Algebra 1 CCSS Alignment

Anchor Standard	#	Algebra 1 Standards	**Citation** - Where in the course is the DEVELOPMENT/PRACTICE? (Course/Semester/Module/Lesson/Activity or Page)
Seeing Structure in Expressions			
Interpret the structure of expressions	SSE.A.1	Interpret expressions that represent a quantity in terms of its context.	Algebra1/A/Module1/Using Variables to create models of the real world Algebra1/A/Module1/Combing like terms
	SSE.A.1a	Interpret parts of an expression, such as terms, factors, and coefficients.	Algebra1/A/Module1/Using Variables to create models of the real world Algebra1/A/Module1/Combing like terms
	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*	Algebra1/A/Module1/Using Variables to create models of the real world Algebra1/A/Module1/Combing like terms
	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* $(x^2 - y^2)(x^2 + y^2)$.	Algebra1/A/Module1/Using the distributive property Algebra1/A/Module1/Combining like terms Algebra1/A/Module1/Working with ratios Algebra1/A/Module1/Using Unit Analysis to guide problem solving Algebra1/B/Module11/Multiplying Rational Expressions Algebra1/B/Module11/Dividing Rational Expressions Algebra1/B/Module11/Adding and Subtracting Rational Expressions with Like Denominators Algebra1/B/Module11/Adding and Subtracting Rational Expressions with Unlike Denominators Algebra1/B/Module11/Solving Rational Expressions Using Cross Products Algebra1/B/Module11/Solving Rational Expressions Using the Lowest Common Denominator
Write expressions in equivalent	SSE.B.3	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.	Algebra1/B/Module7/Transforming Expressions for Exponential Functions Algebra1/B/Module9/Introduction to Quadratic Equations Algebra1/B/Module9/Completing the Square
	SSE.B.3a	Factor a quadratic expression to reveal the zeroes of the function it defines	Algebra1/B/Module9/Introduction to Quadratic Equations
	SSE.3b	Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines	Algebra1/B/Module9/Completing the Square

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problems	SSE.B.3c	Use the properties of exponents to transform expressions for exponential functions. For example the expression 1.15t can be rewritten as (1.151/12)12t ≈ 1.01212t to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.	Algebra1/B/Module7/Transforming Expressions for Exponential Functions
Arithmetic with Polynomials & Rational Expressions			
Perform arithmetic operations on polynomials	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	Algebra1/B/Module8/Simplifying polynomial by addition and subtraction Algebra1/B/Module8/Multiplying polynomials by monomials Algebra1/B/Module8/Multiplying binomials Algebra1/B/Module8/Multiplying polynomials-horizontal methods Algebra1/B/Module8/Multiplying polynomials-vertical method Algebra1/B/Module8/Difference of squares Algebra1/B/Module8/Square of a binomial
Creating Equations			
Create equations that describe numbers or	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*.	Algebra1/A/Module2/Working with proportions Algebra1/A/Module2/Solving Proportions Using the Cross Product Property Algebra1/A/Module2/Solving Percent Problems Algebra1/A/Module2/Solving equations with involving decimals Algebra1/A/Module2/Modeling and solving real-world problems involving linear equations Algebra1/B/Module7/Using Simple Exponential Functions Algebra1/B/Module9/Introduction to Quadratic Equations Algebra1/B/Module11/Modeling Work Problems Algebra1/B/Module11/Modeling Mixture Problems Algebra1/B/Module11/Working with Rational Functions
	CED.A.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	Algebra1/Module3/Graphing Linear functions using an equation in slope-intercept form Algebra1/A/Module3/Graphing linear functions using the slope and point on the line Algebra1/A/Module3/Graph a linear function using an equation in standard form

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	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*.	Algebra1/A/Module2/Designing in the safety factor: Working with linear inequalities Algebra1/A/Module2/Solving linear inequalities with variables on both sides Algebra1/A/Module5/Using functions to model real change Algebra1/A/Module6/Solving systems of inequalities Algebra1/A/Module6/Real-world solutions using systems of inequalities
	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.	Algebra1/A/Module2/Solve a simple equation using commutative and associative properties Algebra1/A/Module3/Convert between slope-intercepts to standard form Algebra1/A/Module3/Modeling constant change using graphs and linear equations
Reasoning with Equations & Inequalities			
Understand solving equations as a process of reasoning and explain the reasoning	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	Algebra1/A/Module2/Solve a simple equation using commutative and associative properties Algebra1/A/Module2/Using the distributive property to solve an equation Algebra1/A/Module2/Solving equations with involving decimals Algebra1/A/Module2/Solving equations involving fractions Algebra1/A/Module2/Solving equations with variables on both sides Algebra1/A/Module2/Designing in the safety factor: Working with linear inequalities Algebra1/A/Module2/Solving linear inequalities with variables on both sides Algebra1/B/Module11/Working with Rational Functions
	REI.B.3	Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	Algebra1/A/Module2/Using the distributive property to solve an equation Algebra1/A/Module2/Solving equations with involving decimals Algebra1/A/Module2/Solving equations involving fractions Algebra1/A/Module2/Solving equations with variables on both sides Algebra1/A/Module2/Modeling and solving real-world problems involving linear equations Algebra1/A/Module2/Designing in the safety factor: Working with linear inequalities Algebra1/A/Module2/Solving linear inequalities with variables on both sides

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Solve equations and inequalities in one variable	REI.B.4	Solve quadratic equations in one variable	Algebra1/B/Module9/Using the Quadratic Formula Algebra1/B/Module9/Factoring when a=1 Algebra1/B/Module9/Factoring when a=>1 Algebra1/B/Module9/Factoring the Difference of Two Squares Algebra1/B/Module9/Factoring Higher Order Polynomials Algebra1/B/Module9/Factoring By Grouping Algebra1/B/Module9/Factoring the Sum or Difference of Two Cubes Algebra1/B/Module9/Completing the Square Algebra1/B/Module9/Choosing the Best Method to Factor
	REI.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.	Algebra1/B/Module9/Using the Quadratic Formula
	REI.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.	Algebra1/B/Module9/Using the Quadratic Formula
Solve systems of equations.	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	Algebra1/A/Module6/Defining systems of equations
	REI.C.6	Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.	Algebra1/A/Module6/Solving systems of equations by substitutions Algebra1/A/Module6/Solving systems of equations by elimination Algebra1/A/Module6/Choosing the best method to solve a system of equations
	REI.C.7	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 $x^2 + y^2 = 3$.	Algebra1/B/Module10/Solving a System Including Linear and Quadratic Equations

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Represent and solve equations and inequalities graphically.	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).	Algebra1/A/Module6/Solving systems of equations graphically
	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.	Algebra1/A/Module6/Solving systems of equations graphically Algebra1/A/Module6/Translating from written descriptions to systems of equations Algebra1/B/Module8/Graphing Polynomials Algebra1/B/Module8/Using Graphing to Solve Systems of Equations Including Polynomials Algebra1/B/Module11/Graphing Rational Functions
	REI.D.12	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.	Algebra1/A/Module3/Graphing linear inequalities and absolute value Algebra1/A/Module6/Real-world solutions using systems of inequalities
The Real Number System			
Extend the properties of exponents to rational exponents	RN.A.1	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 51/3 to be the cube root of 5 because we want (51/3)3 = 5(1/3)3 to hold, so (51/3)3 must equal 5	Algebra1/B/Module7/Simplifying Expressions with Zero and Negative Exponents
	RN.A.2	Rewrite expressions involving radicals and rational exponents using the properties of exponents.	Algebra1/B/Module7/Simplifying Expressions with Zero and Negative Exponents Algebra1/B/Module7/Product of Powers Property Algebra1/B/Module7/Quotient of Powers Property Algebra1/B/Module7/Simplifying Radicals Algebra1/B/Module7/Scientific Notation

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Use properties of rational and irrational numbers	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.	Algebra1/A/Module1/Classify and Compare Numbers
Quantities			
Reason quantitatively and use units to solve problems	NQ.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.	Algebra1/A/Module3/Graph a linear function using a table of values Algebra1/A/Module3/Modeling constant change using graphs and linear equations Algebra1/A/Module3/Modeling motion using graphs and linear equations
	NQ.A.2	Define appropriate quantities for the purpose of descriptive modeling.	Algebra1/A/Module1/Using Variables to create models of the real world Algebra1/A/Module1/Classify and Compare Numbers Algebra1/A/Module1/Combing like terms Algebra1/A/Module1/Working with ratios Algebra1/A/Module1/Using Unit Analysis to guide problem solving Algebra1/A/Module2/Working with proportions Algebra1/A/Module3/Modeling real situations using graphs Algebra1/A/Module3/Graph linear function using a table of values Algebra1/A/Module3/Calculating rate of change Algebra1/A/Module3/Graphing and interpreting horizontal and vertical lines Algebra1/A/Module4/Recognizing associations and trend in data Algebra1/A/Module4/What do the statistics really tell us? Algebra1/A/Module6/Real-world solutions using systems of equations Algebra1/B/Module8/Introduction to Polynomials Algebra1/B/Module9/Choosing the Best Method to Factor Algebra1/B/Module11/Modeling Work Problems Algebra1/B/Module11/Modeling Mixture Problems Algebra1/B/Module11/Graphing Rational Functions
	NQ.A.3	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.	Algebra1/A/Module3/Graph a linear function using a table of values

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Interpreting Functions			
Understand the concept of a function and use function notation	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 corresponding to the input x. The graph of this is the graph of the equation y = f(x)	Algebra1/A/Module3/Modeling real situations using graphs Algebra1/A/Module3/Using ordered pairs to plot points on a graph Algebra1/A/Module5/Is it a function? Algebra1/A/Module5/Identifying the domain and range
	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.	Algebra1/A/Module5/Evaluating linear functions
Interpret functions that arise in applications in terms of the context	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.*	Algebra1/A/Module3/Modeling constant change using graphs and linear equations Algebra1/A/Module3/Modeling motion using graphs and linear equations Algebra1/A/Module3/Equations of perpendicular and parallel lines Algebra1/A/Module3/Graphing linear inequalities and absolute value Algebra1/B/Module10/Sketching Quadratic Functions Given Key Features
	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	Algebra1/B/Module10/Inverse Functions
	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.	Algebra1/A/Module3/Graphing and interpreting horizontal and vertical lines
	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	Algebra1/A/Module3/Graph a linear function using a table of values Algebra1/A/Module3/Graphing linear inequalities and absolute value Algebra1/B/Module7/Exponential Growth and Decay Algebra1/B/Module10/Graphing Quadratic Functions Algebra1/B/Module10/Graphing Square and Cube Roots

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	IF.C.7a	Graph linear and quadratic functions and show intercepts, maxima, and minima	Algebra1/B/Module10/Graphing Quadratic Functions
Analyze functions using different representations	IF.C.7b	Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions	Algebra1/B/Module10/Graphing Square and Cube Roots
	IF.C.7c	Graph polynomial functions, identifying zeroes when suitable factorizations are available, and showing end behavior	Algebra1/A/Module3/Graphing linear inequalities and absolute value
	IF.C.7d	Graph rational functions, identifying zeroes and asymptotes when suitable factorizations are available, and showing end behavior.	Algebra1/A/Module3/Graphing linear inequalities and absolute value
	IF.C.7e	Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.	Algebra1/B/Module7/Exponential Growth and Decay
	IF.C.8	Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.	Algebra1/B/Module7/Transforming Expressions for Exponential Functions Algebra1/B/Module10/Changing the Function
	IF.C.8a	Use the process of factoring and completing the square in a quadratic function to show zeroes, extreme values, and symmetry of the graph, and interpret these in terms of a context	Algebra1/B/Module10/Changing the Function
	IF.C.8b	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 or decay	Algebra1/B/Module7/Transforming Expressions for Exponential Functions
	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.*	Algebra1/B/Module10/Comparing Functions

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Building Functions			
	BF.A.1	Write a function that describes a relationship between two quantities	Algebra1/A/Module2/Solving Percent Problems Algebra1/A/Module2/Calculating percent of change
Build a function that models a relationship between two quantities	BF.A.1a	Determine an explicit expression, a recursive process, or steps for calculation from a context	Algebra1/A/Module1/Evaluating algebraic expressions containing exponents Algebra1/Module1/Evaluating expressions by adding and subtracting real numbers
	BF.A.1b	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.	Algebra1/A/Module5/Constructing linear functions Algebra1/B/Module7/Exponential Growth and Decay
	BF.A.1c	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*	Algebra1/A/Module2/Calculating percent of change
	BF.A.2	Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.	Algebra1/A/Module5/Explicit and Recursive Formulas
Build new functions from existing functions	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.	Algebra1/A/Module5/Transforming functions Algebra1/A/Module5/Graphing transformed functions Algebra1/B/Module10/More Ways to Change the Function
	BF.B.4	Find inverse functions.	Algebra1/B/Module10/Inverse Functions
	BF.B.4a	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, $f(x) = 2x^3$ or $f(x) = (x+1)/(x-1)$ for $x \neq 1$*	Algebra1/B/Module10/Inverse Functions
	BF.Bb	Verify by composition that one function is the inverse of another	Algebra1/B/Module10/Inverse Functions

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	BF.B.4c	Read values of an inverse function from a graph or a table, given that the function has an inverse	Algebra1/B/Module10/Inverse Functions
	BF.B.4d	Produce an invertible function from a non-invertible function by restricting the domain.	Algebra1/B/Module10/Inverse Functions
Linear, Quadratic, & Exponential Models			
Construct and compare linear, quadratic, and exponential models and solve problems	LE.A.1	Distinguish between situations that can be modeled with linear functions and with exponential functions.	Algebra1//Module5/Constructing linear functions Algebra1/B/Module7/Comparing Linear and Exponential Change
	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.	Algebra1/B/Module7/Geometric Sequences
	LE.A.1C	Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another	Algebra1/B/Module7/Comparing Linear and Exponential Change
	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)	Algebra/A/Module5/Constructing linear functions of Arithmetic sequences Algebra1/B/Module7/Geometric Sequences
	LE.A.3	Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadraticaly, or (more generally) as a polynomial function.	Algebra1/B/Module10/Comparing Linear, Quadratic, and Polynomial Functions with Exponential Functions
Interpret expressions for function in terms of the situation they model	LE.B.5	Interpret the parameters in a linear or exponential function in terms of a context	Algebra1/A/Module5/Evaluating linear functions Algebra1/A/Module5/Using functions to model real change Algebra1/B/Module7/Comparing Linear and Exponential Change
Interpreting Categorical & Quantitative Data			
Summarize, represent, and	ID.A.1	Represent data with plots on the real number line (dot plots, histograms, and box plots).	Algebra1/A/Module1/Classify and Compare Numbers Algebra1/A/Module4/Measures of Central Tendency Algebra1/A/Module4/Representing data using graphs Algebra1/A/Module4/Modeling the Spread of Data Algebra1/A/Module4/Choosing the best model to represent the measure

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interpret data on a single count or measurement variable	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	Algebra1/A/Module4/Measures of central tendency Algebra1/A/Module4/Modeling the Spread of Data Algebra1/A/Module4/What do the statistics really tell us
	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).	Algebra1/A/Module4/Identifying effects of extreme data points
Summarize, represent, and interpret data on two categorical and quantitative variables	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.	Algebra1/A/Module4/Recognizing trends and associations using relative frequency Algebra1/A/Module4/Recognizing associations and trends in data
	ID.B.6	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related	Algebra1/A/Module3/Using ordered pairs to plot points on a graph Algebra1/A/Module3/Graph a linear function using a table of values Algebra1/A/Module3/Graphing linear inequalities and absolute value Algebra1/B/Module10/Graphing Best-Fit Line of Quadratic Function Given Real Data
	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, quadratic, and exponential models	Algebra1/B/Module7/Exponential Growth and Decay Algebra1/B/Module10/Graphing Best-Fit Line of Quadratic Function Given Real Data Algebra1/B/Module10/Graphing Best-Fit Line of Quadratic Function Given Real Data
	ID.B.6b	Informally assess the fit of a function by plotting and analyzing residuals.	Algebra1/Module4/Line of best-fit
	ID.6.6c	Fit a linear function for a scatter plot that suggests a linear association.	Algebra1/A/Module3/Graph a linear function using a table of values Algebra1/A/Module4/Line of best-fit
Interpret linear models	ID.C.7	Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.	Algebra1/A/Module3/Calculating rate of change Algebra1/A/Module3/Interpreting the graph Algebra1/A/Module3/Graph linear function using an equation in standard form
	ID.C.8	Compute (using technology) and interpret the correlation coefficient of a linear fit.	Algebra1/A/Module4/Correlation doesn't mean cause
	ID.C.9	Distinguish between correlation and causation	Algebra1/A/Module4/Correlation doesn't mean cause