HUDSONVILLE MIDDLE SCHOOL COURSE FRAMEWORK

COURSE/SUBJECT | **Eighth Grade Math**

UNIT PACING Names of units and approximate pacing	**LEARNING TARGETS** Students will be able to…	**STANDARD** Which standards (i.e. common core, MMC, etc.) does this address?
Big Ideas Math Chapter 1: Equations *September*	• I can solve linear equations in one variable. • I can give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. • I can 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). • I can solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.	8.EE.7a-b

Big Ideas Math
 	
Chapter 2: Transformations
 	
October
	• I can 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.
	• I can 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.
	• I can describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.
	• I can 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.
		8.G.1a-c
		8.G.2
		8.G.3
		8.G.4

Big Ideas Math Chapter 3: Angles and Triangles *October/November*	• I can 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.	8.G.5

Big Ideas Math Chapter 4: Graphing and Writing Linear Equations *November/December*	• I can graph proportional relationships, interpreting the unit rate as the slope of the graph. • i can compare two different proportional relationships represented in different ways. • I can 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. • I can construct a function to model a linear relationship between two quantities. • I can 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. • I can 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.	8.EE.5 8.EE.6 8.F.4
Big Ideas Math Chapter 5: Systems of Linear Equations *December/January*	• I can solve linear equations in one variable. • I can give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. • I can 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). • I can solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms. • I can analyze and solve pairs of simultaneous linear equations. • I can 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.	8.EE.7a-b 8.EE.8a-c

Big Ideas Math Chapter 6: Functions *January*	• I can 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. • I can compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). • I can 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. • I can construct a function to model a linear relationship between two quantities. • I can 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. • I can 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. • I can describe qualitatively the functional relationship between two quantities by analyzing a graph. • I can sketch a graph that exhibits the qualitative features of a function that has been described verbally.	8.F.1 8.F.2 8.F.3 8.F.4 8.F.5
Big Ideas Math Chapter 7: Real Numbers and the Pythagorean Theorem *February*	• I know that numbers that are not rational are called irrational. • I can 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. • I can 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. • I can 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. • I can evaluate square roots of small perfect squares and cube roots of small perfect cubes. • I know that the square root of $\sqrt{2}$ is irrational. • I can explain a proof of the Pythagorean Theorem and its converse. • I can apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions. • I can apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	8.NS.1 8.NS.2 8.EE.2 8.G.6 8.G.7 8.G.8
Big Ideas Math Chapter 8: Volume and Similar Solids *February/March*	• I know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.	8.G.9

Big Ideas Math Chapter 10: Exponents and Scientific Notation *March/April*	• I know and apply the properties of integer exponents to generate equivalent numerical expressions. • I can 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. • I can perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. • I can use scientific notation and choose units of appropriate size for measurements of very large or very small quantities. • I can interpret scientific notation that has been generated by technology.	8.EE.1 8.EE.3 8.EE.4
Big Ideas Math Chapter 9: Data Analysis and Displays *April/May*	• I can construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. • I can describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association. • I 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. • I can use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. • I can understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. • I can construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. • I can use relative frequencies calculated for rows or columns to describe possible association between the two variables.	8.SP.1 8.SP.2 8.SP.3 8.SP.4