines, and linear equations.
				
				CC.2.2.8.B.3
				Analyze and solve linear equations and pairs of simultaneous linear equations.
				
				M08.B-E.2.1.1
				Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. Example: Compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.
				
				M08.B-E.2.1.1a
				Compare two proportional relationships shown in graph form.
				
				M08.B-E.2.1.2
				Use similar right triangles to show and explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane.
				
				M08.B-E.2.1.3
				Derive the equation y = mx for a line
					as = k ory = kx.
					Lessons 4 through 6
					• The slope-intercept form of a linear equation is y = mx + b where m is the slope and b is the y-intercept.
					  • y = 5x − 8; m = 5 and b = −8
					• To graph the equation y = 5x − 8 using the slope and y-intercept:
					  • Step 1 Graph the y-intercept.
					  • Step 2 From −8 on the y-axis, move up 5 units and to the right 1 unit for the slope 5. Place a point.
					  • Step 3 Draw a line passing through both points.
					• To graph functions using the x- and y-intercepts:
					  • Step 1 Find the x-intercept by replacing y with 0 and solving for x.
					  • x − 5y = 10
					  • x − 5(0) = 10
					  • x = 10
					  • Step 2 Find the y-intercept by replacing x with 0 and solving for y.
					  •
					  • x − 5y = 10
					  • 0 − 5y = 10
					  • −5y = 10
					  • y = −2
					  • The x-intercept is 10. The y-		

				through the origin and the equation y = mx + b for a line intercepting the vertical axis at b. M08.B-E.2.1.3a Identify the slope and y-intercept of a line on a graph. M08.B-E.3.1.1 Write and identify 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). M08.B-E.3.1.1a Select an algebraic equation using addition or subtraction to solve a 2-step real-world problem with one variable. M08.B-E.3.1.2 Solve linear equations that have rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms. M08.B-E.3.1.2a Solve a 2-step real-world problem using	intercept is −2. • Step 3 Locate the points (10, 0) and (0, −2) on a coordinate plane. Draw a line passing through both points. Lessons 7 and 8 • A system of equations is a collection of two or more equations with the same variables. A system of equations can have one of the following. • one solution: lines intersect • no solution: parallel lines • infinitely many solutions: same line • A system of equations can also be solved algebraically. For example, to solve • y = 4x + 6 and y = 2x: • y = 4x + 6 Write the first equation. • 2x = 4x + 6 Replace y with 2x in the first equation. • 2x − 4x = 4x − 4x + 6 Subtract 4x from each side. • −2x = 6 Divide each side by −2. • x = −3 Simplify. • y = 2x = 2(−3) = −6 Use the value of −3 to find y. • The solution to the		

				an algebraic equation involving addition or subtraction and one variable. M08.B-E.3.1.3 Interpret solutions to a system of two linear equations in two variables as points of intersection of their graphs because points of intersection satisfy both equations simultaneously. M08.B-E.3.1.4 Solve systems of two linear equations in two variables algebraically and estimate solutions by graphing the equations. Solve simple cases by inspection. Example: 3x + 2y = 5 and 3x + 2y = 6 have no solution because 3x + 2y cannot simultaneously be 5 and 6. M08.B-E.3.1.5 Solve real-world and mathematical problems leading to two linear equations in two variables. Example: Given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair. M08.B-E.3.1.5a Graph a linear equation.	system is (−3, −6).			

Chapter 4 (Week 13-16)	• Functions	1. Translate tables and graphs into linear equations. 2. Represent relations using tables and graphs. 3. Find function values and complete function tables. 4. Represent linear functions using tables and graphs. 5. Compare properties of functions represented in different ways. 6. Find and interpret the rate of change and initial value of a function. 7. Determine whether a function is linear or nonlinear. 8. Graph quadratic functions. 9. Sketch and describe qualitative graphs.	• How can we model relationships between quantities?	A1.1.2.1.1 Write, solve and/or apply a linear equation (including problem situations). A1.1.2.1.2 Use and/or identify an algebraic property to justify any step in an equation solving process (linear equations only). A1.1.2.1.3 Interpret solutions to problems in the context of the problem situation (linear equations only). A1.2.1.1.1 Analyze a set of data for the existence of a pattern and represent the pattern algebraically and/or graphically. A1.2.1.1.2 Determine if a relation is a function given a set of points or a graph. A1.2.1.1.3 Identify the domain or range of a relation (may be presented as ordered pairs, a graph, or a table). A1.2.1.2.1 Create, interpret and/or use the equation, graph or table of a linear function. A1.2.1.2.2 Translate from one representation of a	Lessons 1 and 2 • A relation is a set of ordered pairs that can be represented as a table or a graph. For example, the relation {(−2, 3), (1, 3), (4, 2)} can be shown by graphing each ordered pair on a coordinate plane. • If a table or graph shows a pattern, it is sometimes possible to represent the situation with an algebraic expression or equation. The table below shows the number of pints per quart. Lessons 3 through 6 • A function is a special type of relation in which each member of the domain (input value) is paired with exactly one member in the range (output value). Lessons 7 through 9 • Some functions are linear and others are nonlinear. You can use a table or a graph to make the determination. If a function is linear, its graph is a straight line and a table of values for the function exhibits a constant rate of change. • A nonlinear function is a function whose	Additional time Additional practice Partner/group work	Homework Classwork and Activities Quizzes Mid-Chapter Check Vocabulary Test Test

				linear function to another (graph, table and equation). A1.2.2.1.1 Identify, describe and/or use constant rates of change. A1.2.2.1.2 Apply the concept of linear rate of change (slope) to solve problems. A1.2.2.1.3 Write or identify a linear equation when given the graph of the line 2 points on the line, or the slope and a point on a line, (Linear equation may be in point-slope, standard and/or slope-intercept form). .2.2.1.4 Determine the slope and/or y-intercept represented by a linear equation or graph. CC.2.2.8.C.1 Define, evaluate, and compare functions. CC.2.2.8.C.2 Use concepts of functions to model relationships between quantities. M08.B-F.1.1.1 Determine whether a relation is a function. M08.B-F.1.1.2	graph is not a straight line and a table of values for the function displays a rate of change that is not constant.		

				Compare properties of two functions, each represented in a different way (i.e., algebraically, graphically, numerically in tables, or by verbal descriptions). Example: Given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change. M08.B-F.1.1.3 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. M08.B-F.2.1.1 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.			

				M08.B-F.2.1.1a Determine the missing value in a graph showing a real-world linear relationship. M08.B-F.2.1.2 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 or determine a graph that exhibits the qualitative features of a function that has been described verbally. M08.B-F.2.1.2a Describe the relationship between two variables with a linear relationship displayed in graph form.			
Chapter 5 (Week 17-20)	• Triangles and the Pythagorean Theorem	1. Identify relationships of angles formed by two parallel lines cut by a transversal. 2. Write geometric proofs. 3. Find missing angle measures in triangles. 4. Find the sum of the angle measures of a polygon and the measure of one interior angle of a regular polygon. 5. Use the Pythagorean Theorem.	• How can algebraic concepts be applied to geometry?	CC.2.3.8.A.3 Understand and apply the Pythagorean Theorem to solve problems. G.2.1.2.1 Calculate the distance and/or midpoint between 2 points on a number line or on a coordinate plane. G.2.1.2.2 Relate slope to perpendicularity and/or parallelism (limit to linear algebraic equations).	Lessons 1 and 2 • A relation is a set of ordered pairs that can be represented as a table or a graph. For example, the relation {(−2, 3), (1, 3), (4, 2)} can be shown by graphing each ordered pair on a coordinate plane. • If a table or graph shows a pattern, it is sometimes possible to represent the situation with an algebraic	Additional time Additional practice Partner/group work	Homework Classwork and Activities Quizzes Mid-Chapter Check Vocabulary Test Test

		6. Solve problems using the Pythagorean Theorem. 7. Find the distance between two points on the coordinate plane.		G.2.1.2.3 Use slope, distance and/or midpoint between 2 points on a coordinate plane to establish properties of a 2-dimensional shape. M08.C-G.2.1.1 Apply the converse of the Pythagorean theorem to show a triangle is a right triangle. M08.C-G.2.1.2 Apply the Pythagorean theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions. (Figures provided for problems in three dimensions will be consistent with Eligible Content in grade 8 and below.) M08.C-G.2.1.2a Apply the Pythagorean theorem to determine length/distance in a real-world problem. M08.C-G.2.1.3 Apply the Pythagorean theorem to find the distance between two points in a coordinate system.	expression or equation. The table below shows the number of pints per quart. Lessons 3 through 6 • A function is a special type of relation in which each member of the domain (input value) is paired with exactly one member in the range (output value). Lessons 7 through 9 • Some functions are linear and others are nonlinear. You can use a table or a graph to make the determination. If a function is linear, its graph is a straight line and a table of values for the function exhibits a constant rate of change. • A nonlinear function is a function whose graph is not a straight line and a table of values for the function displays a rate of change that is not constant. • Example of a linear function:		
Chapter 6 (Week 21-24)	• Transformations	1. Graph translations on the coordinate plane. 2. Graph reflections on the coordinate plane. 3. Graph rotations on the coordinate	• How can we best show or describe the change in position of a figure?	CC.2.3.8.A.2 Understand and apply congruence, similarity, and geometric transformations using various tools.	• Students should be able to graph translations on the coordinate plane. • Students should be able to use scale factors to graph	Additional time Additional practice Partner/group work and understanding.	Homework Classwork and Activities Quizzes Mid-Chapter

		plane. 4. Use scale factors to graph dilations.		M08.C-G.1.1.1 Identify and apply properties of rotations, reflections, and translations. Example: Angle measures are preserved in rotations, reflections, and translations. M08.C-G.1.1.1a Identify a rotation, reflection, or translation of a two- or three-dimensional figure. M08.C-G.1.1.2 Given two congruent figures, describe a sequence of transformations that exhibits the congruence between them. M08.C-G.1.1.3 Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates. M08.C-G.1.1.4 Given two similar two-dimensional figures, describe a sequence of transformations that exhibits the similarity between them.	dilations. • Students should be able to graph rotations on the coordinate plane. • Students should be able to graph reflections on the coordinate plane.		Check Vocabulary Test Test
Chapter 7 (Week 25-28)	• Congruence and Similarity	1. Use a series of transformations to create congruent figures. 2. Write congruence statements for congruent figures. 3. Use transformations to	• How can you determine congruence and similarity?	CC.2.3.8.A.2 Understand and apply congruence, similarity, and geometric transformations using various tools. G.1.2.1.1	• Identify and describe figures based on congruence and to determine what transformation the figures may have undergone.	Additional time Additional practice Partner/group work	Homework Classwork and Activities Quizzes Mid-Chapter Check

		create similar figures. 4. Identify similar polygons and find missing measures of similar polygons. 5. Solve problems involving similar triangles. 6. Relate the slope of a line to similar triangles. 7. Find the relationship between perimeters and areas of similar figures.		Identify and/or use properties of triangles .1.2.1.2 Identify and/or use properties of quadrilaterals G.1.2.1.3 Identify and/or use properties of isosceles and equilateral triangles. G.1.2.1.4 Identify and/or use properties of regular polygons .1.2.1.5 Identify and/or use properties of pyramids and prisms. G.2.2.1.1 Use properties of angles formed by intersecting lines to find the measures of missing angles. G.2.2.1.2 Use properties of angles formed when two parallel lines are cut by a transversal to find the measures of missing angles. M08.C-G.1.1.1 Identify and apply properties of rotations, reflections, and translations. Example: Angle measures are preserved in rotations, reflections, and translations. .C-G.1.1.1a Identify a rotation,	• Explain and defend why some figures are congruent and others are not. • Identify and describe corresponding parts of congruent figures. • Apply principles of congruence to determine missing length or angle values in congruent figures. • Identify similar triangles. • Learn the characteristics of similar polygons. • Apply the principles of similarity to indirect measurement. • Understand the concept of slope of similar triangles on a coordinate plane. • Determine area and perimeter of similar figures.		Vocabulary Test Test

				reflection, or translation of a two- or three-dimensional figure. .C-G.1.1.2 Given two congruent figures, describe a sequence of transformations that exhibits the congruence between them. .C-G.1.1.2a Identify figures that are congruent/similar. M08.C-G.1.1.3 Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates. M08.C-G.1.1.4 Given two similar two-dimensional figures, describe a sequence of transformations that exhibits the similarity between them.			

Chapter 8 (Week 29-32)	• Volume and Surface Area	1. Volume of Cylinders
		2. Volume of Cones
		3. Volume of Spheres
		4. Surface Area of Cylinders
		5. Surface Area of Cones
		6. Changes of Dimensions
			• Why are formulas important in math and science?	CC.2.3.8.A.1
				Apply the concepts of volume of cylinders, cones, and spheres to solve real-world and mathematical problems.
				
				.2.3.1.1
				Calculate the surface area of prisms, cylinders, cones, pyramids and/or spheres. Formulas are provided on the reference sheet.
				
				G.2.3.1.2
					Lessons 1 through 3
					• Volume is the measure of space occupied by a three-dimensional region. It is measured in cubic units.
					• Formulas for Volume:
					  • Cylinder
					  • Cone
					  • sphere
					Lessons 4 through 6
					• The lateral area *L.A.* of a prism is the sum of the
						Additional time
						
						Additional practice
						
						Partner/group work
							Homework
							
							Classwork and Activities
							
							Quizzes
							
							Mid-Chapter Check
							
							Vocabulary Test
							
							Test

				Calculate the volume of prisms, cylinders, cones, pyramids and/or spheres. Formulas are provided on the reference sheet. G.2.3.1.3 Find the measurement of a missing length given the surface area or volume. M08.C-G.3.1.1 Apply formulas for the volumes of cones, cylinders, and spheres to solve real-world and mathematical problems. Formulas will be provided. M08.C-G.3.1.1a Complete the formula for volume to solve a real-world or mathematical problem.	areas of the lateral faces. • The surface area *S.A.* is the sum of the lateral area and the area of the base(s). • **Formulas for Latera** • **Figure** • **Model** • cylinder • cone • Similar solids are three-dimensional figures that have the same shape and whose corresponding linear measures are proportional. The scale factor of similar solids is how much larger or smaller one solid is than another. It is written as a ratio in simplest form. • The surface area and volume of a similar solid can be found using ratios. • Ratios of Surface Area *S.A.* of Solid *B* = *S.A.* of Solid *A* × (scale factor)^2 • Ratios of Volume *V* of Solid *B* = *V* of Solid *A* × (scale factor)^3		
Chapter 9 (Week 33-36)	• Scatter Plots and Data Analysis	1. Construct and make conjectures about scatter plots. 2. Draw lines of best fit and use them to make predictions	• Why is learning mathematics important?	A1.2.2.2.1 Draw, find and/or write an equation for a line of best fit for a scatter plot.	Lessons 1 through 3 • A scatter plot is used to explore possible relationships between a data set	Additional time Additional practice Partner/group work	Homework Classwork and Activities Quizzes

		about data. 3. Construct and interpret two-way tables. 4. Find the measures of center and variation. 5. Find and interpret the mean absolute deviation for a set of data. 6. Analyze data distributions.		CC.2.4.8.B.1 Analyze and/or interpret bivariate data displayed in multiple representations. CC.2.4.8.B.2 Understand that patterns of association can be seen in bivariate data utilizing frequencies. M08.D-S.1.1.1 Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative correlation, linear association, and nonlinear association. M08.D-S.1.1.2 For scatter plots that suggest a linear association, identify a line of best fit by judging the closeness of the data points to the line. M08.D-S.1.1.2a Identify a statement that describes the relationship between variables displayed in a scatterplot. .D-S.1.1.3 Use the equation of a linear model to solve problems in the context of bivariate measurement data,	with two variables. • x 1 3 4 5 6 7 8 9 10 • y 19 20 14 18 14 11 13 8 11 • The data in the table can be plotted in the following scatter plot: • CO_Focus_1.JPG • The data may have a positive relationship, a negative relationship, or no relationship. There appears to be a negative relationship between x and y in the graph above. • A line of best fit is a line that is very close to most of the data points. This line is helpful for analyzing the data and making predictions. Scatter plots with no relationships do not have a line of best fit. • A possible line of best fit is shown below. • A two-way table shows data from one sample group as it relates to two different categories. Lessons 4 through 6 • Data with one variable are called univariate data and		Mid-Chapter Check Vocabulary Test Test

				interpreting the slope and intercept. Example: In a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height. M08.D-S.1.2.1 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 associations between the two variables. Example: Given data on whether students have a curfew on school nights and whether they have assigned chores at home, is there evidence that those who have a curfew also tend to have chores? M08.D-S.1.2.1a Answer a question using data from a two-way table.	can be describe by a measure of center, such as mean, median, mode, or range. • Quantitative data are data that can be measured. The data can be divided into four equal parts, called quartiles. • The median of the data values less than the median is called the first quartile or Q1. • The median of the data values greater than the median is called the third quartile or Q3. • The five-number (minimum value, first quartile (Q1), median, third quartile (Q3), maximum value) summary provides a numerical way of characterizing a set of data. • The mean absolute deviation of a set of data is the average distance between each data value and the mean. • The standard deviation of a set of data is a calculated value that shows how the data deviates from the mean of the data.		