Pacing Guide

Lesson		Standards for an Algebra 1 Course	Pacing
Unit 1	**REAL NUMBERS AND CONNECTIONS TO ALGEBRA**		
Module 1:	**Real Numbers and Real-World Quantities**		
1.1	Real Numbers	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.	1 day
1.2	Radicals and 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. Rewrite expressions involving radicals and rational exponents using the properties of exponents.	2 days
1.3	Precision and Accuracy in Calculations	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.*	2 days
Module 2:	**Linear Equations and Inequalities in One Variable**		
2.1	Write, Interpret, and Simplify Expressions	Interpret expressions that represent a quantity in terms of its context.* • Interpret parts of an expression, such as terms, factors, and coefficients. • Interpret complicated expressions by viewing one or more of their parts as a single entity. 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.* Define appropriate quantities for the purpose of descriptive modeling.*	1 day
2.2	Write and Solve Equations	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.** 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. Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters. Interpret expressions that represent a quantity in terms of its context.* • Interpret parts of an expression, such as terms, factors, and coefficients. 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.* Define appropriate quantities for the purpose of descriptive modeling.* 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.*	1 day

* This is also a modeling standard.

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- 3 days per year for the Growth Measure assessments
- 2 days per module for the Module Performance Task, Are You Ready?, Module Review, and Module Test
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Lesson		Standards for an Algebra 1 Course	Pacing
2.3	Rewrite Formulas and Solve Literal Equations	Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.* Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters. Interpret expressions that represent a quantity in terms of its context.* • Interpret complicated expressions by viewing one or more of their parts as a single entity.	2 days
2.4	Write and Solve Inequalities	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.** Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters. 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.* Define appropriate quantities for the purpose of descriptive modeling.* 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.* Interpret expressions that represent a quantity in terms of its context.* • Interpret parts of an expression, such as terms, factors, and coefficients.	1 day
2.5	Write and Solve Compound Inequalities	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.** Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters. 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.* Define appropriate quantities for the purpose of descriptive modeling.* 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.* Interpret expressions that represent a quantity in terms of its context.* • Interpret parts of an expression, such as terms, factors, and coefficients. • Interpret complicated expressions by viewing one or more of their parts as a single entity.	2 days

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Lesson		Standards for an Algebra 1 Course	Pacing
Unit 2	**LINEAR FUNCTIONS AND EQUATIONS**		
Module 3:	**Linear Equations in Two Variables**		
3.1	Linear Equations in Standard Form	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). 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.* Interpret expressions that represent a quantity in terms of its context.* • Interpret parts of an expression, such as terms, factors, and coefficients.	2 days
3.2	Slopes of Lines and Rates of Change	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.*	1 day
Module 4:	**Linear Functions and Models**		
4.1	Relations and Functions	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 $y = f(x)$. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context. 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.* Define appropriate quantities for the purpose of descriptive modeling.* Interpret expressions that represent a quantity in terms of its context.* • Interpret parts of an expression, such as terms, factors, and coefficients. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.*	2 days

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Lesson		Standards for an Algebra 1 Course	Pacing
4.2	Linear Functions	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 $y = f(x)$. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.* Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.* • Graph linear and quadratic functions and show intercepts, maxima, and minima. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.* 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.* Define appropriate quantities for the purpose of descriptive modeling.* Interpret expressions that represent a quantity in terms of its context.* • Interpret parts of an expression, such as terms, factors, and coefficients. 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.** 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.*	2 days
4.3	Characteristics of Linear Functions	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.** Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.* • Graph linear and quadratic functions and show intercepts, maxima, and minima. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.	2 days

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Lesson		Standards for an Algebra 1 Course	Pacing
4.4	Linear Models and Point-Slope Form	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).* Write a function that describes a relationship between two quantities.* • Determine an explicit expression, a recursive process, or steps for calculation from a context. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.* • Graph linear and quadratic functions and show intercepts, maxima, and minima. 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.** 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.* Define appropriate quantities for the purpose of descriptive modeling.* Interpret expressions that represent a quantity in terms of its context.* • Interpret parts of an expression, such as terms, factors, and coefficients. 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.*	2 days
Module 5: Relationships Among Linear Functions			
5.1	Transform Graphs of 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.* Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.*	2 days

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Lesson	Standards for an Algebra 1 Course	Pacing
5.2 Transform Linear 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.* Write a function that describes a relationship between two quantities.* • Combine standard function types using arithmetic operations. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.* • Graph linear and quadratic functions and show intercepts, maxima, and minima. 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).* 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.* Define appropriate quantities for the purpose of descriptive modeling.* Interpret expressions that represent a quantity in terms of its context.* • Interpret parts of an expression, such as terms, factors, and coefficients. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context. Write a function that describes a relationship between two quantities.* • Determine an explicit expression, a recursive process, or steps for calculation from a context.	2 days
5.3 Compare Linear Functions	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a 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.** 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.* Write a function that describes a relationship between two quantities.* • Determine an explicit expression, a recursive process, or steps for calculation from a context.	1 day

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Lesson		Standards for an Algebra 1 Course	Pacing
5.4	Inverses of Linear Functions	Find inverse functions. • 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. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.* • Graph linear and quadratic functions and show intercepts, maxima, and minima. 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.* Define appropriate quantities for the purpose of descriptive modeling.* Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.* Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context. Write a function that describes a relationship between two quantities.* • Determine an explicit expression, a recursive process, or steps for calculation from a context.	1 day
Unit 3	**BUILD LINEAR FUNCTIONS AND MODELS**		
Module 6:	**Fit Linear Functions to Data**		
6.1	Scatter Plots, Correlation, and Fitted Lines	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.* • 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.* • Fit a linear function for a scatter plot that suggests a linear association. Distinguish between correlation and causation.* Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.* Interpret the parameters in a linear or exponential function in terms of a context.* 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.* Write a function that describes a relationship between two quantities.* • Determine an explicit expression, a recursive process, or steps for calculation from a context.	2 days

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6.2	Residuals and Best-Fit Lines	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.* • 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.* • Informally assess the fit of a function by plotting and analyzing residuals. • Fit a linear function for a scatter plot that suggests a linear association. Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.* Compute (using technology) and interpret the correlation coefficient of a linear fit.* Interpret the parameters in a linear or exponential function in terms of a context.* Write a function that describes a relationship between two quantities.* • Determine an explicit expression, a recursive process, or steps for calculation from a context.	2 days
Module 7: Discrete Linear Functions			
7.1	Arithmetic Sequences Defined Recursively	Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.* 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).* Write a function that describes a relationship between two quantities.* • Determine an explicit expression, a recursive process, or steps for calculation from a context.	2 days
7.2	Arithmetic Sequences Defined Explicitly	Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.* 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).* Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context. Write a function that describes a relationship between two quantities.* • Determine an explicit expression, a recursive process, or steps for calculation from a context.	2 days

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Lesson		Standards for an Algebra 1 Course	Pacing
Module 8: Piecewise-Defined Functions			
8.1	Graph Piecewise-Defined Functions	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.* • Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.* 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.* Define appropriate quantities for the purpose of descriptive modeling.* Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a 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.** Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.* Write a function that describes a relationship between two quantities.* • Determine an explicit expression, a recursive process, or steps for calculation from a context.	2 days

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Lesson		Standards for an Algebra 1 Course	Pacing
8.2	Graph Absolute Value Functions	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.* • Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value 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.* Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.* Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a 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.** Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.* Write a function that describes a relationship between two quantities.* • Determine an explicit expression, a recursive process, or steps for calculation from a context.	2 days
8.3	Solve Absolute Value Equations and Inequalities	Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters. 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.* 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.** 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.	2 days

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Lesson		Standards for an Algebra 1 Course	Pacing
Unit 4 LINEAR SYSTEMS			
Module 9: Systems of Linear Equations			
9.1	Solve Linear Systems by Graphing	Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.* 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.* 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.* Define appropriate quantities for the purpose of descriptive modeling.*	1 day
9.2	Solve Linear Systems by Substitution	Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.* 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.* 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.* Define appropriate quantities for the purpose of descriptive modeling.* 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. 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.*	2 days
9.3	Solve Linear Systems by Adding or Subtracting	Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.* 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.* 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.* Define appropriate quantities for the purpose of descriptive modeling.*	1 day

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9.4	Solve Linear Systems by Multiplying First	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. Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.* 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.* 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.* Define appropriate quantities for the purpose of descriptive modeling.* Interpret expressions that represent a quantity in terms of its context.* • Interpret parts of an expression, such as terms, factors, and coefficients.	2 days
Module 10: Linear Inequalities			
10.1	Linear Inequalities in Two Variables	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. 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.* 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.* Define appropriate quantities for the purpose of descriptive modeling.* Interpret expressions that represent a quantity in terms of its context.* • Interpret parts of an expression, such as terms, factors, and coefficients.	2 days
10.2	Graph Systems of Linear Inequalities	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. 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.* 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.* Define appropriate quantities for the purpose of descriptive modeling.*	2 days

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Lesson	Standards for an Algebra 1 Course	Pacing
Unit 5 EXPONENTIAL FUNCTIONS AND EQUATIONS		
Module 11: Exponential Functions and Models		
11.1 Exponential Growth Functions	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.* • Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude. 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.** 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).* Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.* 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.* Define appropriate quantities for the purpose of descriptive modeling.* Interpret expressions that represent a quantity in terms of its context.* • Interpret parts of an expression, such as terms, factors, and coefficients. • Interpret complicated expressions by viewing one or more of their parts as a single entity. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.* 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.* Write a function that describes a relationship between two quantities.* • Determine an explicit expression, a recursive process, or steps for calculation from a context.	2 days

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Lesson	Standards for an Algebra 1 Course	Pacing
11.2 Exponential Decay Functions	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.* • Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude. 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.** 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).* Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.* 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.* Define appropriate quantities for the purpose of descriptive modeling.* Interpret expressions that represent a quantity in terms of its context.* • Interpret parts of an expression, such as terms, factors, and coefficients. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.* 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.* Write a function that describes a relationship between two quantities.* • Determine an explicit expression, a recursive process, or steps for calculation from a context.	2 days

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Lesson	Standards for an Algebra 1 Course	Pacing
11.3 Rewrite Exponential Models	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.* • Use the properties of exponents to transform expressions for exponential functions. Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. • Use the properties of exponents to interpret expressions for exponential functions. Interpret expressions that represent a quantity in terms of its context.* • Interpret parts of an expression, such as terms, factors, and coefficients. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.	1 day
Module 12: Relationships Among Exponential Functions		
12.1 Transform Exponential 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.* Write a function that describes a relationship between two quantities.* • Combine standard function types using arithmetic operations. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.* • Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude. 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).* Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context. Write a function that describes a relationship between two quantities.* • Determine an explicit expression, a recursive process, or steps for calculation from a context. Interpret expressions that represent a quantity in terms of a context.* • Interpret complicated expressions by viewing one or more of their parts as a single entity.	2 days

* This is also a modeling standard.

In addition to the core instructional pacing below, HMH recommends the following:
- 3 days per year for the Growth Measure assessments
- 2 days per module for the Module Performance Task, Are You Ready?, Module Review, and Module Test
- 1 day per unit for the Unit Test

Using these recommendations, the total pacing for Algebra 1 is 177 days.

Lesson	Standards for an Algebra 1 Course	Pacing
12.2 Compare Exponential Functions	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). 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.* Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.* • Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.* Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context. Write a function that describes a relationship between two quantities.* • Determine an explicit expression, a recursive process, or steps for calculation from a context.	2 days

"One day" is equal to one instructional period in a traditional schedule and would need to be adjusted to account for longer class periods in a block schedule.

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Lesson	Standards for an Algebra 1 Course	Pacing
Unit 6 BUILD EXPONENTIAL FUNCTIONS AND MODELS		
Module 13: Fit Exponential Functions to Data		
13.1 Scatter Plots and Fitted Exponential Curves	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.* • 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.* • Informally assess the fit of a function by plotting and analyzing residuals. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.* Distinguish between situations that can be modeled with linear functions and with exponential functions.* • Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.* • Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions. • Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude. 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.* Define appropriate quantities for the purpose of descriptive modeling.* Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context. Write a function that describes a relationship between two quantities.* • Determine an explicit expression, a recursive process, or steps for calculation from a context. Interpret the parameters in a linear or exponential function in terms of a context.*	2 days

* This is also a modeling standard.

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- 2 days per module for the Module Performance Task, Are You Ready?, Module Review, and Module Test
- 1 day per unit for the Unit Test

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Lesson	Standards for an Algebra 1 Course	Pacing
13.2 Choose Between Linear and Exponential Models	Distinguish between situations that can be modeled with linear functions and with exponential functions.* • Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals. • Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. • Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another. Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.* • 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.* • Fit a linear function for a scatter plot that suggests a linear association. Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.* 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.* Define appropriate quantities for the purpose of descriptive modeling.* Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context. Write a function that describes a relationship between two quantities.* • Determine an explicit expression, a recursive process, or steps for calculation from a context. Interpret the parameters in a linear or exponential function in terms of a context.*	2 days

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Lesson		Standards for an Algebra 1 Course	Pacing
Module 14: Discrete Exponential Functions			
14.1	Geometric Sequences Defined Recursively	Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.* 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).* 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.* Define appropriate quantities for the purpose of descriptive modeling.* Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context. Write a function that describes a relationship between two quantities.* • Determine an explicit expression, a recursive process, or steps for calculation from a context.	2 days
14.2	Geometric Sequences Defined Explicitly	Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.* 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).* 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.* Define appropriate quantities for the purpose of descriptive modeling.* Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context. Write a function that describes a relationship between two quantities.* • Determine an explicit expression, a recursive process, or steps for calculation from a context.	2 days
Unit 7 POLYNOMIAL OPERATIONS AND MODELS			
Module 15: Polynomial Multiplication			
15.1	Multiply Monomials	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. Interpret expressions that represent a quantity in terms of its context.* • Interpret parts of an expression, such as terms, factors, and coefficients. • Interpret complicated expressions by viewing one or more of their parts as a single entity.	2 days

* This is also a modeling standard.

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- 1 day per unit for the Unit Test

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Lesson	Standards for an Algebra 1 Course	Pacing
15.2 Multiply Monomials, Binomials, and Trinomials	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. Interpret expressions that represent a quantity in terms of its context.* • Interpret parts of an expression, such as terms, factors, and coefficients. • Interpret complicated expressions by viewing one or more of their parts as a single entity.	2 days
15.3 Special Products of Binomials	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. Interpret expressions that represent a quantity in terms of its context.* • Interpret parts of an expression, such as terms, factors, and coefficients. • Interpret complicated expressions by viewing one or more of their parts as a single entity. Use the structure of an expression to identify ways to rewrite it.	2 days
Module 16: Polynomial Addition and Subtraction		
16.1 Add and Subtract Polynomials	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. Interpret expressions that represent a quantity in terms of its context.* • Interpret parts of an expression, such as terms, factors, and coefficients. • Interpret complicated expressions by viewing one or more of their parts as a single entity.	2 days
16.2 Model with Polynomials	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. Write a function that describes a relationship between two quantities.* • Determine an explicit expression, a recursive process, or steps for calculation from a context. • Combine standard function types using arithmetic operations. Interpret expressions that represent a quantity in terms of its context.* • Interpret complicated expressions by viewing one or more of their parts as a single entity.	1 day

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Lesson		Standards for an Algebra 1 Course	Pacing
Unit 8 QUADRATIC FUNCTIONS AND EQUATIONS			
Module 17: Use Graphing and Factoring to Solve Quadratic Equations			
17.1	Solve Quadratic Equations by Graphing Quadratic Functions	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.* • Graph linear and quadratic functions and show intercepts, maxima, and minima. 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.** 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.* Define appropriate quantities for the purpose of descriptive modeling.* Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a 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.**	2 days
17.2	Solve Quadratic Equations by Factoring $x^2 + bx + c$	Solve quadratic equations in one variable. • 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. Use the structure of an expression to identify ways to rewrite it. 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.** 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.* Define appropriate quantities for the purpose of descriptive modeling.* 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.	2 days

* This is also a modeling standard.

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- 2 days per module for the Module Performance Task, Are You Ready?, Module Review, and Module Test
- 1 day per unit for the Unit Test

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Lesson		Standards for an Algebra 1 Course	Pacing
17.3	Solve Quadratic Equations by Factoring $ax^2 + bx + c$	Solve quadratic equations in one variable. • 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. Use the structure of an expression to identify ways to rewrite it. 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.** 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.* Define appropriate quantities for the purpose of descriptive modeling.* 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.	2 days
17.4	Use Special Factoring Patterns to Solve Quadratic Equations	Solve quadratic equations in one variable. • 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. Use the structure of an expression to identify ways to rewrite it. 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.** 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.	2 days
Module 18: Use Square Roots to Solve Quadratic Equations			
18.1	Solve Quadratic Equations by Taking Square Roots	Solve quadratic equations in one variable. • 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. 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.** 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.* Define appropriate quantities for the purpose of descriptive modeling.* Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.*	2 days

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Lesson	Standards for an Algebra 1 Course	Pacing
18.2 Solve Quadratic Equations by Completing the Square	Solve quadratic equations in one variable. • 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. • 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. 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.** 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.* Define appropriate quantities for the purpose of descriptive modeling.*	2 days
18.3 Use the Quadratic Formula to Solve Equations	Solve quadratic equations in one variable. • 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. • 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. 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.** Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.*	2 days
18.4 Choose a Method for Solving Quadratic Equations	Solve quadratic equations in one variable. • 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. 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.**	1 day

* This is also a modeling standard.

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- 3 days per year for the Growth Measure assessments
- 2 days per module for the Module Performance Task, Are You Ready?, Module Review, and Module Test
- 1 day per unit for the Unit Test

Using these recommendations, the total pacing for Algebra 1 is 177 days.

Lesson	Standards for an Algebra 1 Course	Pacing
Unit 9 FUNCTIONS AND MODELS		
Module 19: Build Quadratic Functions and Models		
19.1 Quadratic Functions in Vertex Form	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.* Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.* • Graph linear and quadratic functions and show intercepts, maxima, and minima. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.* Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a 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.** Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.* Write a function that describes a relationship between two quantities.* • Determine an explicit expression, a recursive process, or steps for calculation from a context.	2 days

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Lesson	Standards for an Algebra 1 Course	Pacing
19.2 Quadratic Functions in Standard Form	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.* • Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines. Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. • 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. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.* • Graph linear and quadratic functions and show intercepts, maxima, and minima. 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.* Define appropriate quantities for the purpose of descriptive modeling.* Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a 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.** Write a function that describes a relationship between two quantities.* • Determine an explicit expression, a recursive process, or steps for calculation from a context.	2 days

* This is also a modeling standard.

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Lesson	Standards for an Algebra 1 Course	Pacing
19.3 Quadratic Functions in Intercept Form	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.* • Factor a quadratic expression to reveal the zeros of the function it defines. Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. • 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. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.* • Graph linear and quadratic functions and show intercepts, maxima, and minima. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a 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.** Write a function that describes a relationship between two quantities.* • Determine an explicit expression, a recursive process, or steps for calculation from a context.	2 days
19.4 Compare Quadratic Functions	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). 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.* Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a 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.** Write a function that describes a relationship between two quantities.* • Determine an explicit expression, a recursive process, or steps for calculation from a context.	2 days

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Lesson	Standards for an Algebra 1 Course	Pacing
19.5 Scatter Plots and Fitted Quadratic Curves	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.* 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.** Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.* • 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.* Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context. Write a function that describes a relationship between two quantities.* • Determine an explicit expression, a recursive process, or steps for calculation from a context.	2 days

* This is also a modeling standard.

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- 2 days per module for the Module Performance Task, Are You Ready?, Module Review, and Module Test
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Lesson		Standards for an Algebra 1 Course	Pacing
Module 20: Function Analysis			
20.1	Choose Among Linear, Exponential, and Quadratic Models	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.* • 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.* Distinguish between situations that can be modeled with linear functions and with exponential functions.* • Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. • Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another. Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.* 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.* 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.* Define appropriate quantities for the purpose of descriptive modeling.* Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a 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.** Write a function that describes a relationship between two quantities.* • Determine an explicit expression, a recursive process, or steps for calculation from a context.	2 days
20.2	Perform Operations with Functions	Write a function that describes a relationship between two quantities.* • Combine standard function types using arithmetic operations. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context. Write a function that describes a relationship between two quantities.* • Determine an explicit expression, a recursive process, or steps for calculation from a context.	2 days

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Lesson	Standards for an Algebra 1 Course	Pacing
20.3 Solve Nonlinear Systems	Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and 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.* Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.* • Graph linear and quadratic functions and show intercepts, maxima, and minima. • Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context. Write a function that describes a relationship between two quantities.* • Determine an explicit expression, a recursive process, or steps for calculation from a context.	2 days
20.4 Cubic Functions	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. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.* 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.* Define appropriate quantities for the purpose of descriptive modeling.* Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a 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.** Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.* Write a function that describes a relationship between two quantities.* • Determine an explicit expression, a recursive process, or steps for calculation from a context.	2 days

* This is also a modeling standard.

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Lesson	Standards for an Algebra 1 Course	Pacing
Unit 10 DATA ANALYSIS		
Module 21: Categorical Data		
21.1 Two-Way Frequency and Relative Frequency Tables	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.*	2 days
21.2 Recognize Possible Associations Between Categorical 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.*	2 days

"One day" is equal to one instructional period in a traditional schedule and would need to be adjusted to account for longer class periods in a block schedule.

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Pacing Guide

Lesson		Standards for an Algebra 1 Course	Pacing
Module 22: Numerical Data			
22.1	Data Distributions and Appropriate Statistics	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.* Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).* Represent data with plots on the real number line (dot plots, histograms, and box plots).* 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.*	2 days
22.2	Compare Data Distributions	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.* Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).* Represent data with plots on the real number line (dot plots, histograms, and box plots).* 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.*	2 days

* This is also a modeling standard.