Algebra

130 Days	Unit 0: ____ Days	Unit 1: 15 days		Unit 2: 10 days	Unit 3: 15 days	Unit 4: 30 days			Unit 5: 5 days	Unit 6: 25 days			Unit 7: 5 days	Unit 8: 15 days		Unit 9: 10 days
Unit Name	**8th Grade Math**	**Number and Quantity**		**Seeing Structure in Expressions**	**Creating Equations**	**Reasoning with Equations and Inequalities**			**Arithmetic with Polynomials and Rational Expressions**	**Interpreting Functions**			**Building Functions**	**Linear, Quadratic and Exponential Models**		**Data and Statistical Analysis**
Domain	N/A	Extend and use properties of rational exponents.	Use units to solve problems.	Interpret and use structure.	Create equations that describe linear, quadratic and exponential relationships.	Understand solving equations as a process, and solve equations and inequalities in one variable.	Solve systems of equations.	Represent and solve linear and exponential equations and inequalities graphically.	Perform operations on polynomials.	Understand the concept of a function and use function notation	Interpret linear, quadratic and exponential functions in terms of the context.	Analyze linear, quadratic and exponential functions using different representations.	Build new functions from existing functions (limited to linear, quadratic and exponential).	Construct and compare linear, quadratic and exponential models and solve problems.	Use arithmetic and geometric sequences.	Summarize, represent and interpret data.
Duration		5	10	10	15	15	10	5	5	5	10	10	5	5	10	10
I Can Statements	I Can Statements	I Can Statements		I Can Statements	I Can Statements	I Can Statements			I Can Statements	I Can Statements			I Can Statements	I Can Statements		I Can Statements
		Alg.NQ.1 I can explain how the meaning of rational exponents extends from the properties of integer exponents.	**Alg.NQ.3 I can use units of measure as a way to understand and solve problems involving quantities.**	**Alg.SSE.1 I can interpret the contextual meaning of individual terms or factors from a given problem that utilizes formulas or expressions.**	**Alg.CED.1 I can create equations and inequalities in one variable and use them to model and/or solve problems.**	Alg.REI.1 I can explain how each step taken when solving an equation/inequality creates an equivalent equation/inequality with the same solution(s).	Alg.REI.3 I can solve a system of linear equations algebraically and/or graphically.	Alg.REI.6 I can explain that the graph of an equation in two variables is the set of all its solutions plotted in the Cartesian coordinate plane.	**Alg.APR.1 I can add, subtract and multiply polynomials.**	Alg.IF.1a I can represent a function using function notation.	**Alg.IF.3 I can interpret key characteristics of a function from a table, graph, or description.**	**Alg.IF.7 I can graph functions and identify and interpret key features of the graph**	**Alg.BF.1 I can analyze the effect of translations and scale changes on functions.**	**Alg.LQE.3 I can construct linear, quadratic and exponential equations given graphs, verbal descriptions or tables.**	**Alg.LQE.4 I can write arithmetic and geometric sequences in recursive and explicit forms, and use them to model situations and translate between the two forms.**	**Alg.DS.1 I can analyze and interpret graphical displays of data.**
		Alg.NQ.2 I can rewrite expressions involving radicals and rational exponents using the properties of exponents.	Alg.NQ.3a I can identify, label and use appropriate units of measure within a problem.	Alg.SSE.2 I can analyze the structure of polynomials to create equivalent expressions or equations.	Alg.CED.2 I can create and graph linear, quadratic and exponential equations in two variables	**Alg.REI.2 I can solve problems involving quadratic equations.**	Alg.REI.4 I can solve a system consisting of a linear equation and a quadratic equation algebraically and/or graphically.	Alg.REI.7 I can graph the solution to a linear inequality in two variables.	**Alg.APR.2 I can divide polynomials by monomials.**	**Alg.IF.2 I can use function notation to evaluate functions for inputs in their domains.**	Alg.IF.4 I can relate the domain and range of a function to its graph.	Alg.IF.8 I can translate between different but equivalent forms of a function.			Alg.LQE.5 I can recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the set of integers.	Alg.DS.2 I can compare center and spread of two or more different data sets.
			Alg.NQ. 3b I can convert units and rates.	**Alg.SSE.3a I can find the zeros of a quadratic function by rewriting it in factored form.**	Alg.CED.3 I can represent constraints by equations/inequalities and systems of equations/inequalities.	**Alg.REI.2a I can use the method of completing the square to create an equivalent quadratic equation.**	**Alg.REI.5 I can justify that the technique of linear combination produces an equivalent system of equations.**	Alg.REI.8 I can solve problems involving a system of linear inequalities.			Alg.IF.5 I can determine the average rate of change of a function and interpret the meaning.	Alg.IF.9 I can compare the properties of two functions given different representations.			Alg.LQE.6 I can find the terms of sequences given an explicit or recursive formula.	Alg.DS.3 I can interpret differences in shape, center and spreads in the context of the data sets, accounting for possible effects of outliers.
			Alg.NQ.3d I can choose and interpret the scale and the origin in graphs and data displays.	**Alg.SSE.3b I can find the maximum or minimum value of a quadratic function by completing the square.**	Alg.CED.4 I can solve literal equations and formulas for a specified variable that highlights a quantity of interest.	**Alg.REI.2b I can derive the quadratic formula.**					Alg.IF.6 I can interpret the parameters of a linear or exponential function in terms of the context.					Alg.DS.4 I can summarize data in two-way frequency tables.
			Alg.NQ.4 I can define and use appropriate quantities for representing a given context or problem.			**Alg.REI.2c I can analyze different methods of solving quadratic equations.**										Alg.DS.4a I can interpret relative frequencies in the context of the data.
			Alg.NQ.5 I can choose a level of accuracy appropriate to limitations on measurement when reporting quantities.													Alg.DS.4b I can recognize possible associations and trends in the data.
MO Learning Standards	MO Learning Standards	MO Learning Standards		MO Learning Standards	MO Learning Standards	MO Learning Standards			MO Learning Standards	MO Learning Standards			MO Learning Standards	MO Learning Standards		MO Learning Standards
		Alg.NQ.1 Explain how the meaning of rational exponents extends from the properties of integer exponents.	Use units of measure as a way to understand and solve problems involving quantities. a. Identify, label and use appropriate units of measure within a problem. b. Convert units and rates. c. Use units within problems. d. Choose and interpret the scale and the origin in graphs and data displays.	**Interpret the contextual meaning of individual terms or factors from a given problem that utilizes formulas or expressions.**	**Create equations and inequalities in one variable and use them to model and/or solve problems.**	Explain how each step taken when solving an equation or inequality in one variable creates an equivalent equation or inequality that has the same solution(s) as the original.	Solve a system of linear equations algebraically and/or graphically.	Explain that the graph of an equation in two variables is the set of all its solutions plotted in the Cartesian coordinate plane.	Add, subtract and multiply polynomials, and understand that polynomials follow the same general rules of arithmetic and are closed under these operations.	Understand that a function from one set (domain) to another set (range) assigns to each element of the domain exactly one element of the range. a. Represent a function using function notation. b. Understand that the graph of a function labeled f is the set of all ordered pairs (x, y) that satisfy the equation $y=f(x)$.	Using tables, graphs and verbal descriptions, interpret key characteristics of a function that models the relationship between two quantities.	Graph functions expressed symbolically and identify and interpret key features of the graph	Analyze the effect of translations and scale changes on functions.	Construct linear, quadratic and exponential equations given graphs, verbal descriptions or tables.	Write arithmetic and geometric sequences in recursive and explicit forms, and use them to model situations and translate between the two forms.	Analyze and interpret graphical displays of data.
		Alg.NQ.2 Rewrite expressions involving radicals and rational exponents using the properties of exponents. Limit to rational exponents with a numerator of 1.	Define and use appropriate quantities for representing a given context or problem.	Analyze the structure of polynomials to create equivalent expressions or equations.	Create and graph linear, quadratic and exponential equations in two variables	**Solve problems involving quadratic equations. a. Use the method of completing the square to create an equivalent quadratic equation. b. Derive the quadratic formula. c. Analyze different methods of solving quadratic equations.**	Solve a system consisting of a linear equation and a quadratic equation algebraically and/or graphically.	Graph the solution to a linear inequality in two variables.	Divide polynomials by monomials.	**Use function notation to evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.**	Relate the domain and range of a function to its graph and, where applicable, to the quantitative relationship it describes	Translate between different but equivalent forms of a function to reveal and explain properties of the function and interpret these in terms of a context.			Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the set of integers.	Use statistics appropriate to the shape of the data distribution to compare center and spread of two or more different data sets.

			Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.	**Choose and produce equivalent forms of a quadratic expression or equations to reveal and explain properties. a. Find the zeros of a quadratic function by rewriting it in factored form. b. Find the maximum or minimum value of a quadratic function by completing the square.**	Represent constraints by equations or inequalities and by systems of equations or inequalities, and interpret the data points as a solution or non-solution in a modeling context.		**Justify that the technique of linear combination produces an equivalent system of equations.**	Solve problems involving a system of linear inequalities.			Determine the average rate of change of a function over a specified interval and interpret the meaning.	Compare the properties of two functions given different representations.			Find the terms of sequences given an explicit or recursive formula.	Interpret differences in shape, center and spreads in the context of the data sets, accounting for possible effects of outliers.
					Solve literal equations and formulas for a specified variable that highlights a quantity of interest.						Interpret the parameters of a linear or exponential function in terms of the context.					Summarize data in two-way frequency tables. a. Interpret relative frequencies in the context of the data. b. Recognize possible associations and trends in the data.
																Construct a scatter plot of bivariate quantitative data describing how the variables are related; determine and use a function that models the relationship. a. Construct a linear function to model bivariate data represented on a scatter plot that minimizes residuals. b. Construct an exponential function to model bivariate data represented on a scatter plot that minimizes residuals.
																Interpret the slope (rate of change) and the y-intercept (constant term) of a linear model in the context of the data.
																Determine and interpret the correlation coefficient for a linear association
																Distinguish between correlation and causation.