SIDE BY SIDE OF OKLAHOMA PASS STRANDS AND COMMON CORE STATE STANDARDS

PASS			Strand and Standard		
Strand	**Standard #**	**PASS**		**Grade**	**Common Core State Standard**
ALGEBRA II					
*** Legends/Abbreviations can be found in a separate table.**					
NA	1	**Standard 1: Number Systems and Algebraic Operations - The student will perform operations with rational, radical, and polynomial expressions, as well as expressions involving complex numbers.**			
NA	1.1a	Rational Exponents: Convert expressions from radical notations to rational exponents and vice versa.	N.RN.1	9-12	Extend the properties of exponents to rational exponents. Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. For example, we define 5^(1/3)
NA	1.1a	Rational Exponents: Convert expressions from radical notations to rational exponents and vice versa.	N.RN.2	9-12	Extend the properties of exponents to rational exponents. Rewrite expressions involving radicals and rational exponents using the properties of exponents.
NA	1.1b	Rational Exponents: Add, subtract, multiply, divide, and simplify radical expressions and expressions containing rational exponents.	N.RN.1	9-12	definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. For example, we define 5^(1/3) to be the cube root of 5 because we want [5^(1/3)]^3 = 5^[(1/3) x 3] to
NA	1.1b	Rational Exponents: Add, subtract, multiply, divide, and simplify radical expressions and expressions containing rational exponents.	N.RN.3	9-12	Use properties of rational and irrational numbers. Explain why the sum or product of rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational.

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NA	1.1b	Rational Exponents: Add, subtract, multiply, divide, and simplify radical expressions and expressions containing rational exponents.	A.SSE.3c	9-12	Use the properties of exponents to transform expressions for exponential functions. For example the expression 1.15^t can be rewritten as [1.15^(1/12)]^(12t) ≈ 1.012^(12t) to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.*
NA	1.2a	Polynomial and Rational Expressions: Divide polynomial expressions by lower degree polynomials.	A.APR.2	9-12	Understand the relationship between zeros and factors of polynomial. Know and apply the Remainder Theorem: For a polynomial p(x) and a number a, the remainder on division by x – a is p(a), so p(a) = 0 if and only if (x – a) is a factor of p(x).
NA	1.2a	Polynomial and Rational Expressions: Divide polynomial expressions by lower degree polynomials.	A.APR.6	9-12	Rewrite rational expressions. 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.
NA	1.2a	Polynomial and Rational Expressions: Divide polynomial expressions by lower degree polynomials.	A.APR.7	9-12	Rewrite rational expressions. Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions.
NA	1.2b	Polynomial and Rational Expressions: Add, subtract, multiply, divide, and simplify rational expressions, including complex fractions.	N.RN.3	9-12	Use properties of rational and irrational numbers. Explain why the sum or product of rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational.
NA	1.2b	Polynomial and Rational Expressions: Add, subtract, multiply, divide, and simplify rational expressions, including complex fractions.	A.APR.7	9-12	Rewrite rational expressions. Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions.

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NA	1.3a	*Complex Numbers: Recognize that to solve certain problems and equations, number systems need to be extended from real numbers to complex numbers.	N.CN.1	9-12	Perform arithmetic operations with complex numbers. Know there is a complex number i such that i^2 = −1, and every complex number has the form a + bi with a and b real.
NA	1.3a	*Complex Numbers: Recognize that to solve certain problems and equations, number systems need to be extended from real numbers to complex numbers.	A.REI.4b	9-12	Solve quadratic equations by inspection (e.g., for x^2 = 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.
NA	1.3b	Complex Numbers: Add, subtract, multiply, divide, and simplify expressions involving complex numbers.	N.CN.2	9-12	Perform arithmetic operations with complex numbers. Use the relation i^2 = –1 and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.
NA	1.3b	Complex Numbers: Add, subtract, multiply, divide, and simplify expressions involving complex numbers.	N.CN.3	9-12	Perform arithmetic operations with complex numbers. Find the conjugate of a complex number; use conjugates to find moduli and quotients of complex numbers.
R	2	**Standard 2: Relations and Functions - The student will use the relationships among the solution of an equation, zero of a function, x-intercepts of a graph, and factors of a polynomial expression to solve problems involving relations and functions.**			
R	2.1a	Functions and Function Notation: Recognize the parent graphs of polynomial, exponential, radical, quadratic, and logarithmic functions and predict the effects of transformations on the parent graphs, using various methods and tools which may include graphing calculators.	F.IF.7	9-12	Analyze functions using different representations. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.*
R	2.1a	Functions and Function Notation: Recognize the parent graphs of polynomial, exponential, radical, quadratic, and logarithmic functions and predict the effects of transformations on the parent graphs, using various methods and tools which may include graphing calculators.	F.IF.7b	9-12	Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.*

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R	2.1a	Functions and Function Notation: Recognize the parent graphs of polynomial, exponential, radical, quadratic, and logarithmic functions and predict the effects of transformations on the parent graphs, using various methods and tools which may include graphing calculators.	F.BF.3	9-12	Build new functions from existing functions. Identify the effect on the graph of replacing f(x) by f(x) + k, k f(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.
R	2.1b	Functions and Function Notation: Add, subtract, multiply, and divide functions using function notation.	F.BF.1b	9-12	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.
R	2.1b	Functions and Function Notation: Add, subtract, multiply, and divide functions using function notation.	F.BF.4	9-12	Build new functions from existing functions. Find inverse functions.
R	2.1c	Functions and Function Notation: Combine functions by composition.	F.BF.1c	9-12	Compose functions. For example, if T(y) is the temperature in the atmosphere as a function of height, and h(t) is the height of a weather balloon as a function of time, then T(h(t)) is the temperature at the location of the weather balloon as a function of time.
R	2.1c	Functions and Function Notation: Combine functions by composition.	F.BF.4	9-12	Build new functions from existing functions. Find inverse functions.
R	2.1d	Functions and Function Notation: Use algebraic, interval, and set notations to specify the domain and range of functions of various types.	F.IF.2	9-12	Understand the concept of a function and use function notation. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.
R	2.1e	Functions and Function Notation: Find and graph the inverse of a function, if it exists.	F.IF.7	9-12	Analyze functions using different representations. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.*
R	2.1e	Functions and Function Notation: Find and graph the inverse of a function, if it exists.	F.BF.4	9-12	Build new functions from existing functions. Find inverse functions.

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R	2.1e	Functions and Function Notation: Find and graph the inverse of a function, if it exists.	F.BF.4a	9-12	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(x^3) or f(x) = (x+1)/(x-1) for x ≠ 1 (x not equal to 1).
R	2.2a	Systems of Equations: Model a situation that can be described by a system of equations or inequalities and use the model to answer questions about the situation.	A.CED.3	9-12	Create equations that describe numbers or relationship. 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.*
R	2.2a	Systems of Equations: Model a situation that can be described by a system of equations or inequalities and use the model to answer questions about the situation.	F.IF.7	9-12	Analyze functions using different representations. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.*
R	2.2b	Systems of Equations: Solve systems of linear equations and inequalities using various methods and tools which may include substitution, elimination, matrices, graphing, and graphing calculators.	N.VM.6	9-12	Perform operations on matrices and use matrices in applications. Use matrices to represent and manipulate data, e.g., to represent payoffs or incidence relationships in a network.
R	2.2b	Systems of Equations: Solve systems of linear equations and inequalities using various methods and tools which may include substitution, elimination, matrices, graphing, and graphing calculators.	A.CED.3	9-12	Create equations that describe numbers or relationship. 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.*
R	2.2b	Systems of Equations: Solve systems of linear equations and inequalities using various methods and tools which may include substitution, elimination, matrices, graphing, and graphing calculators.	A.REI.5	9-12	Solve systems of equations. Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.

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R	2.2b	Systems of Equations: Solve systems of linear equations and inequalities using various methods and tools which may include substitution, elimination, matrices, graphing, and graphing	A.REI.6	9-12	Solve systems of equations. Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.
R	2.2b	Systems of Equations: Solve systems of linear equations and inequalities using various methods and tools which may include substitution, elimination, matrices, graphing, and graphing calculators.	A.REI.8	9-12	Solve systems of equations. Represent a system of linear equations as a single matrix equation in a vector variable.
R	2.2b	Systems of Equations: Solve systems of linear equations and inequalities using various methods and tools which may include substitution, elimination, matrices, graphing, and graphing calculators.	A.REI.9	9-12	Solve systems of equations. Find the inverse of a matrix if it exists and use it to solve systems of linear equations (using technology for matrices of dimension 3 × 3 or greater).
R	2.2b	Systems of Equations: Solve systems of linear equations and inequalities using various methods and tools which may include substitution, elimination, matrices, graphing, and graphing calculators.	A.REI.11	9-12	Represent and solve equations and inequalities graphically. Explain why the x-coordinates of the points where the graphs of the equations y = f(x) and y = g(x) intersect are the solutions of the equation f(x) = g(x); find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where f(x) and/or g(x) are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.*
R	2.2b	Systems of Equations: Solve systems of linear equations and inequalities using various methods and tools which may include substitution, elimination, matrices, graphing, and graphing calculators.	F.IF.7	9-12	Analyze functions using different representations. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.*
R	2.2c	*Systems of Equations: Use either one quadratic equation and one linear equation or two quadratic equations to solve problems.	A.REI.7	9-12	Solve systems of equations. Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. For example, find the points of intersection between the line y = –3x and the circle x^2 + y^2 = 3.

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R	2.2c	*Systems of Equations: Use either one quadratic equation and one linear equation or two quadratic equations to solve problems.	F.IF.7	9-12	Analyze functions using different representations. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.*
R	2.3a	Quadratic Equations and Functions: Solve quadratic equations by graphing, factoring, completing the square and quadratic formula.	N.CN.7	9-12	Use complex numbers in polynomial identities and equations. Solve quadratic equations with real coefficients that have complex solutions.
R	2.3a	Quadratic Equations and Functions: Solve quadratic equations by graphing, factoring, completing the square and quadratic formula.	N.CN.8	9-12	Use complex numbers in polynomial identities and equations. Extend polynomial identities to the complex numbers. For example, rewrite x^2 + 4 as (x + 2i)(x – 2i).
R	2.3a	Quadratic Equations and Functions: Solve quadratic equations by graphing, factoring, completing the square and quadratic formula.	A.SSE.3a	9-12	Factor a quadratic expression to reveal the zeros of the function it defines.*
R	2.3a	Quadratic Equations and Functions: Solve quadratic equations by graphing, factoring, completing the square and quadratic formula.	A.SSE.3b	9-12	Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.*
R	2.3a	Quadratic Equations and Functions: Solve quadratic equations by graphing, factoring, completing the square and quadratic formula.	A.CED.1	9-12	Create equations that describe numbers or relationship. 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.*
R	2.3a	Quadratic Equations and Functions: Solve quadratic equations by graphing, factoring, completing the square and quadratic formula.	A.CED.2	9-12	Create equations that describe numbers or relationship. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.*
R	2.3a	Quadratic Equations and Functions: Solve quadratic equations by graphing, factoring, completing the square and quadratic formula.	A.REI.4	9-12	Solve equations and inequalities in one variable. Solve quadratic equations in one variable.

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R	2.3a	Quadratic Equations and Functions: Solve quadratic equations by graphing, factoring, completing the square and quadratic formula.	A.REI.4a	9-12	Use the method of completing the square to transform any quadratic equation in x into an equation of the form (x – p)^2 = q that has the same solutions. Derive the quadratic formula from this form.
R	2.3a	Quadratic Equations and Functions: Solve quadratic equations by graphing, factoring, completing the square and quadratic formula.	A.REI.4b	9-12	Solve quadratic equations by inspection (e.g., for x^2 = 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.
R	2.3a	Quadratic Equations and Functions: Solve quadratic equations by graphing, factoring, completing the square and quadratic formula.	F.IF.7	9-12	Analyze functions using different representations. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.*
R	2.3a	Quadratic Equations and Functions: Solve quadratic equations by graphing, factoring, completing the square and quadratic formula.	F.IF.8a	9-12	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.
R	2.3b	Quadratic Equations and Functions: Graph a quadratic function and identify the x- and y-intercepts and maximum or minimum value, using various methods and tools which may include a graphing calculator.	N.CN.9	9-12	Use complex numbers in polynomial identities and equations. Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials.
R	2.3b	Quadratic Equations and Functions: Graph a quadratic function and identify the x- and y-intercepts and maximum or minimum value, using various methods and tools which may include a graphing calculator.	A.SSE.3b	9-12	Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.*
R	2.3b	Quadratic Equations and Functions: Graph a quadratic function and identify the x- and y-intercepts and maximum or minimum value, using various methods and tools which may include a graphing calculator.	A.CED.1	9-12	Create equations that describe numbers or relationship. 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.*

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R	2.3b	Quadratic Equations and Functions: Graph a quadratic function and identify the x- and y-intercepts and maximum or minimum value, using various methods and tools which may include a graphing calculator.	A.CED.2	9-12	Create equations that describe numbers or relationship. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.*
R	2.3b	Quadratic Equations and Functions: Graph a quadratic function and identify the x- and y-intercepts and maximum or minimum value, using various methods and tools which may include a graphing calculator.	F.IF.4	9-12	Interpret functions that arise in applications in terms of the context. 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.*
R	2.3b	Quadratic Equations and Functions: Graph a quadratic function and identify the x- and y-intercepts and maximum or minimum value, using various methods and tools which may include a graphing calculator.	F.IF.7	9-12	Analyze functions using different representations. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.*
R	2.3b	Quadratic Equations and Functions: Graph a quadratic function and identify the x- and y-intercepts and maximum or minimum value, using various methods and tools which may include a graphing calculator.	F.IF.7a	9-12	Graph linear and quadratic functions and show intercepts, maxima, and minima.*
R	2.3c	Quadratic Equations and Functions: Model a situation that can be described by a quadratic function and use the model to answer questions about the situation.	A.CED.1	9-12	Create equations that describe numbers or relationship. 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.*
R	2.3c	Quadratic Equations and Functions: Model a situation that can be described by a quadratic function and use the model to answer questions about the situation.	A.CED.2	9-12	Create equations that describe numbers or relationship. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.*

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R	2.3c	Quadratic Equations and Functions: Model a situation that can be described by a quadratic function and use the model to answer questions about the situation.	F.IF.5	9-12	Interpret functions that arise in applications in terms of the context. 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.*
R	2.3c	Quadratic Equations and Functions: Model a situation that can be described by a quadratic function and use the model to answer questions about the situation.	F.IF.7	9-12	Analyze functions using different representations. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.*
R	2.3c	Quadratic Equations and Functions: Model a situation that can be described by a quadratic function and use the model to answer questions about the situation.	F.IF.8a	9-12	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.
R	2.3c	Quadratic Equations and Functions: Model a situation that can be described by a quadratic function and use the model to answer questions about the situation.	F.BF.1a	9-12	Determine an explicit expression, a recursive process, or steps for calculation from a context.
R	2.4	Identify, graph, and write the equations of the conic sections (circle, ellipse, parabola, and hyperbola).	G.GPE.1	9-12	Translate between the geometric description and the equation for a conic section. 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.
R	2.4	Identify, graph, and write the equations of the conic sections (circle, ellipse, parabola, and hyperbola).	G.GPE.2	9-12	Translate between the geometric description and the equation for a conic section. Derive the equation of a parabola given a focus and directrix.
R	2.4	Identify, graph, and write the equations of the conic sections (circle, ellipse, parabola, and hyperbola).	G.GPE.3	9-12	Translate between the geometric description and the equation for a conic section. Derive the equations of ellipses and hyperbolas given the foci, using the fact that the sum or difference of distances from the foci is constant.

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R	2.5a	Exponential and Logarithmic Functions: Graph exponential and logarithmic functions.	A.CED.1	9-12	Create equations that describe numbers or relationship. 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.*
R	2.5a	Exponential and Logarithmic Functions: Graph exponential and logarithmic functions.	A.CED.2	9-12	Create equations that describe numbers or relationship. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.*
R	2.5a	Exponential and Logarithmic Functions: Graph exponential and logarithmic functions.	F.IF.7	9-12	Analyze functions using different representations. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.*
R	2.5a	Exponential and Logarithmic Functions: Graph exponential and logarithmic functions.	F.IF.7e	9-12	Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.*
R	2.5a	Exponential and Logarithmic Functions: Graph exponential and logarithmic functions.	F.LE.2	9-12	Construct and compare linear, quadratic, and exponential models and solve problems. 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).*
R	2.5b	Exponential and Logarithmic Functions: Apply the inverse relationship between exponential and logarithmic functions to convert from one form to another.	F.BF.5	9-12	Understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents.
R	2.5b	Exponential and Logarithmic Functions: Apply the inverse relationship between exponential and logarithmic functions to convert from one form to another.	F.LE.4	9-12	Construct and compare linear, quadratic, and exponential models and solve problems. For exponential models, express as a logarithm the solution to ab^(ct) = d where a, c, and d are numbers and the base b is 2, 10, or e; evaluate the logarithm using technology.*
R	2.5c	Exponential and Logarithmic Functions: Model a situation that can be described by an exponential or logarithmic function and use the model to answer questions about the situation.	A.SSE.3c	9-12	Use the properties of exponents to transform expressions for exponential functions. For example the expression 1.15^t can be rewritten as [1.15^(1/12)]^(12t) ≈ 1.012^(12t) to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.*

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R	2.5c	Exponential and Logarithmic Functions: Model a situation that can be described by an exponential or logarithmic function and use the model to answer questions about the situation.	A.CED.1	9-12	Create equations that describe numbers or relationship. 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.*
R	2.5c	Exponential and Logarithmic Functions: Model a situation that can be described by an exponential or logarithmic function and use the model to answer questions about the situation.	A.CED.2	9-12	Create equations that describe numbers or relationship. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.*
R	2.5c	Exponential and Logarithmic Functions: Model a situation that can be described by an exponential or logarithmic function and use the model to answer questions about the situation.	F.IF.5	9-12	Interpret functions that arise in applications in terms of the context. 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.*
R	2.5c	Exponential and Logarithmic Functions: Model a situation that can be described by an exponential or logarithmic function and use the model to answer questions about the situation.	F.IF.7	9-12	Analyze functions using different representations. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.*
R	2.5c	Exponential and Logarithmic Functions: Model a situation that can be described by an exponential or logarithmic function and use the model to answer questions about the situation.	F.IF.8b	9-12	Use the properties of exponents to interpret expressions for exponential functions. For example, identify percent rate of change in functions such as y = (1.02)^t, y = (0.97)^t, y = (1.01)^(12t), y = (1.2)^(t/10), and classify them as representing exponential growth and decay.
R	2.5c	Exponential and Logarithmic Functions: Model a situation that can be described by an exponential or logarithmic function and use the model to answer questions about the situation.	F.BF.1a	9-12	Determine an explicit expression, a recursive process, or steps for calculation from a context.
R	2.5c	Exponential and Logarithmic Functions: Model a situation that can be described by an exponential or logarithmic function and use the model to answer questions about the situation.	F.LE.1c	9-12	Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.*

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R	2.5c	Exponential and Logarithmic Functions: Model a situation that can be described by an exponential or logarithmic function and use the model to answer questions about the situation.	F.LE.2	9-12	Construct and compare linear, quadratic, and exponential models and solve problems. 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).*
R	2.5c	Exponential and Logarithmic Functions: Model a situation that can be described by an exponential or logarithmic function and use the model to answer questions about the situation.	F.LE.3	9-12	Construct and compare linear, quadratic, and exponential models and solve problems. Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.*
R	2.5c	Exponential and Logarithmic Functions: Model a situation that can be described by an exponential or logarithmic function and use the model to answer questions about the situation.	F.LE.4	9-12	Construct and compare linear, quadratic, and exponential models and solve problems. For exponential models, express as a logarithm the solution to ab^(ct) = d where a, c, and d are numbers and the base b is 2, 10, or e; evaluate the logarithm using technology.*
R	2.5c	Exponential and Logarithmic Functions: Model a situation that can be described by an exponential or logarithmic function and use the model to answer questions about the situation.	F.LE.5	9-12	Construct and compare linear, quadratic, and exponential models and solve problems. Interpret the parameters in a linear or exponential function in terms of a context.*
R	2.6a	Polynomial Equations and Functions: Solve polynomial equations using various methods and tools which may include factoring and synthetic division.	A.APR.2	9-12	Understand the relationship between zeros and factors of polynomial. Know and apply the Remainder Theorem: For a polynomial p(x) and a number a, the remainder on division by x – a is p(a), so p(a) = 0 if and only if (x – a) is a factor of p(x).
R	2.6a	Polynomial Equations and Functions: Solve polynomial equations using various methods and tools which may include factoring and synthetic division.	A.APR.3	9-12	Understand the relationship between zeros and factors of polynomials. Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.

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R	2.6a	Polynomial Equations and Functions: Solve polynomial equations using various methods and tools which may include factoring and synthetic division.	A.CED.1	9-12	Create equations that describe numbers or relationship. 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.*
R	2.6a	Polynomial Equations and Functions: Solve polynomial equations using various methods and tools which may include factoring and synthetic division.	A.CED.2	9-12	Create equations that describe numbers or relationship. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.*
R	2.6a	Polynomial Equations and Functions: Solve polynomial equations using various methods and tools which may include factoring and synthetic division.	F.IF.7c	9-12	Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.*
R	2.6b	Polynomial Equations and Functions: Sketch the graph of a polynomial function.	A.APR.3	9-12	Understand the relationship between zeros and factors of polynomials. Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.
R	2.6b	Polynomial Equations and Functions: Sketch the graph of a polynomial function.	A.CED.1	9-12	Create equations that describe numbers or relationship. 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.*
R	2.6b	Polynomial Equations and Functions: Sketch the graph of a polynomial function.	A.CED.2	9-12	Create equations that describe numbers or relationship. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.*
R	2.6b	Polynomial Equations and Functions: Sketch the graph of a polynomial function.	F.IF.4	9-12	Interpret functions that arise in applications in terms of the context. 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.*

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R	2.6b	Polynomial Equations and Functions: Sketch the graph of a polynomial function.	F.IF.7	9-12	Analyze functions using different representations. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.*
R	2.6b	Polynomial Equations and Functions: Sketch the graph of a polynomial function.	F.IF.7c	9-12	Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.*
R	2.6c	Polynomial Equations and Functions: Given the graph of a polynomial function, identify the x- and y-intercepts, relative maximums and relative minimums, using various methods and tools which may include a graphing calculator.	F.IF.4	9-12	Interpret functions that arise in applications in terms of the context. 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.*
R	2.6c	Polynomial Equations and Functions: Given the graph of a polynomial function, identify the x- and y-intercepts, relative maximums and relative minimums, using various methods and tools which may include a graphing calculator.	F.IF.7	9-12	Analyze functions using different representations. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.*
R	2.6c	Polynomial Equations and Functions: Given the graph of a polynomial function, identify the x- and y-intercepts, relative maximums and relative minimums, using various methods and tools which may include a graphing calculator.	F.IF.7c	9-12	Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.*
R	2.6d	Polynomial Equations and Functions: Model a situation that can be described by a polynomial function and use the model to answer questions about the situation.	F.5	8	Use functions to model relationships between quantities. 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.

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R	2.6d	Polynomial Equations and Functions: Model a situation that can be described by a polynomial function and use the model to answer questions about the situation.	A.CED.1	9-12	Create equations that describe numbers or relationship. 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.*
R	2.6d	Polynomial Equations and Functions: Model a situation that can be described by a polynomial function and use the model to answer questions about the situation.	A.CED.2	9-12	Create equations that describe numbers or relationship. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.*
R	2.6d	Polynomial Equations and Functions: Model a situation that can be described by a polynomial function and use the model to answer questions about the situation.	F.IF.5	9-12	Interpret functions that arise in applications in terms of the context. 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.*
R	2.6d	Polynomial Equations and Functions: Model a situation that can be described by a polynomial function and use the model to answer questions about the situation.	F.IF.7	9-12	Analyze functions using different representations. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.*
R	2.6d	Polynomial Equations and Functions: Model a situation that can be described by a polynomial function and use the model to answer questions about the situation.	F.BF.1a	9-12	Determine an explicit expression, a recursive process, or steps for calculation from a context.
R	2.7a	Rational Equations and Functions: Solve rational equations.	A.CED.1	9-12	Create equations that describe numbers or relationship. 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.*
R	2.7a	Rational Equations and Functions: Solve rational equations.	A.CED.2	9-12	Create equations that describe numbers or relationship. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.*

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R	2.7a	Rational Equations and Functions: Solve rational equations.	A.REI.2	9-12	Understand solving equations as a process of reasoning and explain the reasoning. Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.
R	2.7b	Rational Equations and Functions: Sketch the graph of a rational function.	A.CED.1	9-12	Create equations that describe numbers or relationship. 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.*
R	2.7b	Rational Equations and Functions: Sketch the graph of a rational function.	A.CED.2	9-12	Create equations that describe numbers or relationship. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.*
R	2.7b	Rational Equations and Functions: Sketch the graph of a rational function.	F.IF.4	9-12	Interpret functions that arise in applications in terms of the context. 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.*
R	2.7b	Rational Equations and Functions: Sketch the graph of a rational function.	F.IF.7	9-12	Analyze functions using different representations. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.*
R	2.7b	Rational Equations and Functions: Sketch the graph of a rational function.	F.IF.7d	9-12	Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.*

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R	2.7c	Rational Equations and Functions: Given the graph of a rational function, identify the x- and y-intercepts, vertical asymptotes, using various methods and tools which may include a graphing calculator.	F.IF.4	9-12	Interpret functions that arise in applications in terms of the context. 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.*
R	2.7c	Rational Equations and Functions: Given the graph of a rational function, identify the x- and y-intercepts, vertical asymptotes, using various methods and tools which may include a graphing calculator.	F.IF.7	9-12	Analyze functions using different representations. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.*
R	2.7c	Rational Equations and Functions: Given the graph of a rational function, identify the x- and y-intercepts, vertical asymptotes, using various methods and tools which may include a graphing calculator.	F.IF.7d	9-12	Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.*
R	2.7d	Rational Equations and Functions: Model a situation that can be described by a rational function and use the model to answer questions about the situation.	F.5	8	Use functions to model relationships between quantities. 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.
R	2.7d	Rational Equations and Functions: Model a situation that can be described by a rational function and use the model to answer questions about the situation.	A.CED.1	9-12	Create equations that describe numbers or relationship. 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.*
R	2.7d	Rational Equations and Functions: Model a situation that can be described by a rational function and use the model to answer questions about the situation.	A.CED.2	9-12	Create equations that describe numbers or relationship. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.*

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R	2.7d	Rational Equations and Functions: Model a situation that can be described by a rational function and use the model to answer questions about the situation.	F.IF.5	9-12	Interpret functions that arise in applications in terms of the context. 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.*
R	2.7d	Rational Equations and Functions: Model a situation that can be described by a rational function and use the model to answer questions about the situation.	F.IF.7	9-12	Analyze functions using different representations. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.*
R	2.7d	Rational Equations and Functions: Model a situation that can be described by a rational function and use the model to answer questions about the situation.	F.BF.1a	9-12	Determine an explicit expression, a recursive process, or steps for calculation from a context.
DS	3	**Standard 3: Data Analysis and Statistics - The student will use data analysis and statistics to formulate and justify predictions from a set of data.**			
DS	3.1a	Analysis of Collected Data Involving Two Variables: Interpret data on a scatter plot using a linear, exponential, or quadratic model/equation.	SP.1	8	Investigate patterns of association in bivariate data. Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.
DS	3.1a	Analysis of Collected Data Involving Two Variables: Interpret data on a scatter plot using a linear, exponential, or quadratic model/equation.	F.IF.7	9-12	Analyze functions using different representations. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.*
DS	3.1a	Analysis of Collected Data Involving Two Variables: Interpret data on a scatter plot using a linear, exponential, or quadratic model/equation.	F.BF.1	9-12	Build a function that models a relationship between two quantities. Write a function that describes a relationship between two quantities.*

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DS	3.1a	Analysis of Collected Data Involving Two Variables: Interpret data on a scatter plot using a linear, exponential, or quadratic model/equation.	F.BF.1a	9-12	Determine an explicit expression, a recursive process, or steps for calculation from a context.
DS	3.1a	Analysis of Collected Data Involving Two Variables: Interpret data on a scatter plot using a linear, exponential, or quadratic model/equation.	F.LE.1	9-12	Construct and compare linear, quadratic, and exponential models and solve problems. Distinguish between situations that can be modeled with linear functions and with exponential functions.*
DS	3.1a	Analysis of Collected Data Involving Two Variables: Interpret data on a scatter plot using a linear, exponential, or quadratic model/equation.	F.LE.3	9-12	Construct and compare linear, quadratic, and exponential models and solve problems. Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.*
DS	3.1a	Analysis of Collected Data Involving Two Variables: Interpret data on a scatter plot using a linear, exponential, or quadratic model/equation.	S.ID.6	9-12	Summarize, represent, and interpret data on two categorical and quantitative variables. Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.*
DS	3.1a	Analysis of Collected Data Involving Two Variables: Interpret data on a scatter plot using a linear, exponential, or quadratic model/equation.	S.ID.9	9-12	Interpret linear models. Distinguish between correlation and causation.*
DS	3.1b	Analysis of Collected Data Involving Two Variables: Identify whether the model/equation is a curve of best fit for the data, using various methods and tools which may include a graphing calculator.	F.IF.7	9-12	Analyze functions using different representations. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.*
DS	3.1b	Analysis of Collected Data Involving Two Variables: Identify whether the model/equation is a curve of best fit for the data, using various methods and tools which may include a graphing calculator.	F.BF.1	9-12	Build a function that models a relationship between two quantities. Write a function that describes a relationship between two quantities.*
DS	3.1b	Analysis of Collected Data Involving Two Variables: Identify whether the model/equation is a curve of best fit for the data, using various methods and tools which may include a graphing calculator.	F.BF.1a	9-12	Determine an explicit expression, a recursive process, or steps for calculation from a context.

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DS	3.1b	Analysis of Collected Data Involving Two Variables: Identify whether the model/equation is a curve of best fit for the data, using various methods and tools which may include a graphing calculator.	S.ID.6	9-12	Summarize, represent, and interpret data on two categorical and quantitative variables. Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.*
DS	3.1b	Analysis of Collected Data Involving Two Variables: Identify whether the model/equation is a curve of best fit for the data, using various methods and tools which may include a graphing calculator.	S.ID.6a	9-12	Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models.*
DS	3.1b	Analysis of Collected Data Involving Two Variables: Identify whether the model/equation is a curve of best fit for the data, using various methods and tools which may include a graphing calculator.	S.ID.6c	9-12	Fit a linear function for a scatter plot that suggests a linear association.*
DS	3.1b	Analysis of Collected Data Involving Two Variables: Identify whether the model/equation is a curve of best fit for the data, using various methods and tools which may include a graphing calculator.	S.ID.8	9-12	Interpret linear models. Compute (using technology) and interpret the correlation coefficient of a linear fit.*
DS	3.2a	*Measures of Central Tendency and Variability: Analyze and synthesize data from a sample using appropriate measures of central tendency (mean, median, mode, weighted average).	S.ID.2	9-12	Summarize, represent, and interpret data on a single count or measurement variable. Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile
DS	3.2b	*Measures of Central Tendency and Variability: Analyze and synthesize data from a sample using appropriate measures of variability (range, variance, standard deviation).	S.ID.2	9-12	Summarize, represent, and interpret data on a single count or measurement variable. Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile
DS	3.2c	*Measures of Central Tendency and Variability: Use the characteristics of the Gaussian normal distribution (bell-shaped curve) to solve problems.	S.ID.4	9-12	Summarize, represent, and interpret data on a single count or measurement variable. Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.*

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DS	3.2d	*Measures of Central Tendency and Variability: Identify how given outliers affect representations of data.	S.ID.3	9-12	Summarize, represent, and interpret data on a single count or measurement variable. Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).*
DS	3.3	Identify and use arithmetic and geometric sequences and series to solve problems.	A.SSE.4	9-12	Write expressions in equivalent forms to solve problems. 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.*
DS	3.3	Identify and use arithmetic and geometric sequences and series to solve problems.	F.IF.3	9-12	Understand the concept of a function and use function notation. Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. For example, the Fibonacci sequence is defined recursively by f(0) = f(1) = 1, f(n+1) = f(n) + f(n-1) for $n \geq 1$ (n is greater than or equal to 1).
DS	3.3	Identify and use arithmetic and geometric sequences and series to solve problems.	F.BF.2	9-12	Build a function that models a relationship between two quantities. Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.*
			N.Q.3	9-12	Reason quantitatively and use units to solve problems. Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.*
			N.CN.4	9-12	Represent complex numbers and their operations on the complex plane. Represent complex numbers on the complex plane in rectangular and polar form (including real and imaginary numbers), and explain why the rectangular and polar forms of a given complex number represent the same number.

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			N.CN.5	9-12	Represent complex numbers and their operations on the complex plane. Represent addition, subtraction, multiplication, and conjugation of complex numbers geometrically on the complex plane; use properties of this representation for computation. For example, (-1 + √3i)^3 = 8 because (-1 + √3i) has modulus 2 and argument 120°.
			N.CN.6	9-12	Represent complex numbers and their operations on the complex plane. Calculate the distance between numbers in the complex plane as the modulus of the difference, and the midpoint of a segment as the average of the numbers at its endpoints.
			N.VM.1	9-12	Represent and model with vector quantities. Recognize vector quantities as having both magnitude and direction. Represent vector quantities by directed line segments, and use appropriate symbols for vectors and their magnitudes (e.g., v(bold), |v|, ||v||, v(not bold)).
			N.VM.2	9-12	Represent and model with vector quantities. Find the components of a vector by subtracting the coordinates of an initial point from the coordinates of a terminal point.
			N.VM.3	9-12	Represent and model with vector quantities. Solve problems involving velocity and other quantities that can be represented by vectors.
			N.VM.4	9-12	Perform operations on vectors. Add and subtract vectors.
			N.VM.4a	9-12	Add vectors end-to-end, component-wise, and by the parallelogram rule. Understand that the magnitude of a sum of two vectors is typically not the sum of the magnitudes.
			N.VM.4b	9-12	Given two vectors in magnitude and direction form, determine the magnitude and direction of their sum.

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			N.VM.4c	9-12	Understand vector subtraction v – w as v + (–w), where (–w) is the additive inverse of w, with the same magnitude as w and pointing in the opposite direction. Represent vector subtraction graphically by connecting the tips in the appropriate order, and perform vector subtraction component-wise.
			N.VM.5	9-12	Perform operations on vectors. Multiply a vector by a scalar.
			N.VM.5a	9-12	Represent scalar multiplication graphically by scaling vectors and possibly reversing their direction; perform scalar multiplication component-wise, e.g., as c(v(sub x), v(sub y)) = (cv(sub x), cv(sub y)).
			N.VM.5b	9-12	Compute the magnitude of a scalar multiple cv using ‖cv‖ = |c|v. Compute the direction of cv knowing that when |c|v 0, the direction of cv is either along v (for c > 0) or against v (for c < 0).
			N.VM.7	9-12	Perform operations on matrices and use matrices in applications. Multiply matrices by scalars to produce new matrices, e.g., as when all of the payoffs in a game are doubled.
			N.VM.8	9-12	Perform operations on matrices and use matrices in applications. Add, subtract, and multiply matrices of appropriate dimensions.
			N.VM.9	9-12	Perform operations on matrices and use matrices in applications. Understand that, unlike multiplication of numbers, matrix multiplication for square matrices is not a commutative operation, but still satisfies the associative and distributive properties.
			N.VM.10	9-12	Perform operations on matrices and use matrices in applications. Understand that the zero and identity matrices play a role in matrix addition and multiplication similar to the role of 0 and 1 in the real numbers. The determinant of a square matrix is nonzero if and only if the matrix has a multiplicative inverse.

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			N.VM.11	9-12	Perform operations on matrices and use matrices in applications. Multiply a vector (regarded as a matrix with one column) by a matrix of suitable dimensions to produce another vector. Work with matrices as transformations of vectors.
			N.VM.12	9-12	Perform operations on matrices and use matrices in applications. Work with 2 X 2 matrices as transformations of the plane, and interpret the absolute value of the determinant in terms of area.
			A.SSE.1a	9-12	Interpret parts of an expression, such as terms, factors, and coefficients.*
			A.SSE.1b	9-12	Interpret complicated expressions by viewing one or more of their parts as a single entity. For example, interpret P(1+r)^n as the product of P and a factor not depending on P.*
			A.SSE.2	9-12	Interpret the structure of expressions. Use the structure of an expression to identify ways to rewrite it. For example, see x^4 – y^4 as (x^2)^2 – (y^2)^2, thus recognizing it as a difference of squares that can be factored as (x^2 – y^2)(x^2 + y^2).
			A.APR.4	9-12	Use polynomial identities to solve problems. Prove polynomial identities and use them to describe numerical relationships. For example, the polynomial identity (x^2 + y^2)^2 = (x^2 – y^2)^2 + (2xy)^2 can be used to generate Pythagorean triples.
			A.APR.5	9-12	Use polynomial identities to solve problems. Know and apply that the Binomial Theorem gives the expansion of (x + y)^n in powers of x and y for a positive integer n, where x and y are any numbers, with coefficients determined for example by Pascal’s Triangle. (The Binomial Theorem can be proved by mathematical induction or by a combinatorial argument.)

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			A.REI.1	9-12	Understand solving equations as a process of reasoning and explain the reasoning. 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.IF.9	9-12	Analyze functions using different representations. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.
			F.BF.4b	9-12	Verify by composition that one function is the inverse of another.
			F.BF.4c	9-12	Read values of an inverse function from a graph or a table, given that the function has an inverse.
			F.BF.4d	9-12	Produce an invertible function from a non-invertible function by restricting the domain.
			F.LE.1a	9-12	Prove that linear functions grow by equal differences over equal intervals and that exponential functions grow by equal factors over equal intervals.*
			F.TF.1	9-12	Extend the domain of trigonometric functions using the unit circle. Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle.
			F.TF.2	9-12	Extend the domain of trigonometric functions using the unit circle. 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.

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			F.TF.3	9-12	Extend the domain of trigonometric functions using the unit circle. Use special triangles to determine geometrically the values of sine, cosine, tangent for π/3, π/4 and π/6, and use the unit circle to express the values of sine, cosine, and tangent for π - x, π + x, and 2π - x in terms of their values for x, where x is any real number.
			F.TF.4	9-12	Extend the domain of trigonometric functions using the unit circle. Use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions.
			F.TF.5	9-12	Model periodic phenomena with trigonometric functions. Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline.*
			F.TF.6	9-12	Model periodic phenomena with trigonometric functions. Understand that restricting a trigonometric function to a domain on which it is always increasing or always decreasing allows its inverse to be constructed.
			F.TF.7	9-12	Model periodic phenomena with trigonometric functions. Use inverse functions to solve trigonometric equations that arise in modeling contexts; evaluate the solutions using technology, and interpret them in terms of the context.*
			F.TF.8	9-12	Prove and apply trigonometric identities. Prove the Pythagorean identity (sin A)^2 + (cos A)^2 = 1 and use it to find sin A, cos A, or tan A, given sin A, cos A, or tan A, and the quadrant of the angle.
			F.TF.9	9-12	Prove and apply trigonometric identities. Prove the addition and subtraction formulas for sine, cosine, and tangent and use them to solve problems.
			G.CO.1	9-12	Experiment with transformations in the plane. Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.

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			G.CO.3	9-12	Experiment with transformations in the plane. Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.
			G.CO.4	9-12	Experiment with transformations in the plane. Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.
			G.CO.5	9-12	Experiment with transformations in the plane. 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.6	9-12	Understand congruence in terms of rigid motions. Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.
			G.CO.7	9-12	Understand congruence in terms of rigid motions. Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.
			G.CO.8	9-12	Understand congruence in terms of rigid motions. Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.

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			G.SRT.1	9-12	Understand similarity in terms of similarity transformations. Verify experimentally the properties of dilations given by a center and a scale factor: -- a. A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged. -- b. The dilation of a line segment is longer or shorter in the ratio given by the scale factor.
			G.SRT.10	9-12	Apply trigonometry to general triangles. Prove the Laws of Sines and Cosines and use them to solve problems.
			G.SRT.11	9-12	Apply trigonometry to general triangles. Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).
			S.ID.5	9-12	Summarize, represent, and interpret data on two categorical and quantitative variables. Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.*
			S.ID.6b	9-12	Informally assess the fit of a function by plotting and analyzing residuals.*
			S.IC.2	9-12	Understand and evaluate random processes underlying statistical experiments. Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation. For example, a model says a spinning coin falls heads up with probability 0. 5. Would a result of 5 tails in a row cause you to question the model?*

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			S.IC.4	9-12	Make inferences and justify conclusions from sample surveys, experiments, and observational studies. Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling.*
			S.IC.5	9-12	Make inferences and justify conclusions from sample surveys, experiments, and observational studies. Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant.*
			S.IC.6	9-12	Make inferences and justify conclusions from sample surveys, experiments, and observational studies. Evaluate reports based on data.*
			S.CP.3	9-12	Understand independence and conditional probability and use them to interpret data. Understand the conditional probability of A given B as P(A and B)/P(B), and interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A, and the conditional probability of B given A is the same as the probability of B.*

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			S.CP.4	9-12	Understand independence and conditional probability and use them to interpret data. Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities. For example, collect data from a random sample of students in your school on their favorite subject among math, science, and English. Estimate the probability that a randomly selected student from your school will favor science given that the student is in tenth grade. Do the same for other subjects and compare the results.*
			S.CP.5	9-12	Understand independence and conditional probability and use them to interpret data. Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations. For example, compare the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer.*
			S.CP.6	9-12	Use the rules of probability to compute probabilities of compound events in a uniform probability model. Find the conditional probability of A given B as the fraction of B's outcomes that also belong to A, and interpret the answer in terms of the model.*
			S.CP.8	9-12	Use the rules of probability to compute probabilities of compound events in a uniform probability model. Apply the general Multiplication Rule in a uniform probability model, P(A and B) = [P(A)]x[P(B|A)] =[P(B)]x[P(A|B)], and interpret the answer in terms of the model.*

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			S.CP.9	9-12	Use the rules of probability to compute probabilities of compound events in a uniform probability model. Use permutations and combinations to compute probabilities of compound events and solve problems.*
			S.MD.1	9-12	Calculate expected values and use them to solve problems. Define a random variable for a quantity of interest by assigning a numerical value to each event in a sample space; graph the corresponding probability distribution using the same graphical displays as for data distributions.*
			S.MD.2	9-12	Calculate expected values and use them to solve problems. Calculate the expected value of a random variable; interpret it as the mean of the probability distribution.*
			S.MD.3	9-12	Calculate expected values and use them to solve problems. 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.MD.4	9-12	Calculate expected values and use them to solve problems. Develop a probability distribution for a random variable defined for a sample space in which probabilities are assigned empirically; find the expected value. For example, find a current data distribution on the number of TV sets per household in the United States, and calculate the expected number of sets per household. How many TV sets would you expect to find in 100 randomly selected households?*
			S.MD.5	9-12	Use probability to evaluate outcomes of decisions. Weigh the possible outcomes of a decision by assigning probabilities to payoff values and finding expected values.*

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			S.MD.5a	9-12	Find the expected payoff for a game of chance. For example, find the expected winnings from a state lottery ticket or a game at a fast-food restaurant.*
			S.MD.5b	9-12	Evaluate and compare strategies on the basis of expected values. For example, compare a high-deductible versus a low-deductible automobile insurance policy using various, but reasonable, chances of having a minor or a major accident.*
			S.MD.6	9-12	Use probability to evaluate outcomes of decisions. Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).*
			S.MD.7	9-12	Use probability to evaluate outcomes of decisions. Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).*