DETERMINING OUR ESSENTIALS - 8th grade MATH									
Prioritize	**Standard**			**Student Learning Goal** *written in student language*	**Vocabulary** *needed to meet that standard*	**Formative Assesment**	**Summative Assessment**	**Criteria for determining mastery**	REVEAL UNIT
	The Number System (NS)								
	8.NS.A Understand that there are irrational numbers, and approximate them using rational numbers.	**8.NS.A.1**	Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion. Know that numbers whose decimal expansions do not terminate in zeros or in a repeating sequence of fixed digits are called irrational.	I can explain the difference between Rational and Irrational Number. I can sort numbers into categories of Rational and Irrational. I can convert between repeating/terminating decimals and fractions.	Rational, Irrational, Terminating Decimal, Non-Terminating/Non-Repeating Decimal, Repeating Decimal, Real Numbers, Integers, Whole Number, Natural Number	Review Sessions in class and before school (worksheets, slates)			Unit 2
		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 their values.						Unit 2
		8.NS.A.3	Understand that given any two distinct rational numbers, a < b, there exist a rational number c and an irrational number d such that a < c < b and a < d < b. Given any two distinct irrational numbers, a < b, there exist a rational number c and an irrational number d such that a < c < b and a < d < b.						
	Expressions and Equations (EE)								
	8.EE.A Work with radicals and integer exponents.	**8.EE.A.1**	Understand and apply the properties of integer exponents to generate equivalent numerical expressions.						Unit 1

		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. Know that is irrational. a. Evaluate square roots of perfect squares less than or equal to 225. b. Evaluate cube roots of perfect cubes less than or equal to 1000.		Square roots, cube roots, perfect squares, perfect cubes				Unit 2 Unit 7
		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 express how many times larger or smaller one is than the other.						Unit 1
		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.						Unit 1
	8.EE.B Understand the connections between proportional relationships, lines, and linear equations.	**8.EE.B.5**	Graph proportional relationships interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.		Proportions, Unit Rate, Slope				Unit 4
		8.EE.B.6	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 (0, b).	I can sse 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. I can 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 (0, b).					Unit 4

	8.EE.C Analyze and solve linear equations, inequalities, and pairs of simultaneous linear equations.	**8.EE.C.7**	Fluently solve linear equations and inequalities in one variable. **a. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solution.** 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). **b. Solve linear equations and inequalities with rational number coefficients, including solutions that require expanding expressions using the distributive property and collecting like terms.**	I can give examples of linear equations in one variable with one solution, infinitely many solutions, or no solution.simpler forms, until an equivalent equation of the form x = a, a = a, or a = b results (where a and b are different numbers).	Linear equations, inequalities, solutions, inverse operations, properties of equality, properties of inequality, distributive property, factors, terms, like terms, coefficients, constants				Unit 3

		8.EE.C.8	Analyze and solve pairs of simultaneous linear equations. a. 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. b. Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations including cases of no solution and infinite number of solutions. Solve simple cases by inspection. c. Solve mathematical problems and problems in real-world context leading to two linear equations in two variables.						Unit 6
	Functions (F)								
	8.F.A Define, evaluate, and compare functions.	**8.F.A.1**	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. (Function notation is not required in Grade 8.)						Unit 5
		8.F.A.2	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For 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.	I can compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).		Unit 4 Quiz, Linear Vs. Non-Linear matching SB activity.			Unit 5

		8.F.A.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. For example, the function A = s2 giving the area of a square as a function of its side length in not linear because its graph contains the points (1,1), (2,4), and (3,9) which are not on a straight line.						Unit 5 unit 6
	8.F.B Use functions to model relationships between quantities.	**8.F.B.4**	Given a description of a situation, generate 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 a graph. Track how the values of the two quantities change together. Interpret the rate of change and initial value of a linear function in terms of the situation it models, its graph, or its table of values.	Given a situation, I can generate 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 a graph, track how the values of the two quantities change together, and nterpret the rate of change and initial value of a linear function in terms of the situation it models, its graph, or its table of values.					unit 4 Unit 5 unit 11
		8.F.B.5	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.						Unit 5
	Geometry (G)								
	8.G.A Understand congruence and similarity.	**8.G.A.1**	Verify experimentally the properties of rotations, reflections, and translations. Properties include: lines are taken to lines, line segments are taken to line segments of the same length, angles are taken to angles of the same measure, parallel lines are taken to parallel lines.						Unit 8 Unit 9

		8.G.A.2	Understand that a two-dimensional figure is congruent to another if one can be obtained from the other by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that demonstrates congruence.	I understand that a two-dimensional figure is congruent to another if one can be obtained from the other by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that demonstrates congruence.					Unit 9
		8.G.A.3	Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.	I can describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.		Unit 1 IM			Unit 8
		8.G.A.4	Understand that a two-dimensional figure is similar to another if, and only if, one can be obtained from the other by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that demonstrates similarity.	I understand that a two-dimensional figure is similar to another if, and only if, one can be obtained from the other by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that demonstrates similarity.					Unit 9
		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.						Unit 9 Unit 11
	8.G.B Understand and apply the Pythagorean Theorem.	**8.G.B.6**	Understand the Pythagorean Theorem and its converse.						Unit 7
		8.G.B.7	Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world context and mathematical problems in two and three dimensions.	I can apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world context and mathematical problems in two and three dimensions.					Unit 7
		8.G.B.8	Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.						Unit 7

	8.G.C Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.	**8.G.C.9**	Understand and use formulas for volumes of cones, cylinders and spheres and use them to solve real-world context and mathematical problems.						Unit 10
	Statistics and Probability (SP)								
	8.SP.A Investigate patterns of association in bivariate data.	**8.SP.A.1**	Construct and interpret scatter plots for bivariate measurement data to investigate and describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.						Unit 11
		8.SP.A.2	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 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.					Unit 11
		8.SP.A.3	Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.						unit 4 Unit 11
		8.SP.A.4	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.						Unit 11

	8.SP.B Investigate chance processes and develop, use, and evaluate probability models.	**8.SP.B.5**	Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. a. Understand that the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs. b. Represent sample spaces for compound events using organized lists, tables, tree diagrams and other methods. Identify the outcomes in the sample space which compose the event. c. Design and use a simulation to generate frequencies for compound events.						