Pacing Guide

Lesson		Standards for an Algebra 2 Course	Pacing
Unit 1	**FUNCTIONS AND EQUATIONS**		
Module 1	**Analyze Functions**		
1.1	Domain, Range, and End Behavior	Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.* Define appropriate quantities for the purpose of descriptive modeling.*	2 days
1.2	Characteristics of Functions and Graphs	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.* 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

* This is also a modeling standard.

In addition to the core instructional pacing below, HMH recommends the following:
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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 2 Course	Pacing
1.3	Transformations of Function Graphs	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.* 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.** Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.* 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 square root, cube root, and piecewise-defined functions, including step functions and absolute value functions. 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

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Pacing Guide

Lesson		Standards for an Algebra 2 Course	Pacing
1.4	Transformations of Absolute Value and Quadratic 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.* 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. • Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value 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.** 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 2 Course	Pacing
1.5	Compare Functions Across Representations	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). 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.** 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.* 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 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
Module 2	**Solve Quadratic Equations and Systems**		
2.1	Use Square Roots 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. Know there is a complex number i such that $i^2 = -1$, and every complex number has the form $a + bi$ with a and b real. 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
2.2	Operations with Complex Numbers	Use the relation $i^2 = -1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers. Know there is a complex number i such that $i^2 = -1$, and every complex number has the form $a + bi$ with a and b real.	2 days

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Lesson		Standards for an Algebra 2 Course	Pacing
2.3	Derive and Apply the Quadratic Formula	Solve quadratic equations with real coefficients that have complex solutions. Use the relation $i^2 = -1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers. 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 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. 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.* 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
2.4	Solve Linear-Quadratic 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.*	2 days

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Lesson		Standards for an Algebra 2 Course	Pacing
Unit 2 POLYNOMIAL FUNCTIONS AND EQUATIONS			
Module 3 Polynomial Functions			
3.1	Graph Polynomial 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.* Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.* • Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior. 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.* 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.** 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.* 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. 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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Pacing Guide

Lesson		Standards for an Algebra 2 Course	Pacing
3.2	Analyze Graphs of Polynomial 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 polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior. 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 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.* 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. 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. 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. 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
Module 4	**Function Operations and Polynomials**		
4.1	Function Operations	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.	1 day

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Lesson		Standards for an Algebra 2 Course	Pacing
4.2	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. Write a function that describes a relationship between two quantities.* • Combine standard function types using arithmetic operations.	1 day
4.3	Multiply 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. Prove polynomial identities and use them to describe numerical relationships. Write a function that describes a relationship between two quantities.* • Combine standard function types using arithmetic operations.	2 days
4.4	Factor Polynomials	Use the structure of an expression to identify ways to rewrite it. Prove polynomial identities and use them to describe numerical relationships. 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. 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 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.**	2 days
4.5	Divide Polynomials	Know and apply the Remainder Theorem: For a polynomial $p(x)$ and a number a, the remainder on division by $x - a$ is $p(a)$, so $p(a) = 0$ if and only if $(x - a)$ is a factor of $p(x)$. 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.* • Combine standard function types using arithmetic operations.	2 days
Module 5 Polynomial Equations			
5.1	Solve Polynomial Equations	Know and apply the Remainder Theorem: For a polynomial $p(x)$ and a number a, the remainder on division by $x - a$ is $p(a)$, so $p(a) = 0$ if and only if $(x - a)$ is a factor of $p(x)$. 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. Use the structure of an expression to identify ways to rewrite it.	2 days

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Pacing Guide

Lesson		Standards for an Algebra 2 Course	Pacing
5.2	The Fundamental Theorem of Algebra	Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials. Know and apply the Remainder Theorem: For a polynomial $p(x)$ and a number a, the remainder on division by $x - a$ is $p(a)$, so $p(a) = 0$ if and only if $(x - a)$ is a factor of $p(x)$. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.* • Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior. Write a function that describes a relationship between two quantities.* • Combine standard function types using arithmetic operations.	2 days
Unit 3	**RATIONAL EXPONENTS AND RADICAL FUNCTIONS**		
Module 6	**Rational Exponents and Radical Operations**		
6.1	Rational Exponents and *n*th Roots	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.	2 days
6.2	Properties of Rational Exponents and Radicals	Rewrite expressions involving radicals and rational exponents using the properties of exponents.	2 days
Module 7	**Radical Functions and Equations**		
7.1	Inverse Functions and Function Composition	Find inverse functions. • Verify by composition that one function is the inverse of another. Write a function that describes a relationship between two quantities.* • Compose functions. Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.* 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.	1 day

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Lesson		Standards for an Algebra 2 Course	Pacing
7.2	Inverses of Quadratic and Cubic 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. • Verify by composition that one function is the inverse of another. • Read values of an inverse function from a graph or a table, given that the function has an inverse. • Produce an invertible function from a non-invertible function by restricting the domain. 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.	2 days
7.3	Graph Square Root 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. 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.* 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. 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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Pacing Guide

Lesson		Standards for an Algebra 2 Course	Pacing
7.4	Graph Cube Root 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. 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.* 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. 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
7.5	Solve Radical Equations	Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise. Create equations and inequalities in one variable and use them to solve problems.* 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 square root, cube root, and piecewise-defined functions, including step functions and absolute value 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 2 Course	Pacing
Unit 4	**EXPONENTIAL AND LOGARITHMIC FUNCTIONS AND EQUATIONS**		
Module 8	**Exponential Functions**		
8.1	Exponential Growth and 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. 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).* 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.* 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.* Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.* Interpret the parameters in a linear or exponential function in terms of a context.* 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.* Define appropriate quantities for the purpose of descriptive modeling.* 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. 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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Pacing Guide

Lesson		Standards for an Algebra 2 Course	Pacing
8.2	The Natural Base *e*	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. 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.* Interpret the parameters in a linear or exponential function in terms of a context.* 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.	2 days
8.3	Compound Interest	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).* 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.* 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. Define appropriate quantities for the purpose of descriptive modeling.* 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 2 Course	Pacing
Module 9	**Logarithmic Functions**		
9.1	Logarithms and Logarithmic Functions	Understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents. 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. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context. Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.* 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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Pacing Guide

Lesson		Standards for an Algebra 2 Course	Pacing
9.2	Graph 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.* 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.* 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.* 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. 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 2 Course	Pacing
9.3	Create Exponential and Logarithmic Functions	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.* 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.** 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.* 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. Write a function that describes a relationship between two quantities.* • Determine an explicit expression, a recursive process, or steps for calculation from a context. 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.* 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. • Read values of an inverse function from a graph or a table, given that the function has an inverse. 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

"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 2 Course	Pacing
Module 10	**Exponential and Logarithmic Equations**		
10.1	Properties of Logarithms	Understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents. Define appropriate quantities for the purpose of descriptive modeling.*	2 days
10.2	Solve Exponential Equations	For exponential models, express as a logarithm the solution to $ab^{ct} = d$ where a, c, and d are numbers and the base b is 2, 10, or e; evaluate the logarithm using technology.* 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 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 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.* 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
10.3	Solve Logarithmic Equations	Understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents. 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.* 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.	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

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Lesson	Standards for an Algebra 2 Course	Pacing
Unit 5 RATIONAL FUNCTIONS AND EQUATIONS		
Module 11 Rational Functions		
11.1 Inverse Variation	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.* • Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior. 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.** Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.* Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.* 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. 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 2 Course	Pacing
11.2	Graph Simple Rational 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 rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior. Rewrite simple rational expressions in different forms; write $a(x)/b(x)$ in the form $q(x) + r(x)/b(x)$, where $a(x)$, $b(x)$, $q(x)$, and $r(x)$ are polynomials with the degree of $r(x)$ less than the degree of $b(x)$, using inspection, long division, or, for the more complicated examples, a computer algebra system. 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.* 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.** 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.* 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. Define appropriate quantities for the purpose of descriptive modeling.* 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. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.	2 days

* 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

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Lesson		Standards for an Algebra 2 Course	Pacing
11.3	Graph More Complicated Rational 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 rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.* 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. Rewrite simple rational expressions in different forms; write $a(x)/b(x)$ in the form $q(x) + r(x)/b(x)$, where $a(x)$, $b(x)$, $q(x)$, and $r(x)$ are polynomials with the degree of $r(x)$ less than the degree of $b(x)$, using inspection, long division, or, for the more complicated examples, a computer algebra system. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). 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. 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
Module 12	**Rational Expressions and Equations**		
12.1	Multiply and Divide Rational Expressions	Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions. Use the structure of an expression to identify ways to rewrite it. 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 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.	1 day

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Lesson		Standards for an Algebra 2 Course	Pacing
12.2	Add and Subtract Rational Expressions	Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions. Use the structure of an expression to identify ways to rewrite it. Write a function that describes a relationship between two quantities.* • Determine an explicit expression, a recursive process, or steps for calculation from a context. Define appropriate quantities for the purpose of descriptive modeling.*	2 days
12.3	Solve Rational Equations	Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise. 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.** 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.* Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.* 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.* Define appropriate quantities for the purpose of descriptive modeling.*	2 days
Unit 6 SEQUENCES AND SERIES			
Module 13 Explicit Formulas for Sequences and Series			
13.1	Define Sequences and Series	Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.* Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. Write a function that describes a relationship between two quantities.* • Determine an explicit expression, a recursive process, or steps for calculation from a context. 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).*	2 days

* This is also a modeling standard.

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Lesson		Standards for an Algebra 2 Course	Pacing
13.2	Arithmetic and Sequences and Series	Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.* Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. Write a function that describes a relationship between two quantities.* • Determine an explicit expression, a recursive process, or steps for calculation from a context.* 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).*	2 days
13.3	Geometric Sequences and Series	Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.* Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. 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. Derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems. Use the structure of an expression to identify ways to rewrite it. Write a function that describes a relationship between two quantities.* • Determine an explicit expression, a recursive process, or steps for calculation from a context.* 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).*	2 days
Module 14	**Recursive Formulas for Sequences**		
14.1	Recursive Formulas for Arithmetic Sequences	Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.* Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. Write a function that describes a relationship between two quantities.* • Determine an explicit expression, a recursive process, or steps for calculation from a context.* 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).*	2 days

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Lesson		Standards for an Algebra 2 Course	Pacing
14.2	Recursive Formulas for Geometric Sequences	Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.* Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. Write a function that describes a relationship between two quantities.* • Determine an explicit expression, a recursive process, or steps for calculation from a context.* 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).*	2 days
Unit 7 TRIGONOMETRIC FUNCTIONS AND IDENTITIES			
Module 15 Unit-Circle Definition of Trigonometric Functions			
15.1	Angles of Rotation and Radian Measure	Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle.	2 days
15.2	Define and Evaluate the Basic Trigonometric Functions	Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle.	2 days
15.3	Use a Pythagorean Identity	Prove the Pythagorean identity $\sin^2(\theta) + \cos^2(\theta) = 1$ and use it to find $\sin(\theta)$, $\cos(\theta)$, or $\tan(\theta)$ given $\sin(\theta)$, $\cos(\theta)$, or $\tan(\theta)$ and the quadrant of the angle.	1 day
Module 16 Graph Trigonometric Functions			
16.1	Graph Sine and Cosine 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. 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.* 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.** 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. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.	1 day

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Lesson		Standards for an Algebra 2 Course	Pacing
16.2	Graph Tangent 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.* 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.* 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.** 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. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.	2 days
16.3	Translations of Trigonometric Graphs	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. 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.* 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 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 2 Course	Pacing
16.4	Model Periodic Phenomena with Trigonometric Functions	Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline.* Define appropriate quantities for the purpose of descriptive modeling.* 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.** 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.* 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.** 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.* Write a function that describes a relationship between two quantities.* • Determine an explicit expression, a recursive process, or steps for calculation from a context. 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.	1 day
Unit 8 PROBABILITY			
Module 17 Probability of Compound Events			
17.1	Theoretical and Experimental Probability	Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events ("or," "and," "not").* Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).	2 days

* This is also a modeling standard.

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Lesson		Standards for an Algebra 2 Course	Pacing
17.2	Two-Way Tables and Probability	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.* Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities.*	1 day
17.3	Mutually Exclusive and Inclusive Events	Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities.* Apply the Addition Rule, $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$, and interpret the answer in terms of the model.*	2 days
Module 18	**Probability and Decision Making**		
18.1	Conditional Probability	Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities.* Understand the conditional probability of A given B as $P(A \text{ and } B)/P(B)$, and interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A, and the conditional probability of B given A is the same as the probability of B.* Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations.* Find the conditional probability of A given B as the fraction of B's outcomes that also belong to A, and interpret the answer in terms of the model.*	2 days
18.2	Dependent and Independent Events	Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent.* Understand the conditional probability of A given B as $P(A \text{ and } B)/P(B)$, and interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A, and the conditional probability of B given A is the same as the probability of B.* Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities.* Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations.* Apply the general Multiplication Rule in a uniform probability model, $P(A \text{ and } B) = P(A)P(B\|A) = P(B)P(A\|B)$, and interpret the answer in terms of the model.*	2 days

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Lesson		Standards for an Algebra 2 Course	Pacing
18.3	Analyze Decisions	Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities.* Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations.* Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).*	2 days
Unit 9 STATISTICS			
Module 19 Data Distributions			
19.1	Probability Distributions	Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation.* Apply the Addition Rule, $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$, and interpret the answer in terms of the model.*	2 days
19.2	Normal Distributions	Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.*	2 days
19.3	Data-Gathering Techniques	Understand statistics as a process for making inferences about population parameters based on a random sample from that population.*	2 days
19.4	Sampling Distributions	Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling.*	1 day
Module 20 Make Inferences from Data			
20.1	Confidence Intervals and Margins of Error	Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling.* Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation.*	2 days
20.2	Surveys, Experiments, and Observational Studies	Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.* Evaluate reports based on data.*	2 days
20.3	Make Inferences from Experimental Data	Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant.*	2 days

* This is also a modeling standard.