

Jemez Valley Public Schools
ALGEBRA 2 • CONTENT MAP

Quadrant I	Quadrant II	Quadrant III	Quadrant IV
Strand 1: Algebra, Functions, and Graphs			
Standard: Students will understand algebraic concepts and applications.			
<p>Classify and use equivalent representations of natural, whole, integer, rational, irrational numbers and complex numbers, and choose which type of number is appropriate in a given context.</p> <p>Determine the relative position on the number line and the relative magnitude of integers, decimals, rationals, irrationals, and numbers in scientific notation.</p> <p>Explain that the distance between two numbers on the number line is the absolute value of their difference.</p> <p>Explain and use equivalent representations for algebraic expressions (e.g., simplify using the distributive property).</p> <p>Use the special symbols of mathematics correctly and precisely.</p> <p>Simplify numerical expressions using the order of operations, including integer exponents.</p> <p>Evaluate polynomial, rational, radical, and absolute value expressions for one or more variables.</p> <p>Solve formulas for specified variables.</p> <p>Solve linear equations and inequalities in one variable including those involving the absolute value of a linear function.</p> <p>Translate verbal statements into algebraic expressions or equations.</p> <p>Distinguish between the concept of a relation and a function.</p> <p>Determine whether a relation defined by a graph, a set of ordered pairs, a table of values, an equation, or a rule is a function.</p>	<p>Translate verbal statements into algebraic expressions or equations.</p> <p>Solve systems of linear equations in two variables algebraically and graphically</p> <p>Solve applications involving systems of two equations in two variables.</p> <p>Graph a linear inequality in two variables.</p> <p>Model real-world phenomena using linear equations and linear inequalities interpret resulting solutions, and use estimation to detect errors.</p> <p>Solve three-by-three linear systems.</p> <p>Identify and describe symmetries of graphs.</p> <p>Graph a quadratic function and understand the relationship between its real zeros and the x-intercepts of its graph.</p> <p>Model real-world phenomena using quadratic equations, interpret resulting solutions, and use estimation to detect errors.</p> <p>Analyze the effects of parameter changes on these functions: quadratic (e.g., $f(x-a)$, changes in coefficients and constants), exponential (e.g., changes caused by changing the base or the exponent), and polynomial (e.g., changes caused by positive or negative values of $A \pm an$, or in a constant $a0$).</p> <p>Factor polynomials of various types (e.g., difference of squares, perfect square trinomials, sum and difference of cubes).</p> <p>Solve quadratic equations in one variable.</p>	<p>Compare and order polynomial expressions by degree.</p> <p>Analyze the general shape of polynomial functions and equations for different degree polynomials (e.g., positive and negative general shapes for third-, fourth-, and fifth-degree polynomials).</p> <p>Identify the relationship between the degree of a polynomial function and the maximum number of turning points in its graph, and the relationship between the leading term and the behavior of the function for large values of x.</p> <p>Factor polynomials of various types (e.g., difference of squares, perfect square trinomials, sum and difference of cubes).</p> <p>Use the four basic operations (+, -, $\sqrt{\quad}$, $\frac{\quad}{\quad}$) with linear, polynomial, and rational expressions in contextual situations.</p> <p>Factor polynomials of degree higher than two using the fundamental theorem of algebra (i.e., an nth degree polynomial has at most n distinct linear factors), integral and rational zero theorems, and factor and remainder theorems.</p> <p>Describe Pascal's triangle and use it to expand binomial expressions that are raised to positive integer powers.</p> <p>Simplify numerical expressions using the order of operations, including integer exponents.</p> <p>Classify and use equivalent representations of natural, whole, integer, rational, irrational numbers and complex numbers, and choose which type of number is appropriate in a given context.</p> <p>Explain and use equivalent representations for algebraic expressions (e.g., simplify using the distributive property).</p>	<p>Model real-world phenomena using exponential equations, interpret resulting solutions, and use estimation to detect errors.</p> <p>Graph exponential functions and identify their key characteristics as related to contextual situations.</p> <p>Apply exponential functions and common and natural logarithms to understand real-life situations (e.g., half-life, amortization, logistic growth).</p> <p>Analyze the effects of parameter changes on these functions: quadratic (e.g., $f(x-a)$, changes in coefficients and constants), exponential (e.g., changes caused by changing the base or the exponent), and polynomial (e.g., changes caused by positive or negative values of $A \pm an$, or in a constant $a0$).</p> <p>Find and use inverse functions involving ordered pairs, graphs, and explicit statements of a function rule.</p> <p>Prove basic properties of a logarithm using properties of its inverse. Apply logarithms and exponents to solve equations. Simplify rational expressions by factoring and reducing to lowest terms.</p> <p>Use the four basic operations (+, -, $\sqrt{\quad}$, $\frac{\quad}{\quad}$) with linear, polynomial, and rational expressions in contextual situations.</p> <p>Identify and describe symmetries of graphs.</p> <p>Graph, interpret, and find the equations for conic sections with axes parallel to the coordinate axes, and apply them to contextual situations.</p> <p>Analyze the effects of parameter changes on these functions: quadratic (e.g., $f(x-a)$, changes in coefficients and</p>

<p>Translate among tabular, symbolic, and graphical representations of functions and relations.</p> <p>Explain and use function notation in both abstract and contextual situations and evaluate a function at a specific point in its domain.</p> <p>Determine the domain and range of linear and quadratic functions expressed symbolically and graphically, and of functions defined by a finite set of ordered pairs in mathematical and contextual situations.</p> <p>Construct a linear function that represents a given graph.</p> <p>Graph a linear equation and demonstrate that it has a constant rate of change.</p> <p>Understand the relationship between the coefficients of a linear equation and the slope and x- and y- intercepts of its graphs.</p> <p>Write an equation of the line that passes through two given points.</p> <p>Verify that a point lies on a line, given an equation of the line, and be able to derive linear equations given a point and a slope.</p> <p>Determine whether the graphs of two given linear equations are parallel, perpendicular, coincide or none of these.</p> <p>Model real-world phenomena using linear equations and linear inequalities interpret resulting solutions, and use estimation to detect errors.</p> <p>Verify that a point lies on a line, given an equation of the line, and be able to derive linear equations given a point and a slope.</p> <p>Evaluate estimated rate of change in a contextual situations.</p> <p>Read information and draw conclusions</p>	<p>Explain the meaning of the real and complex roots of quadratic functions in contextual situations.</p> <p>Use the quadratic formula and factoring techniques to determine whether the graph of a quadratic function will intersect the x-axis in zero, one, or two points (include quadratic functions that represent real phenomena).</p>	<p>Describe the properties of rational exponents and apply these properties to simplify algebraic expressions.</p> <p>Solve radical equations involving one radical.</p> <p>Find and use inverse functions involving ordered pairs, graphs, and explicit statements of a function rule.</p> <p>Identify and describe symmetries of graphs.</p> <p>Analyze the effects of parameter changes on these functions: quadratic (e.g., $f(x-a)$, changes in coefficients and constants), exponential (e.g., changes caused by changing the base or the exponent), and polynomial (e.g., changes caused by positive or negative values of $\pm an$, or in a constant a_0).</p>	<p>constants), exponential (e.g., changes caused by changing the base or the exponent), and polynomial (e.g., changes caused by positive or negative values of $\pm an$, or in a constant a_0).</p>
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<p>from graphs, and identify properties of a graph that provide useful information about the original problem.</p> <p>Solve and graph linear and quadratic equations and inequalities involving absolute value.</p> <p>Analyze the effects of parameter changes on these functions: quadratic (e.g., $f(x-a)$, changes in coefficients and constants), exponential (e.g., changes caused by changing the base or the exponent), and polynomial (e.g., changes caused by positive or negative values of $\hat{A} \pm an$, or in a constant $a0$).</p>			
Quadrant I	Quadrant II	Quadrant III	Quadrant IV
Strand 2: Geometry and Trigonometry			
Standard: Students will understand geometric concepts and applications			
Quadrant I	Quadrant II	Quadrant III	Quadrant IV
Strand 3: Data Analysis and Probability			
Standard: Students will understand how to formulate questions, analyze data, and determine probabilities.			
<p>Describe the shape of a scatterplot.</p> <p>Use linear patterns in data to make predictions.</p> <p>Use technological tools to find the line of best fit.</p> <p>Describe the relationship between two variables and determine its strength with and without technological tools.</p>			