



Algebra I Scope & Sequence

Grading Period	Unit Title	Learning Targets
Throughout the School Year		<ul style="list-style-type: none"> *Apply mathematics to problems in everyday life *Use a problem-solving model that incorporates analyzing information, formulating a plan, determining a solution, justifying the solution and evaluating the reasonableness of the solution *Select tools to solve problems *Communicate mathematical ideas, reasoning and their implications using multiple representations *Create and use representations to organize, record and communicate mathematical ideas *Analyze mathematical relationships to connect and communicate mathematical ideas *Display, explain and justify mathematical ideas and arguments
First Grading Period	Foundations for Algebra - Expressions, Equations and Functions	<ul style="list-style-type: none"> *Write algebraic expressions from verbal situations *Simplify numeric and algebraic expressions using properties of Algebra and the order of operations. *Represent relations; Identify and interpret functional relationships *Find domain and range from discrete and continuous functions, and from scenarios.
	Equations	<ul style="list-style-type: none"> *Write equations that describe relationships, *Solving one-step, two-step, and multi-step equations including equations with variables on both sides, literal equations (solving for a variable,) proportional equations *Use formulas and equations to solve real world problems *Solve absolute value equations

	Linear Functions Part 1	<ul style="list-style-type: none"> *Identify linear equations, intercepts and zeros *Graph linear equations *Relate slope as a rate of change and determine the rate of change from tables, graphs, data points and verbal situations *Recognize direct variation as a proportional linear relationship, write direct variation equations, find the constant of variation *Recognize arithmetic sequences and relate them to linear functions *Write explicit and recursive formulas that describe arithmetic sequences *Write linear equations to represent proportional and nonproportional relationships
Second Grading Period	Equation of Linear Functions	<ul style="list-style-type: none"> *Write and graph equations in slope-intercept form, point-slope form, and standard form including vertical and horizontal lines *Classify the correlation as positive, negative or no correlation from multiple representation *Write equation of the regression line, and then find the correlation coefficient *Write equation of inverse functions *Write equation of perpendicular bisectors
	Linear Inequalities	<ul style="list-style-type: none"> *Solve multi-step problems *Represent solutions to inequalities and compound inequalities using a number line and set builder notation
	Systems of Linear Equations and Inequalities	<ul style="list-style-type: none"> *Determine whether the given system is consistent or inconsistent, and independent or dependent *Graph the system of equations, and determine the number of solutions it has *Write and solve the system of equations using substitution, and elimination *Describe the meaning of the solution in the context of the situation. *Graph the solution set of system of two linear inequalities in two variables. *Solve systems of equations using matrices. *Write and graph the system of inequalities from slope-intercept form and standard form
Third Grading Period	Exponents and Exponential Functions	<ul style="list-style-type: none"> *Develop the laws of exponents using the definition of a power *Simplify numeric and algebraic expressions using the laws of exponents including negative, zero and rational exponents *Multiply and divide monomials *Evaluate and rewrite expressions involving rational exponents *Solve equations involving expressions using rational exponents

		<ul style="list-style-type: none"> *Solve real world problems dealing with multiplying and dividing numbers given scientific notation (can integrate into laws of exponents) *Write and graph exponential functions in the form $y = ab^x$ to represent mathematical and real world problems including growth and decay. *Determine the domain and range of exponential functions and represent the sets using inequalities. *Interpret the meaning of the values of a and b from the function $y = ab^x$ from mathematical and real world situations *Determine the asymptote of exponential functions. *Solve real world problems involving exponential growth and decay. *Determine if a given exponential function represents growth or decay given an equation, table of values, a verbal situation or graph. *Graph exponential functions using transformations of the parent function. *Understand the effects of changing a and b in the function $y = ab^x$ on the table of values and graph of the exponential function. *Understand the effects of changing the parameter h, and k in the function $y = ab^{(x-h)} + k$
	Quadratic Expressions and Equations.	<ul style="list-style-type: none"> *Add and subtract polynomials and identify by degree *Multiply a polynomial by a monomial, binomial, or another polynomial *Write a polynomial to represent the perimeter, area, and area of the shaded region, from different geometric figures, including a difference of two squares, and perfect square trinomials *Factor polynomials completely by gcf, grouping, difference of squares, perfect square, and by trial and error *Solve quadratic equations by factoring, and by applying the square root property including word problems *Solving quadratic equations when variables are replaced by binomial expressions.
Fourth Grading Period	Quadratic Functions and Equations	<ul style="list-style-type: none"> *Find and graph quadratic functions using characteristics of parabola *Find maximum height and zeros of quadratic real word problem *Find domain and range of a quadratic function using inequalities *Solve quadratic equations by graphing. *Transform quadratic functions : $af(x)$, $f(x)+d$, $f(x-c)$, $f(bx)$ for specific values of a,b,c, and d *Solve quadratic equations by completing the square *Find the discriminant, and number of real solutions *Solve and write quadratic equations

	<p>Square Root Functions and Expressions</p>	<ul style="list-style-type: none"> *Simplify square root expressions *Rationalize square root expressions where there exists a radical on the denominator *include conjugates *Graph square root functions and determine domain and range of the given function *Determine inverse of square root function. *Solve and graph equations involving radicals to find real and extraneous solutions
	<p>Inverse Variation and Rational Functions</p>	<ul style="list-style-type: none"> *Simplify rational expressions by adding/subtracting/multiplying and dividing *Determine the quotient of a polynomial of degree one and degree two when divided by a polynomial of degree one or two where the degree of the divisor does not exceed the degree of the dividend *Find the value of k and then write a function to represent inverse variation in the form $y = k/x$ *Solve literal and real world problems involving inverse variation *Graph the general form of $y = 1/x$, list all important characteristics including horizontal and vertical asymptotes *Determine the domain and range of rational functions from graphs and equations *Graph rational functions in the form $y = 1/(x-h) + k$ by transforming the parent function $y = 1/x$ *Solve rational equations to find solutions and determine if the solution is extraneous or not