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September	**Algebraic Language**	A.SSE.1 Interpret expressions that represent a quantity in terms of its context. a. Interpret parts of an expression, such as terms, factors, and coefficients. A.SSE.4 Derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems. For example, calculate mortgage payments. A.REI.3 Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters. Graph the solution set of an inequality on a number line.	L1.2.1 Use mathematical symbols to represent quantitative relationships and situations. L2.2.1 Find the nth term in arithmetic, geometric, or other simple sequences. A1.2.3 Solve linear and quadratic equations and inequalities including systems of up to three linear equations with three unknowns. Justify steps in the solution, and apply the quadratic formula appropriately.	Writing algebraic expressions, Use formulas including explicit and recursive for sequences, Solving equations and inequalities and justifications	All lessons will be assessed through daily lesson quizzes, skill checks, homework assignments, and formal quizzes and tests.	Recursive, Explicit, Sequence

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September - October	**Variations and Graphs**	F.IF.4 For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity. A.CED.1 Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions. F.IF.7 Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases N.Q.2 Define appropriate quantities for the purpose of descriptive modeling.	A2.1.7 Identify and interpret the key features of a function from its graph or its formula(e). A3.1.1 Write the symbolic forms of linear functions (standard, point-slope, and slope-intercept) given appropriate information, and convert between forms. A3.1.3 Relate the coefficients in a linear function to the slope and x- and y-intercepts of its graph. L1.1.5 Justify numerical relationships. A2.2.2 Apply given transformations to basic functions and represent symbolically. A2.3.1 Identify a function as a member of a family of functions based on its symbolic or graphical representation; recognize that different families of functions have different asymptotic behavior. A1.1.4 Add, subtract, multiply, and simplify polynomials and rational expressions. A3.1.2 Graph lines (including those of the form x = h and y = k) given appropriate information. A2.3.3 Write the general symbolic forms that characterize each family of functions. A2.4.1 Identify the family of function best suited for modeling a given real-world situation.	***Variations – direct, inverse, combined and joint,*** Graphing data of the form y=kx, y=kx2, y=k/x, y=k/x2, Modeling data with equations, work with data,***Translations and scale changes with respect to graphs. Identify even/odd functions,*** Characteristics of functions, Operations of polynomials, graphing functions and showing key points, equations for family of functions, real world modeling, ***making sense of real world applications***	All lessons will be assessed through daily lesson quizzes, skill checks, homework assignments, and formal quizzes and tests.	Direct/Inverse, Combined/Joint, Hyperbola/Parabola, Inverse Square, Linear

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		F.BF.3 Identify the effect on the graph of replacing f(x) by f(x) + k, kf(x), f(kx), and f(x + k) for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them. A.APR.1 Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials. A.CED.3 Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.	A2.4.2 Adapt the general symbolic form of a function to one that fits the specification of a given situation by using the information to replace arbitrary constants with numbers. A2.4.3 Using the adapted general symbolic form, draw reasonable conclusions about the situation being modeled.			

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October	**Linear Relations**	A.REI.3 Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters. Graph the solutionset of an inequality on a number line. A.SSE.3 Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. A.CED.2 2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. F.IF.5 Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function.	A1.2.3 Solve linear and quadratic equations and inequalities including systems of up to three linear equations with three unknowns. Justify steps in the solution, and apply the quadratic formula appropriately. A1.1.1 Give a verbal description of an expression that is presented in symbolic form, write an algebraic expression from a verbal description, and evaluate expressions given values of the variables. A1.2.1 Write equations and inequalities with one or two variables to represent mathematical or applied situations, and solve. A2.1.4 Recognize that functions may be defined by different expressions over different intervals of their domains; such functions are piecewise-defined. A2.3.2 Describe the tabular pattern associated with functions having constant rate of change (linear); or variable rates of change.	Types of graphs and algebraic representation, write an equation from data, arithmetic sequences, linear inequalities, charateristics of both linear and quadratic graphs, ***rate of change of exponential functions.***	All lessons will be assessed through daily lesson quizzes, skill checks, homework assignments, and formal quizzes and tests.	Slope, Constant Rate of Change, Point Slope Formula, Index Number

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		F.LE.1 Distinguish between situations that can be modeled with linear functions and with exponential functions. a. Understand that linear functions grow by equal differences over equal intervals; exponential functions grow by equal factors over equal intervals. b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. c. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another. F.IF.7 Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. a. Graph linear and quadratic functions and show intercepts, maxima, and minima.	A3.1.2 Graph lines (including those of the form x = h and y = k) given appropriate information.			

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November	**Matrices**	G.CO.4 Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments. G.CO.5 Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another. G.CO.2 Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch).	***G3.1.1 Define reflection, rotation, translation, and glide reflection and find the image of a figure under a given isometry.*** ***G3.1.2 Given two figures that are images of each other under an isometry, find the isometry and describe it completely.*** ***G .1.3 Find the image of a figure under the composition of two or more isometries and determine whether the resulting figure is a reflection, rotation, translation, or glide reflection image of the original figure.***	***Introduction of matrices, application of matrices, operations of matrices***	All lessons will be assessed through daily lesson quizzes, skill checks, homework assignments, and formal quizzes and tests.	Matrix, Matrix Inverse, Matrix Equation

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November - December	**Systems**	A.CED.2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. A.APR.3 Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function. A.REI.6 Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables. A.CED.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law V = IR to highlight resistance R. A.REI.1 Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method. F.LE.2 Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table). A.APR.1 Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.	A1.2.1 Write equations and inequalities with one or two variables to represent mathematical or applied situations, and solve. A1.2.2 Associate a given equation with a function whose zeros are the solutions of the equation. A1.2.3 Solve linear and quadratic equations and inequalities including systems of up to three linear equations with three unknowns. Justify steps in the solution, and apply the quadratic formula appropriately. A1.2.8 Solve an equation involving several variables (with numerical or letter coefficients) for a designated variable. Justify steps in the solution. A3.1.4 Find an equation of the line parallel or perpendicular to given line, through a given point; understand and use the facts that non-vertical parallel lines have equal slopes, and that non-vertical perpendicular lines have slopes that multiply to give -1. L1.2.1 Use mathematical symbols to represent quantitative relationships and situations. A2.2.1 Combine functions by addition, subtraction, multiplication, and division.	Methods for solving systems of Equations, determing feasible regions and vertices, linear programming, equations of linear and exponential functions, systems of equations,operations of polynomials ***union and intersection of sets,***	All lessons will be assessed through daily lesson quizzes, skill checks, homework assignments, and formal quizzes and tests.	Feasible Region, Linear Programming, Systems, Maximize/Minimize

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December	**Parabola and Quadratic Equations**	N.CN.1 Know there is a complex number i such that i2 = −1, and every complex number has the form a + bi with a and b real. N.CN.2 Use the relation i2 = –1 and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers. N-CN.3 Find the conjugate of a complex number; use conjugates to find moduli and quotients of complex numbers. F.BF.3 Identify the effect on the graph of replacing f(x) by f(x) + k, kf(x), f(kx), and f(x + k) for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them. A.REI.1 Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method. A.REI.2 Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.	L2.1.4 Know that the complex number i is one of two solutions to x2 = -1. L2.1.5 Add, subtract, and multiply complex numbers; use conjugates to simplify quotients of complex numbers. A2.2.2 Apply given transformations to basic functions and represent symbolically. A1.2.5 Solve polynomial equations and equations involving rational expressions, and justify steps in the solution. A1.2.9 Know common formulas and apply appropriately in contextual situations. A1.2.3 Solve linear and quadratic equations and inequalities including systems of up to three linear equations with three unknowns. Justify steps in the solution, and apply the quadratic formula appropriately. A3.3.1 Write the symbolic form and sketch the graph of a quadratic function given appropriate information. A3.3.2 Identify the elements of a parabola (vertex, axis of symmetry, direction of opening) given its symbolic form or its graph, and relate these elements to the coefficient(s) of the symbolic form of the function. A3.3.3 Convert quadratic functions from standard to vertex form by completing the square.	Complex numbers, techniques for solving quadratics, characteristics of parabolas and transformations on quadratic functions, methods for solving polynomial equations, using formulas. (quadratic formula & discrimant), ***solving systems of equations and quadratics,*** key features of graphing quadratic equations, graphs of quadratic equations, vertex form of quadratic functions	All lessons will be assessed through daily lesson quizzes, skill checks, homework assignments, and formal quizzes and tests.	Discriminant, Vertex, Maximum/Minimum Value, x/y intercepts, Complex Numbers, Imaginary Numbers, Conjugate, Axis of Symmetry

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		A.REI.4 Solve quadratic equations in one variable. a Use the method of completing the square that transforms any quadratic equation in x into an equation of the form (x – p)2 = q that has the same solutions. This leads to the quadratic formula. b. Solve quadratic equations by inspection (e.g., for x2 = 49), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as a ± bi for real numbers a and b. F.IF.7c Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior. F.IF.7.a Graph linear and quadratic functions and show intercepts, maxima, and minima. F.IF.8.a Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.	A3.3.4 Relate the number of real solutions of a quadratic equation to the graph of the associated quadratic function. A3.3.5 Express quadratic functions in vertex form to identify their maxima or minima, and in factored form to identify their zeros.			

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January	**Functions**	F.IF. 5 Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function. F.BF.1 Write a function that describes a relationship between two quantities. b. Combine standard function types using arithmetic operations. For example, build a function that models the temperature of a cooling body by adding a constant function to a decaying exponential, and relate these functions to the model. A.CED.1 Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions. A.CED.2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. F.IF.2 Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.	A2.1.4 Recognize that functions may be defined by different expressions over different intervals of their domains; such functions are piecewise-defined. A1.1.4 Add, subtract, multiply, and simplify polynomials and rational expressions. A2.3.3 Write the general symbolic forms that characterize each family of functions. A3.6.2 Analyze graphs of simple rational functions and understand the relationship between the zeros of the numerator and denominator and the function's intercepts, asymptotes, and domain. A3.1.1 Write the symbolic forms of linear functions (standard, point-slope, and slope-intercept) given appropriate information, and convert between forms. A2.3.1 Identify a function as a member of a family of functions based on its symbolic or graphical representation; recognize that different families of functions have different asymptotic behavior. A2.1.1 Determine whether a relationship (given in contextual, symbolic, tabular, or graphical form) is a function and identify its domain and range.	Terminology and notation for functions, operations of rational expressions, characteristics of different functions, find values and graph functions, different forms of linear functions, family of functions and characteristics, family of functions and characteristics, different representations of functions, ***graphs of rational functions.***	All lessons will be assessed through daily lesson quizzes, skill checks, homework assignments, and formal quizzes and tests.	Function Notation, Arrow/mappingnotation, Euler, Inverse, Composite, Domain/Range

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		F.IF.7 Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. d. Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior. F.IF.4 For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity. F.IF.1 Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then f(x) denotes the output of f corresponding to the input x. The graph of f is the graph of the equation y = f(x).	A2.1.3 Represent functions in symbols, graphs, tables, diagrams, or words and translate among representations. A2.1.2 Read, interpret, and use function notation and evaluate a function at a value in its domain. ***A3.6.1 Write the symbolic form and sketch the graph of simple rational functions.***			

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Sem. 2 February	**Powers and Roots**	A.REI.2 Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise. F.IF.7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. e. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude. F.LE.2 Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading F.LE.3 Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function. F.BF.5 Understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents.	A1.2.6 Solve power equations and equations including radical expressions, justify steps in the solution, and explain how extraneous solutions may arise. A3.2.1 Write the symbolic form and sketch the graph of an exponential function given appropriate information. A3.2.2 Interpret the symbolic forms and recognize the graphs of exponential and logarithmic functions; recognize the logarithmic function as the inverse of the exponential function. A3.2.3 Apply properties of exponential and logarithmic functions. A3.2.4 Understand and use the fact that the base of an exponential function determines whether the function increases or decreases and understand how the base affects the rate of growth or decay. ***A.3.2.5 Relate exponential and logarithmic functions to real phenomena, including half-life and doubling time.*** ***A3.4.1 Write the symbolic form and sketch the graph of power functions.*** ***A3.4.2 Express direct and inverse relationships as functions and recognize their characteristics.***	Properties of exponents, formulas for geometric sequences (explicit and recursive), solving equations with exponents, exponential functions and their inverses, characteristic of exponential functions, ***real world applications of exponential functions, graph power functions, inverse functions***	All lessons will be assessed through daily lesson quizzes, skill checks, homework assignments, and formal quizzes and tests.	nth root, Rational Exponents, Geometric Sequence

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		F.IF.8 Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. b. Use the properties of exponents to interpret expressions for exponential functions. F.LE.1 Distinguish between situations that can be modeled with linear functions and with exponential functions. c. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another. F.BF.4 Find inverse functions. a. Solve an equation of the form f(x) = c for a simple function f that has an inverse and write an expression for the inverse. For example, f(x) =2 x3 or f(x) = (x+1)/(x-1) for x ≠ 1.b. (+) Verify by composition that one function is the inverse of another. c. (+) Read values of an inverse function from a graph or a table, given that the function has an inverse. d. (+) Produce an invertible function from a non-invertible function by restricting the domain.				

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February	**Exponents and Logarithms**	F-BF.5 Understand the inverse relationship between exponents and ogarithms and use this relationship to solve problems involving logarithms and exponents. F.LE.1 Distinguish between situations that can be modeled with linear functions and with exponential functions. c. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another. F.IF.7 Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. a. Graph linear and quadratic functions and show intercepts, maxima, and minima. F.LE.4 For exponential models, express as a logarithm the solution to a bct = d where a, c, and d are numbers and the base b is 2, 10, or e; evaluate the logarithm using technology. A.REI.1 Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.	A1.2.7 Solve exponential and logarithmic equations, and justify steps in the solution. A3.2.2 Interpret the symbolic forms and recognize the graphs of exponential and logarithmic functions; recognize the logarithmic function as the inverse of the exponential function. A3.2.3 Apply properties of exponential and logarithmic functions. A3.2.4 Understand and use the fact that the base of an exponential function determines whether the function increases or decreases and understand how the base affects the rate of growth or decay. A3.1.2 Graph lines (including those of the form x = h and y = k) given appropriate information. L2.1.3 Explain the exponential relationship between a number and its base 10 logarithm and use it to relate rules of logarithms to those of exponents in expressions involving numbers. A1.1.6 Transform exponential and logarithmic expressions into equivalent forms using the properties of exponents and logarithms, including the inverse relationship between exponents and logarithms. L2.2.3 Use iterative processes in such examples as computing compound interest or applying approximation procedures.	Exponential growth and decay, properties of logarithms, applications of logarithms, exponential equations, graphing functions and showing key points, change of base formula, changins from logarithmic to exponential form, compound interest, r***eal world applications to logarithmic and exponential functions.***	All lessons will be assessed through daily lesson quizzes, skill checks, homework assignments, and formal quizzes and tests.	Logarithms, Exponential form, Asymptotes, Logarithmic form, Ph Scale, exponential growth, Decibels, exponential decay, Richter Scale, e, Natural Logs, Logarithmic Functions

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			A.3.2.5 Relate exponential and logarithmic functions to real phenomena, including half-life and doubling time. ***L2.3.2 Describe and interpret logarithmic relationships in such contexts as the Richter scale, the pH scale, or decibel measurements; solve applied problems.***			

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March	**Trigonometry**	T.TF.2 Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle. F.TF.1 Understand that the radian measure of an angle is the length of the arc on the unit circle subtended by the angle. F.IF.7 Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. e. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude. F.IF.8 Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. F.IF.4 For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity. G.SRT.11 Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles.	A3.7.1 Use the unit circle to define sine and cosine; approximate values of sine and cosine; use sine and cosine to define the remaining trigonometric functions; explain why the trigonometric functions are periodic. A3.7.2 Use the relationship between degree and radian measures to solve problems. A3.7.4 Graph the sine and cosine functions; analyze graphs by noting domain, range, period, amplitude, and location of maxima and minima. A2.3.3 Write the general symbolic forms that characterize each family of functions. A2.3.1 Identify a function as a member of a family of functions based on its symbolic or graphical representation; recognize that different families of functions have different asymptotic behavior. G1.3.2 Know and use the Law of Sines and the Law of Cosines and use them to solve problems. Find the area of a triangle with sides a and b and included angle q using the formula Area = (1/2) absin q. ***A3.7.3 Use the unit circle to determine the exact values of sine and cosine, for integer multiples of ⁄6 and ⁄4.***	Right triangle trigonometry ratios, unit circle, graphing sine and cosine, characteristics of trigonometric functions, law of sines and cosines, ***exact values of sine and cosine, radian measure,***	All lessons will be assessed through daily lesson quizzes, skill checks, homework assignments, and formal quizzes and tests.	Radian, Degree, Unit Circle, Rotation, Reference Angle

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March -April	**Polynomials**	A.REI.1 Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method. A.APR.6 Rewrite simple rational expressions in different forms; write a(x)/b(x) in the form q(x) + r(x)/b(x), where a(x), b(x), q(x), and r(x) are polynomials with the degree of r(x) less than the degree of b(x), using inspection, long division, or, for the more complicated examples, a computer algebra system. A.APR.3 Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined 1by the polynomial. F.IF.4 For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.	A1.2.5 Solve polynomial equations and equations involving rational expressions, and justify steps in the solution. A1.1.5 Divide a polynomial by a monomial. A2.1.6 Identify the zeros of a function, the intervals where the values of a function are positive or negative, and describe the behavior of a function as x approaches positive or negative infinity, given the symbolic and graphical representations. A3.5.3 Determine the maximum possible number of zeros of a polynomial function, and understand the relationship between the x-intercepts of the graph and the factored form of the function. ***A3.5.1 Write the symbolic form and sketch the graph of simple polynomial functions.*** ***A3.5.2 Understand the effects of degree, leading coefficient, and number of real zeros on the graphs of polynomial functions of degree greater than 2.***	Models for polynomials, factoring polynomials, solving polynomial equations, zeros of a function, ***writing polynomial equations from data, graphs of polynomial functions***	All lessons will be assessed through daily lesson quizzes, skill checks, homework assignments, and formal quizzes and tests.	Polynomial Degree, Factor, Roots, Difference

Honors Algebra II

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April - May	**Quadratic Relations**	G.GPE.1 Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation. G.GPE.3 Derive the equations of ellipses and hyperbolas given two foci for the ellipse, and two directrices of a hyperbola.	***G1.7.1 Find an equation of a circle given its center and radius; given the equation of a circle, find its center and radius.*** ***G1.7.2 Identify and distinguish among geometric representations of parabolas, circles, ellipses, and hyperbolas; describe their symmetries, and explain how they are related to cones.*** ***G1.7.3 Graph ellipses and hyperbolas with axes parallel to the x- and y-axes, given equations.*** ***G1.7.4 Know and use the relationship between the vertices and foci in and ecllipse, the vertices and foci in a hyperboia, and the directix and focus in a parabola, interpret these relationships in applied contexts.***	***Conic sections, equation of conic sections, quadratic systems, applications***	All lessons will be assessed through daily lesson quizzes, skill checks, homework assignments, and formal quizzes and tests.	Circles, Parabolas, Ellipses, Hyperbola, Directix, Focus/Foci, Degenerate

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May- June **if time	***Series, Combinations, and Statistics***	*S.ID.2 Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.* *S.MD.3 Develop a probability distribution for a random variable defined for a sample space in which theoretical probabilities can be calculated; find the expected value. For example, find the theoretical probability distribution for the number of correct answers obtained by guessing on all five questions of a multiple-choice test where each question has four choices, and find the expected grade under various grading schemes.* *S.CP.9 Use permutations and combinations to compute probabilities of compound events and solve problems.* *S.CP.5 Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations.* *F.BF.2 Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.*	***S1.2.2 Estimate the position of the mean, median, and mode in both symmetrical and skewed distributions, and from a frequency distribution or histogram.*** ***S1.2.3 Compute and interpret measures of variation, including percentiles, quartiles, interquartile range, variance, and standard deviation.*** ***S4.2.1 Compute probabilities of events using tree diagrams, formulas for combinations and permutations, Venn diagrams, or other counting techniques.*** ***L1.3.1 Describe, explain, and apply various counting techniques; relate combinations to Pascal's triangle; know when to use each technique. L1.3.2 Define and interpret commonly used expressions of probability.*** ***L2.2.2 Compute sums of finite arithmetic and geometric sequences.***	***Types of series, binomial expansion, combinations, statistics, series***	All lessons will be assessed through daily lesson quizzes, skill checks, homework assignments, and formal quizzes and tests.	Binomial Expansion Series, Infinite Series (geopmetric), Pascal's Triangle, Factorial, Permutation, Combination