CONNECTED MATHEMATICS® 3

Correlation of Common Core Content Standards to CMP3 Content As Identified by PARCC

GRADE 8 / ALGEBRA 1

Number	Standard for Mathematical Content	CMP3 Unit: Investigation
8.NS.A	Know that there are numbers that are not rational, and approximate them by rational numbers.	
8.NS.A.1	Understand informally that every number has a decimal expansion; the rational numbers are those with decimal expansions that terminate in 0s or eventually repeat. Know that other numbers are called irrational.	Looking for Pythagoras: Inv. 4
8.NS.A.2	Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π^2). For example, by truncating the decimal expansion of $\sqrt{2}$, show that $\sqrt{2}$ is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.	Looking for Pythagoras: Inv. 2, 4
8.EE.A	Work with radicals and integer exponents.	
8.EE.A.1	Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$.	Growing, Growing, Growing: Inv. 5
8.EE.A.2	Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.	Looking for Pythagoras: Inv. 2, 4 Growing, Growing, Growing: Inv. 5 Say It With Symbols: Inv. 3
8.EE.A.3	Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. For example, estimate the population of the United States as 3 × 108 and the population of the world as 7 × 109, and determine that the world population is more than 20 times larger.	Growing, Growing, Growing: Inv. 1, 5
8.EE.A.4	Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.	Growing, Growing, Growing: Inv. 5

Number	Standard for Mathematical Content	CMP3 Unit: Investigation
8.EE.B	**Understand the connections between proportional relationships, lines, and linear equations.**	
8.EE.B.5	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.	Thinking With Mathematical Models: Inv. 2, 3
8.EE.B.6	Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b.	Butterflies, Pinwheels, and Wallpaper: Inv. 4
8.EE.C	**Analyze and solve linear equations and pairs of simultaneous linear equations.**	
8.EE.C.7	Solve linear equations in one variable.	Thinking With Mathematical Models: Inv. 2 Say It With Symbols: Inv. 1, 2, 3, 4
8.EE.C.7a	Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers).	Looking for Pythagoras: Inv. 4 Say It With Symbols: Inv. 3
8.EE.C.7b	Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.	Thinking With Mathematical Models: Inv. 2 Say It With Symbols: Inv. 1, 2, 3, 4, 5
8.EE.C.8	Analyze and solve pairs of simultaneous linear equations.	Thinking With Mathematical Models: Inv. 2 Say It With Symbols: Inv. 3 It's In the System: Inv. 1, 2
8.EE.C.8a	Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.	Thinking With Mathematical Models: Inv. 2 Say It With Symbols: Inv. 3 It's In the System: Inv. 1, 2, 3
8.EE.C.8b	Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. For example, $3x + 2y = 5$ and $3x + 2y = 6$ have no solution because $3x + 2y$ cannot simultaneously be 5 and 6.	Say It With Symbols: Inv. 3 It's In the System: Inv. 1, 2, 4
8.EE.C.8c	Solve real-world and mathematical problems leading to two linear equations in two variables. For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.	Thinking With Mathematical Models: Inv. 2 Say It With Symbols: Inv. 3 It's In the System: Inv. 1, 2, 3, 4

Number	Standard for Mathematical Content	CMP3 Unit: Investigation
8.F.A	**Define, evaluate, and compare functions.**	
8.F.A.1	Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.	Thinking With Mathematical Models: Inv. 2, 3, 4 Growing, Growing, Growing: Inv. 1, 2, 3, 4 Say It With Symbols: Inv. 2, 3, 4, 5
8.F.A.2	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.	Thinking With Mathematical Models: Inv. 2 Growing, Growing, Growing: Inv. 3, 4 Say It With Symbols: Inv. 2, 5
8.F.A.3	Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. For example, the function $A = s^2$ giving the area of a square as a function of its side length is not linear because its graph contains the points (1, 1), (2, 4) and (3, 9), which are not on a straight line.	Thinking With Mathematical Models: Inv. 2, 3, 4 Growing, Growing, Growing: Inv. 1, 3, 5 Say It With Symbols: Inv. 1, 2, 4 It's In the System: Inv. 1
8.F.B	**Use functions to model relationships between quantities.**	
8.F.B.4	Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.	Thinking With Mathematical Models: Inv. 2, 4 Growing, Growing, Growing: Inv. 1 Say It With Symbols: Inv. 4, 5
8.F.B.5	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.	Thinking With Mathematical Models: Inv. 1, 3, 4 Growing, Growing, Growing: Inv. 1, 2, 3, 4 Say It With Symbols: Inv. 4

Number	Standard for Mathematical Content	CMP3 Unit: Investigation
8.G.A	**Understand congruence and similarity using physical models, transparencies, or geometry software.**	
8.G.A.1	Verify experimentally the properties of rotations, reflections, and translations:	Butterflies, Pinwheels, and Wallpaper: Inv. 1, 2, 3
8.G.A.1a	Lines are taken to lines, and line segments to line segments of the same length.	Butterflies, Pinwheels, and Wallpaper: Inv. 1, 2, 3
8.G.A.1b	Angles are taken to angles of the same measure.	Butterflies, Pinwheels, and Wallpaper: Inv. 1, 2, 3
8.G.A.1c	Parallel lines are taken to parallel lines.	Butterflies, Pinwheels, and Wallpaper: Inv. 1, 3
8.G.A.2	Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.	Butterflies, Pinwheels, and Wallpaper: Inv. 2, 3
8.G.A.3	Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.	Butterflies, Pinwheels, and Wallpaper: Inv. 3, 4
8.G.A.4	Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar twodimensional figures, describe a sequence that exhibits the similarity between them.	Looking for Pythagoras: Inv. 5 Butterflies, Pinwheels, and Wallpaper: Inv. 4
8.G.A.5	Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.	Butterflies, Pinwheels, and Wallpaper: Inv. 3, 4
8.G.B	**Understand and apply the Pythagorean Theorem.**	
8.G.B.6	Explain a proof of the Pythagorean Theorem and its converse.	Looking for Pythagoras: Inv. 3
8.G.B.7	Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.	Looking for Pythagoras: Inv. 3, 4, 5
8.G.B.8	Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	Looking for Pythagoras: Inv. 3, 5

Number	Standard for Mathematical Content	CMP3 Unit: Investigation
8.G.C	**Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.**	
8.G.C.9	Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.	Say It With Symbols: Inv. 2
8.SP.A	**Investigate patterns of association in bivariate data.**	
8.SP.A.1	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.	Thinking With Mathematical Models: Inv. 1, 2, 3, 4
8.SP.A.2	Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.	Thinking With Mathematical Models: Inv. 2, 4
8.SP.A.3	Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.	Thinking With Mathematical Models: Inv. 2, 4
8.SP.A.4	Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?	Thinking With Mathematical Models: Inv. 5

Number	Standard for Mathematical Content	CMP3 Unit: Investigation
N-Q.A	**Reason quantitatively and use units to solve problems.**	
N-Q.A.1	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.	Thinking With Mathematical Models: Inv. 1, 2, 4 Growing, Growing, Growing: Inv. 2, 4 Frogs, Fleas, and Painted Cubes: Inv. 1 Say It With Symbols: Inv. 2, 3, 4 Function Junction: Inv. 1
N-Q.A.2	Define appropriate quantities for the purpose of descriptive modeling.	Thinking With Mathematical Models: Inv. 1 Growing, Growing, Growing: Inv. 2 Say It With Symbols: Inv. 2, 4 Function Junction: Inv. 1
N-Q.A.3	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.	Looking for Pythagoras: Inv. 2, 4, 5
N-RN.B	**Use properties of rational and irrational numbers.**	
N-RN.B.3	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.	Say It With Symbols: Inv. 5
A-SSE.A	**Interpret the structure of expressions**	
A-SSE.A.1	Interpret expressions that represent a quantity in terms of its context.	
A-SSE.A.1a	Interpret parts of an expression, such as terms, factors, and coefficients.	Thinking With Mathematical Models: Inv. 2 Growing, Growing, Growing: Inv. 1, 2, 3, 4, 5 Frogs, Fleas, and Painted Cubes: Inv. 2 Say It With Symbols: Inv. 1, 2, 3, 4, 5
A-SSE.A.1b	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.	Growing, Growing, Growing: Inv. 3, 4 Frogs, Fleas, and Painted Cubes: Inv. 1, 2, 3 Say It With Symbols: Inv. 1, 2, 3, 4, 5
A-SSE.A.2	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 $(x^2 – y^2)(x^2 + y^2)$.	Growing, Growing, Growing: Inv. 5 Frogs, Fleas, and Painted Cubes: Inv. 2, 3 Say It With Symbols: Inv. 1, 2, 3, 4, 5 Function Junction: Inv. 4

Number	Standard for Mathematical Content	CMP3 Unit: Investigation
A-SSE.B	**Write expressions in equivalent forms to solve problems**	
A-SSE.B.3	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.	
A-SSE.B.3a	Factor a quadratic expression to reveal the zeros of the function it defines.	Say It With Symbols: Inv. 3, 4
A-SSE.B.3b	Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.	Function Junction: Inv. 4
A-SSE.B.3c	Use the properties of exponents to transform expressions for exponential functions. For example the expression 1.15*t* can be rewritten as (1.151/12)12*t* ≈ 1.01212*t* to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.	Growing, Growing, Growing: Inv. 5
A-APR.A	**Perform arithmetic operations on polynomials**	
A-APR.A.1	Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.	Function Junction: Inv. 5
A-APR.B	**Understand the relationship between zeros and factors of polynomials**	
A-APR.B.3	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.	Function Junction: Inv. 4, 5
A-CED.A	**Create equations that describe numbers or relationships**	
A-CED.A.1	Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.	Thinking With Mathematical Models: Inv. 2 Looking for Pythagoras: Inv. 4 Growing, Growing, Growing: Inv. 1 Frogs, Fleas, and Painted Cubes: Inv. 1 Say It With Symbols: Inv. 2, 3, 4, 5 It's In the System: Inv. 3
A-CED.A.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	Thinking With Mathematical Models: Inv. 2, 3, 4 Looking for Pythagoras: Inv. 5 Growing, Growing, Growing: Inv. 1, 2, 3, 4 Frogs, Fleas, and Painted Cubes: Inv. 1, 2, 3, 4 Say It With Symbols: Inv. 3, 4, 5 It's In the System: Inv. 1, 2, 3, 4
A-CED.A.3	Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.	It's In the System: Inv. 1, 2, 3, 4
A-CED.A.4	Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law $V = IR$ to highlight resistance R.	Thinking With Mathematical Models: Inv. 3 It's in the System: Inv. 1, 2

Number	Standard for Mathematical Content	CMP3 Unit: Investigation
A-REI.A	**Understand solving equations as a process of reasoning and explain the reasoning**	
A-REI.A.1	Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.	Thinking With Mathematical Models: Inv. 2 Say It With Symbols: Inv. 3
A-REI.B	**Solve equations and inequalities in one variable**	
A-REI.B.3	Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	Thinking With Mathematical Models: Inv. 2 Say It With Symbols: Inv. 2, 3, 4 It's In the System: Inv. 1, 2, 3
A-REI.B.4	Solve quadratic equations in one variable.	
A-REI.B.4a	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.	Function Junction: Inv. 4
A-REI.B.4b	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 $a \pm bi$ for real numbers a and b.	Say It With Symbols: Inv. 3, 4 It's In the System: Inv. 3 Function Junction: Inv. 4
A-REI.C	**Solve systems of equations**	
A-REI.C.5	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.	It's In the System: Inv. 2
A-REI.C.6	Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.	Thinking With Mathematical Models: Inv. 2 Say It With Symbols: Inv. 3 It's In the System: Inv. 1, 2, 4
A-REI.D	**Represent and solve equations and inequalities graphically**	
A-REI.D.10	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).	Looking for Pythagoras: Inv. 5 Growing, Growing, Growing: Inv. 1, 2, 3, 4 Frogs, Fleas, and Painted Cubes: Inv. 1, 2, 3, 4 Say It With Symbols: Inv. 3 It's In the System: Inv. 1, 2, 3, 4
A-REI.D.11	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.	Say It With Symbols: Inv. 3

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A-REI.D.12	Graph the solutions to a linear inequality in two variables as a halfplane (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.	It's In the System: Inv. 4
F-IF.A	**Understand the concept of a function and use function notation**	
F-IF.A.1	Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then $f(x)$ denotes the output of f corresponding to the input x. The graph of f is the graph of the equation $y = f(x)$.	Thinking With Mathematical Models: Inv. 2 Function Junction: Inv. 1
F-IF.A.2	Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.	Function Junction: Inv. 1
F-IF.A.3	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 $n \geq 1$.	Function Junction: Inv. 2
F-IF.B	**Interpret functions that arise in applications in terms of the context**	
F-IF.B.4	For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.	Thinking With Mathematical Models: Inv. 1 Growing, Growing, Growing: Inv. 1, 2, 3, 4 Frogs, Fleas, and Painted Cubes: Inv. 1, 2, 3, 4 Function Junction: Inv. 1, 5
F-IF.B.5	Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. For example, if the function $h(n)$ gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function.	Function Junction: Inv. 1, 4
F-IF.B.6	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.	Thinking With Mathematical Models: Inv. 1 Growing, Growing, Growing: Inv. 3, 4 Function Junction: Inv. 1

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F-IF.C	**Analyze functions using different representations**	
F-IF.C.7	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.	
F-IF.C.7a	Graph linear and quadratic functions and show intercepts, maxima, and minima.	Frogs, Fleas, and Painted Cubes: Inv. 1, 2, 3, 4 Function Junction: Inv. 3
F-IF.C.7b	Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.	Function Junction: Inv. 1
F-IF.C.8	Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.	
F-IF.C.8a	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.	Frogs, Fleas, and Painted Cubes: Inv. 2 Function Junction: Inv. 4
F-IF.C.9	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.	Thinking With Mathematical Models: Inv. 1 Growing, Growing, Growing: Inv. 1, 4 Frogs, Fleas, and Painted Cubes: Inv. 1, 3, 4 Say It With Symbols: Inv. 1, 2, 4 Function Junction: Inv. 3, 5
F-BF.A	**Build a function that models a relationship between two quantities**	
F-BF.A.1	Write a function that describes a relationship between two quantities.	
F-BF.A.1a	Determine an explicit expression, a recursive process, or steps for calculation from a context.	Thinking With Mathematical Models: Inv. 1, 2, 3 Frogs, Fleas, and Painted Cubes: Inv. 2, 3 Say It With Symbols: Inv. 1, 2, 4 Function Junction: Inv. 2

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F-BF.B	**Build new functions from existing functions**	
F-BF.B.3	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.	Function Junction: Inv. 3
F-LE.A	**Construct and compare linear and exponential models and solve problems**	
F-LE.A.1	Distinguish between situations that can be modeled with linear functions and with exponential functions.	
F-LE.A.1a	Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.	Growing, Growing, Growing: Inv. 1, 3, 4 Frogs, Fleas, and Painted Cubes: Inv. 3, 4
F-LE.A.1b	Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.	Thinking With Mathematical Models: Inv. 1 Frogs, Fleas, and Painted Cubes: Inv. 3, 4
F-LE.A.1c	Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.	Growing, Growing, Growing: Inv. 3, 4
F-LE.A.2	Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).	Thinking With Mathematical Models: Inv. 2 Growing, Growing, Growing: Inv. 1, 2, 3, 4 Say It With Symbols: Inv. 4
F-LE.A.3	Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.	Growing, Growing, Growing: Inv. 1
F-LE.B	**Interpret expressions for functions in terms of the situation they model**	
F-LE.B.5	Interpret the parameters in a linear or exponential function in terms of a context.	Thinking With Mathematical Models: Inv. 2 Growing, Growing, Growing: Inv. 1, 2, 3, 4 Say It With Symbols: Inv. 4

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S-ID.A	**Summarize, represent, and interpret data on a single count or measurement variable**	
S-ID.A.1	Represent data with plots on the real number line (dot plots, histograms, and box plots).	Thinking With Mathematical Models: Inv. 4
S-ID.A.2	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.	Thinking With Mathematical Models: Inv. 4
S-ID.A.3	Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).	Thinking With Mathematical Models: Inv. 4
S-ID.B	**Summarize, represent, and interpret data on two categorical and quantitative variables**	
S-ID.B.5	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.	Thinking With Mathematical Models: Inv. 5
S-ID.B.6	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.	
S-ID.B.6a	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 and exponential models.	Thinking With Mathematical Models: Inv. 2, 3
S-ID.B.6b	Informally assess the fit of a function by plotting and analyzing residuals.	Thinking With Mathematical Models: Inv. 2, 4
S-ID.B.6c	Fit a linear function for a scatter plot that suggests a linear association.	Thinking With Mathematical Models: Inv. 2
S-ID.C	**Interpret linear models**	
S-ID.C.7	Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.	Thinking With Mathematical Models: Inv. 4
S-ID.C.8	Compute (using technology) and interpret the correlation coefficient of a linear fit.	Thinking With Mathematical Models: Inv. 4
S-ID.C.9	Distinguish between correlation and causation.	Thinking With Mathematical Models: Inv. 4, 5