

ACCRS/QUALITY CORE CORRELATION DOCUMENT: ALGEBRA I

2010 ACOS ALGEBRA I	QUALITYCORE COURSE STANDARD	COMMENTS
Extend the properties of exponents to rational exponents.		
1. [N-RN1] 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.	F.1.a. Exploring advanced Functions; Rational and Radical Expressions, Equations and Functions; a. Use properties of exponents (including zero and negative exponents) to evaluate and simplify expressions.	
2. [N-RN2] Rewrite expressions involving radicals and rational exponents using the properties of exponents.	F.1.a. Exploring advanced Functions; Rational and Radical Expressions, Equations and Functions; a. Use properties of exponents (including zero and negative exponents) to evaluate and simplify expressions.	
Use properties of rational and irrational numbers.		
3. [N-RN3] Explain why the sum or product of two 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.	F.1.d. Exploring advanced Functions; Rational and Radical Expressions, Equations and Functions; d. Find rational number square roots (without calculators) and approximate irrational square roots (with and without calculators)	
	F.1.e. Exploring advanced Functions; Rational and Radical Expressions, Equations and Functions; e. Evaluate and simplify radical expressions.	
	F.1.f. Exploring advanced Functions; Rational and Radical Expressions, Equations and Functions; f. Multiply radical expressions.	
Reason quantitatively and use units to solve problems. (Foundation for work with expressions, equations, and functions.)		
4. [N-Q1] Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.	D.1.a. Exploring Expressions, Equation, and Functions in the First Degree; 1. Expressions, Equations, and Inequalities; a. Solve single-step and multistep equations and inequalities in one variable.	
5. [N-Q2] Define appropriate quantities for the purpose of descriptive modeling.		
6. [N-Q3] Choose a level of accuracy appropriate to limitations on measurement when reporting quantities .		

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Interpret the structure of expressions. (For standard 7, linear, exponential, quadratic.)		
<p>7. [A-SSE1] Interpret expressions that represent a quantity in terms of its context.*</p> <p>7a. [A-SSE1a] Interpret parts of an expression, such as terms, factors, and coefficients.</p> <p>7b. [A-SSE1b] Interpret complicated expressions by viewing one or more of their parts as a single entity. (Linear, exponential, quadratic)</p>	<p>C.1.b. Establishing Number Sense and Operation Skills; 1. Foundations; b. Translate real-world problems into expressions using variables to represent values.</p>	<p>Real-world application should be included.</p>
Interpret the structure of expressions. (For standard 8, linear, exponential, quadratic, rational.)		
<p>8. [A-SSE2] Use the structure of an expression to identify ways to rewrite it.</p>	<p>E.1.a Exploring Quadratic Equations and Functions; 1. Equations and Inequalities; a. Factor perfect square trinomials and the difference of two squares.</p>	
	<p>E.1.b Exploring Quadratic Equations and Functions; 1. Equations and Inequalities; b. Factor trinomials in the form $ax^2 + bx + c$.</p>	
	<p>F.1.e. Exploring advanced Functions; Rational and Radical Expressions, Equations and Functions; e. Evaluate and simplify radical expressions.</p>	
Write expressions in equivalent forms to solve problems. (Quadratic and exponential.)		
<p>9. [A-SSE3] Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.* (Quadratic and exponential)</p> <p>9a. [A-SSE3a] Factor a quadratic expression to reveal the zeros of the function it defines.</p> <p>9b. [A-SSE3b] Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines. (Quadratic and exponential)</p> <p>9c. [AL] Determine a quadratic equation when given its graph or roots.</p> <p>9d. [A-SSE3c] Use the properties of exponents to transform expressions for exponential functions. (Quadratic and Exponential Problems)</p>	<p>C.1.e. Establishing Number Sense and Operation Skills; 1. Foundations; e. Factor a monomial from a polynomial.</p>	
	<p>E.1.a Exploring Quadratic Equations and Functions; 1. Equations and Inequalities; a. Factor perfect square trinomials and the difference of two squares.</p>	
	<p>F.1.e. Exploring advanced Functions; Rational and Radical Expressions, Equations and Functions; e. Evaluate and simplify radical expressions.</p>	

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Perform arithmetic operations on polynomials. (Linear and quadratic.)		
10. [A-APR1] 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. (Linear and quadratic)	<p>C.1.d. Establishing Number Sense and Operation Skills; 1. Foundations; d. Add & subtract polynomials.</p> <p>C.1.f. Establishing Number Sense and Operation Skills; 1. Foundations; f. Multiply monomials, binomials, trinomials, and polynomials.</p>	
11. (+) [A-APR7] Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expressions; add, subtract, multiply, and divide rational expressions.		
Create equations that describe numbers or relationships. (Linear, quadratic, and exponential (integer inputs only); for Standard 14, linear only.)		
12. [A-CED1] Create equations and inequalities in one variable and use them to solve problems. <i>Include equations arising from linear and quadratic functions, and simple rational and exponential functions.</i> (Linear, quadratic, and exponential (integer inputs only))	<p>C.1.b. Establishing Number Sense and Operation Skills; 1. Foundations; b. Translate real-world problems into expressions using variables to represent values.</p> <p>D.1.a. Exploring Expressions, Equation, and Functions in the First Degree; 1. Expressions, Equations, and Inequalities; a. Solve single-step and multistep equations and inequalities in one variable.</p> <p>D.1.e. Exploring Expressions, Equation, and Functions in the First Degree; 1. Expressions, Equations, and Inequalities; e. Write linear equations in standard form and slope-intercept form when given two points, a point and the slope, or the graph of the equation.</p> <p>D.2.a. Exploring Expressions, Equation, and Functions in the First Degree; 1. Graphs, Relations, and Functions; a. Graph linear inequalities in one variable on the real number line to solve problems.</p> <p>F.1.b Exploring advanced Functions; Rational and Radical Expressions, Equations and Functions; b. Evaluate and simplify rational expressions.</p>	<p>Quality Core D.2.a. Addressed in Grade 7, Std. 10.b. – Should be revisited in Algebra I</p>

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<p>13. [A-CED2] Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. [A-CED2] (Linear, quadratic, and exponential (integer inputs only))</p>	<p>C.1.b. Establishing Number Sense and Operation Skills; 1. Foundations; b. Translate real-world problems into expressions using variables to represent values.</p> <p>D.1.a. Exploring Expressions, Equation, and Functions in the First Degree; 1. Expressions, Equations, and Inequalities; a. Solve single-step and multistep equations and inequalities in one variable.</p> <p>D.1.e. Exploring Expressions, Equation, and Functions in the First Degree; 1. Expressions, Equations, and Inequalities; e. Write linear equations in standard form and slope-intercept form when given two points, a point and the slope, or the graph of the equation.</p> <p>D.1.f. Exploring Expressions, Equation, and Functions in the First Degree; 1. Expressions, Equations, and Inequalities; f. Identify, formulate, and obtain solutions to problems involving direct and inverse variation.</p> <p>D.2.a. Exploring Expressions, Equation, and Functions in the First Degree; 1. Graphs, Relations, and Functions; a. Graph linear inequalities in one variable on the real number line to solve problems.</p> <p>D.2.i. Exploring Expressions, Equation, and Functions in the First Degree; 1. Graphs, Relations, and Functions; i. Translate between different representations of relations and functions: graphs, equations, sets of ordered pairs, verbal descriptions, and tables.</p> <p>E.1.c Exploring Quadratic Equations and Functions; 1. Equations and Inequalities; c. Solve quadratic equations using multiple methods, including graphing, factoring, and the square root principle.</p> <p>E.2.b. Exploring Quadratic Equations and Functions; 2. Graphs, Relations, and Functions; b. Relate factors, solutions (roots), zeros of related functions, and x-intercepts in equations that arise from quadratic functions.</p>	<p>Quality Core D.1.a. and D.2.a. addressed in Grade 7, Std. 10.b. – Should be revisited in Algebra I</p>
<p>Create equations that describe numbers or relationships. (Linear, quadratic, and exponential (integer inputs only); for Standard 14, linear only.)</p>		
<p>14. [A-CED3] 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.</p>		
<p>15. [A-CED4] Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.</p>	<p>D.1.c. Exploring Expressions, Equation, and Functions in the First Degree; 1. Expressions, Equations, and Inequalities; c. Solve formulas for a specified variable.</p>	

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Understand solving equations as a process of reasoning and explain the reasoning. (<i>Master linear; learn as general principle.</i>)		
16. [A-REI1] 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.	D.2.a. Exploring Expressions, Equation, and Functions in the First Degree; 1. Graphs, Relations, and Functions; a. Graph linear inequalities in one variable on the real number line to solve problems.	Quality Core D.2.a. is initially addressed in Grade 7. However, graphing must be revisited in Algebra I.
Solve equations and inequalities in one variable. (<i>Linear inequalities; literal that are linear in the variables being solved for; quadratics with real solutions.</i>)		
17. [A-REI3] Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	D.1.a. Exploring Expressions, Equation, and Functions in the First Degree; 1. Expressions, Equations, and Inequalities; a. Solve single-step and multistep equations and inequalities in one variable.	Quality Core D.2.a. is initially addressed in Grade 7. However, graphing must be revisited in Algebra I.
	D.2.a. Exploring Expressions, Equation, and Functions in the First Degree; 1. Graphs, Relations, and Functions; a. Graph linear inequalities in one variable on the real number line to solve problems.	
18. [A-REI4] Solve quadratic equations in one variable. 18a. [A-REI4a] 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. 18b. [A-REI4b] 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. [AL]	E.1.c Exploring Quadratic Equations and Functions; 1. Equations and Inequalities; c. Solve quadratic equations using multiple methods, including graphing, factoring, and the square root principle.	
	D.2.i. Exploring Expressions, Equation, and Functions in the First Degree; 1. Graphs, Relations, and Functions; i. Translate between different representations of relations and functions: graphs, equations, sets of ordered pairs, verbal descriptions, and tables.	
Solve systems of equations. (<i>Linear-linear and linear-quadratic.</i>)		
19. [A-REI5] 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. (Linear-linear and linear-quadratic)	D.1.g. Exploring Expressions, Equation, and Functions in the First Degree; 1. Expressions, Equations, and Inequalities; g. Solve systems of two equations using various methods, including elimination, substitution, and graphing with and without technology.	

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20. [A-REI6] Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables. (Linear-linear and linear-quadratic)	D.1.g. Exploring Expressions, Equation, and Functions in the First Degree; 1. Expressions, Equations, and Inequalities; g. Solve systems of two equations using various methods, including elimination, substitution, and graphing with and without technology.	
21. [A-REI7] Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. (Linear-linear and linear-quadratic)		
Represent and solve equations and inequalities graphically. (Linear and exponential; learn as general principle.)		
22. [A-REI10] Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line). (Linear and exponential)	<p>D.1.e. Exploring Expressions, Equation, and Functions in the First Degree; 1. Expressions, Equations, and Inequalities; e. Write linear equations in standard form and slope-intercept form when given two points, a point and the slope, or the graph of the equation.</p> <p>D.2.d. Exploring Expressions, Equation, and Functions in the First Degree; 1. Graphs, Relations, and Functions; d. Identify graphs of relations and functions and analyze them to determine whether a relation is a function (e.g., vertical line test).</p>	Quality Core D.2.d. initially addressed in Grade 8. Must be revisited in Algebra I.
23. [A-REI11] 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.*	<p>D.1.g. Exploring Expressions, Equation, and Functions in the First Degree; 1. Expressions, Equations, and Inequalities; g. Solve systems of two equations using various methods, including elimination, substitution, and graphing with and without technology.</p> <p>D.1.b. Exploring Expressions, Equation, and Functions in the First Degree; 1. Expressions, Equations, and Inequalities; b. Solve equations that contain absolute value.</p>	
24. [A-REI12] Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes (Linear and exponential)	D.2.e. Exploring Expressions, Equation, and Functions in the First Degree; 1. Graphs, Relations, and Functions; e. Graph linear inequalities with two variables on the standard (x, y) coordinate plane	

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<p>Understand the concept of a function and use function notation. (<i>Learn as general principle; focus on linear and exponential and on arithmetic and geometric sequences.</i>)</p>		
<p>25. [F-IF1] 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 $y = f(x)$. (Focus on linear and exponential and on arithmetic and geometric sequences)</p>	<p>D.2.b. Exploring Expressions, Equation, and Functions in the First Degree; 1. Graphs, Relations, and Functions; b. Give the domain and range of relations and functions.</p> <p>D.2.c. Exploring Expressions, Equation, and Functions in the First Degree; 1. Graphs, Relations, and Functions; c. Evaluate functions at given values.</p> <p>D.2.d Exploring Expressions, Equation, and Functions in the First Degree; 1. Graphs, Relations, and Functions; d. Identify graphs of relations and functions and analyze them to determine whether a relation is a function (e.g., vertical line test).</p>	
<p>26. [F-IF2] Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context (Focus on linear and exponential and on arithmetic and geometric sequences)</p>	<p>D.2.c. Exploring Expressions, Equation, and Functions in the First Degree; 1. Graphs, Relations, and Functions; c. Evaluate functions at given values.</p>	
<p>27. [F-IF3] Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. (Focus on linear and exponential and on arithmetic and geometric sequences.)</p>	<p>G.1.c. Organizing and Analyzing Data and Applying Probability; 1. Data Relations, Probability, and Statistics; c. Identify arithmetic sequences and patterns in a set of data.</p> <p>G.1.d. Organizing and Analyzing Data and Applying Probability; 1. Data Relations, Probability, and Statistics; d. Identify patterns of growth (e.g., patterns of exponential growth) in a set of data.</p>	

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<p>Interpret functions that arise in applications in terms of the context. (<i>Linear, exponential, and quadratic.</i>)</p>		
<p>28. [F-IF4] 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. <i>Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.*</i> [F-IF4] (Linear, exponential and quadratic)</p>	<p>D.2.g. Exploring Expressions, Equation, and Functions in the First Degree; 1. Graphs, Relations, and Functions; g. Recognize the concept of slope as a rate of change and determine the slope when given the equation of a line in standard form or slope-intercept form, the graph of a line, two points, or a verbal description.</p> <p>D.2.h. Exploring Expressions, Equation, and Functions in the First Degree; 1. Graphs, Relations, and Functions; h. Graph a linear equation using a table of values, x- and y-intercepts, slope-intercept form, and technology.</p>	
<p>29. [F-IF5] Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.* (Linear, exponential, and quadratic)</p>	<p>D.2.b. Exploring Expressions, Equation, and Functions in the First Degree; 1. Graphs, Relations, and Functions; b. Give the domain and range of relations and functions.</p>	
<p>30. [F-IF6] Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.* (Linear, exponential and quadratic)</p>	<p>D.2.g. Exploring Expressions, Equation, and Functions in the First Degree; 1. Graphs, Relations, and Functions; g. Recognize the concept of slope as a rate of change and determine the slope when given the equation of a line in standard form or slope-intercept form, the graph of a line, two points, or a verbal description.</p>	

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<p>Analyze functions using different representations. (<i>Linear, exponential, quadratic, absolute value, step, and an awareness of piecewise-defined.</i>)</p>		
<p>31. [F-IF7] Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.* (Linear, exponential, quadratic, absolute value, step, piece-wise defined)</p> <p>31a. [F-IF7a] Graph linear and quadratic functions and show intercepts, maxima, and minima. (Linear, exponential, quadratic, absolute value, step, piece-wise defined)</p> <p>31b. [F-IF7b] Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions. (Linear, exponential, quadratic, absolute value, step, piece-wise defined)</p>	<p>D.1.b. Exploring Expressions, Equation, and Functions in the First Degree; 1. Expressions, Equations, and Inequalities; b. Solve equations that contain absolute value.</p> <p>D.2.e. Exploring Expressions, Equation, and Functions in the First Degree; 1. Graphs, Relations, and Functions; e. Graph linear inequalities with two variables on the standard (x, y) coordinate plane.</p> <p>E.2.b. Exploring Quadratic Equations and Functions; 2. Graphs, Relations, and Functions; b. Relate factors, solutions (roots), zeros of related functions, and x-intercepts in equations that arise from quadratic functions.</p>	
<p>32. [F-IF8] Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. (Linear, exponential, quadratic, absolute value, step, piece-wise defined)</p> <p>32a. [F-IF8a] 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. (Linear, exponential, quadratic, absolute value, step, piece-wise defined)</p> <p>32b. [F-IF8b] Use the properties of exponents to interpret expressions for exponential functions.</p>	<p>E.2.b. Exploring Quadratic Equations and Functions; 2. Graphs, Relations, and Functions; b. Relate factors, solutions (roots), zeros of related functions, and x-intercepts in equations that arise from quadratic functions.</p>	

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<p>33. [F-IF9] Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). (Linear, exponential, quadratic, absolute value, step, piece-wise defined)</p>	<p>D.1.b. Exploring Expressions, Equation, and Functions in the First Degree; 1. Expressions, Equations, and Inequalities; b. Solve equations that contain absolute value.</p> <p>D.2.g. Exploring Expressions, Equation, and Functions in the First Degree; 1. Graphs, Relations, and Functions; g. Recognize the concept of slope as a rate of change and determine the slope when given the equation of a line in standard form or slope-intercept form, the graph of a line, two points, or a verbal description.</p> <p>D.2.i. Exploring Expressions, Equation, and Functions in the First Degree; 1. Graphs, Relations, and Functions; i. Translate between different representations of relations and functions: graphs, equations, sets of ordered pairs, verbal descriptions, and tables.</p>	
<p>Build a function that models a relationship between two quantities. (For standards 34 and 35, linear, exponential, and quadratic.)</p>		
<p>34. [F-BF1] Write a function that describes a relationship between two quantities.* (Linear, exponential, and quadratic)</p> <p>34a. [F-BF1a] Determine an explicit expression, a recursive process, or steps for calculation from a context. (Linear, exponential, and quadratic)</p> <p>34b. [F-BF1b] Combine standard function types using arithmetic operations. (Linear, exponential, and quadratic)</p>	<p>D.2.h. Exploring Expressions, Equation, and Functions in the First Degree; 1. Graphs, Relations, and Functions; h. Graph a linear equation using a table of values, x- and y-intercepts, slope-intercept form, and technology.</p>	
<p>35. [F-BF2] Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.* (Linear, exponential, and quadratic)</p>	<p>G.1.c. Organizing and Analyzing Data and Applying Probability; 1. Data Relations, Probability, and Statistics; c. Identify arithmetic sequences and patterns in a set of data.</p> <p>G.1.d. Organizing and Analyzing Data and Applying Probability; 1. Data Relations, Probability, and Statistics; d. Identify patterns of growth (e.g., patterns of exponential growth) in a set of data</p>	

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<p>Build new functions from existing functions. <i>(Linear, exponential, quadratic, and absolute value)</i></p>		
<p>36. [F-BF3] 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. (Linear, exponential, quadratic, and absolute value)</p>	<p>D.2.h. Exploring Expressions, Equation, and Functions in the First Degree; 1. Graphs, Relations, and Functions; h. Graph a linear equation using a table of values, x- and y-intercepts, slope-intercept form, and technology.</p> <p>E.2.a. Exploring Quadratic Equations and Functions; 2. Graphs, Relations, and Functions; a. Identify graphs of quadratic functions.</p> <p>E.2.b. Exploring Quadratic Equations and Functions; 2. Graphs, Relations, and Functions; b. Relate factors, solutions (roots), zeros of related functions, and x-intercepts in equations that arise from quadratic functions.</p>	
<p>Construct and compare linear, quadratic, and exponential models and solve problems.</p>		
<p>37. [F-LE1] Distinguish between situations that can be modeled with linear functions and with exponential functions. [F-LE1] (Linear, quadratic, and exponential)</p> <p>37a. [F-LE1a] Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.</p> <p>37b. [F-LE1b] Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.</p> <p>37c. [F-LE1c] Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.</p>	<p>D.2.g. Exploring Expressions, Equation, and Functions in the First Degree; 1. Graphs, Relations, and Functions; g. Recognize the concept of slope as a rate of change and determine the slope when given the equation of a line in standard form or slope-intercept form, the graph of a line, two points, or a verbal description.</p> <p>G.1.c. Organizing and Analyzing Data and Applying Probability; 1. Data Relations, Probability, and Statistics; c. Identify arithmetic sequences and patterns in a set of data.</p> <p>G.1.d. Organizing and Analyzing Data and Applying Probability; 1. Data Relations, Probability, and Statistics; d. Identify patterns of growth (e.g., patterns of exponential growth) in a set of data</p>	

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<p>38. [F-LE2] 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).</p>	<p>D.1.e. Exploring Expressions, Equation, and Functions in the First Degree; 1. Expressions, Equations, and Inequalities; e. Write linear equations in standard form and slope-intercept form when given two points, a point and the slope, or the graph of the equation.</p> <p>G.1.c. Organizing and Analyzing Data and Applying Probability; 1. Data Relations, Probability, and Statistics; c. Identify arithmetic sequences and patterns in a set of data.</p>	
<p>39. [F-LE3] Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.</p>		
<p>Interpret expressions for functions in terms of the situation they model. (Linear and exponential of form $f(x) = b^x + k$.)</p>		
<p>40. [F-LE5] Interpret the parameters in a linear or exponential function in terms of a context. (Linear and exponential of form $f(x) = b^x + k$)</p>		
<p>Summarize, represent, and interpret data on a single count or measurement variable.</p>		
<p>41. [S-ID1] Represent data with plots on the real number line (dot plots, histograms, and box plots).</p>	<p>G.1.a. Organizing and Analyzing Data and Applying Probability; 1. Data Relations, Probability, and Statistics; a. Identify the effect on mean, median, mode, and range when a set of data is changed.</p> <p>G.1.b. Organizing and Analyzing Data and Applying Probability; 1. Data Relations, Probability, and Statistics; b. Interpret data from line, bar, and circle graphs, histograms, scatterplots, box-and-whisker plots, stem-and-leaf plots, and frequency tables to draw inferences and make predictions.</p>	

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42. [S-ID2] 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.	<p>G.1.a. Organizing and Analyzing Data and Applying Probability; 1. Data Relations, Probability, and Statistics; a. Identify the effect on mean, median, mode, and range when a set of data is changed.</p> <p>G.1.b. Organizing and Analyzing Data and Applying Probability; 1. Data Relations, Probability, and Statistics; b. Interpret data from line, bar, and circle graphs, histograms, scatterplots, box-and-whisker plots, stem-and-leaf plots, and frequency tables to draw inferences and make predictions.</p> <p>G.1.h. Organizing and Analyzing Data and Applying Probability; 1. Data Relations, Probability, and Statistics; h. Identify the most efficient way to display data.</p>	
43. [S-ID3] Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).	<p>G.1.b. Organizing and Analyzing Data and Applying Probability; 1. Data Relations, Probability, and Statistics; b. Interpret data from line, bar, and circle graphs, histograms, scatterplots, box-and-whisker plots, stem-and-leaf plots, and frequency tables to draw inferences and make predictions.</p>	
<p>Summarize, represent, and interpret data on two categorical and quantitative variables. (Linear focus, discuss general principle.)</p>		
44. [S-ID5] 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.	<p>G.1.g. Organizing and Analyzing Data and Applying Probability; 1. Data Relations, Probability, and Statistics; g. Identify an approximate line of best fit to model data and make predictions</p>	
<p>45. [S-ID6] Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.</p> <p>45a. [S-ID6a] Fit a function to the data; use functions fitted to data to solve problems in the context of the data. <i>Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models.</i></p> <p>45b. [S-ID6b] Informally assess the fit of a function by plotting and analyzing residuals.</p> <p>45c. [S-ID6c] Fit a linear function for a scatter plot that suggests a linear association.</p>	<p>G.1.g. Organizing and Analyzing Data and Applying Probability; 1. Data Relations, Probability, and Statistics; g. Identify an approximate line of best fit to model data and make predictions</p>	

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Interpret linear models.		
<p>46. [S-ID7] Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.</p>	<p>D.2.g. Exploring Expressions, Equation, and Functions in the First Degree; 1. Graphs, Relations, and Functions; g. Recognize the concept of slope as a rate of change and determine the slope when given the equation of a line in standard form or slope-intercept form, the graph of a line, two points, or a verbal description.</p>	
	<p>G.1.g. Organizing and Analyzing Data and Applying Probability; 1. Data Relations, Probability, and Statistics; g. Identify an approximate line of best fit to model data and make predictions</p>	
	<p>G.1.g. Organizing and Analyzing Data and Applying Probability; 1. Data Relations, Probability, and Statistics; g. Identify an approximate line of best fit to model data and make predictions</p>	
<p>Understand independent and conditional probability and use them to interpret data. <i>(Link data from simulations or experiments.)</i></p>		
<p>47. [S-CP2] Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent.</p>	<p>G.1.e. Organizing and Analyzing Data and Applying Probability; 1. Data Relations, Probability, and Statistics; e. Find the probability of a simple event.</p>	
	<p>G.1.f. Organizing and Analyzing Data and Applying Probability; 1. Data Relations, Probability, and Statistics; Distinguish between independent and dependent events.</p>	