Algebra 1 Units of Study	Length of Unit
Unit 1: Algebraic Properties	**2 weeks**
Unit 2: Intro to Functions	**2 weeks**
Unit 3: Linear Functions	**3 weeks**
Unit 4: Exponential Functions	**7 weeks**
Unit 5: Quadratic Functions	**9 weeks**
Unit 8: Statistics	**6 weeks**

Priority standards and learning targets grouped by units.

Unit 1: Algebraic Properties	
Learning Targets	**Standard(s) Aligned**
Use algebraic properties to solve algebraic equations in one variable.	A-CED.4
Use algebraic properties to rearrange familiar linear, area, and volume equations.	A-CED.4

Unit 2: Intro to Functions	
Learning Targets	**Standard(s) Aligned**
Identify functions from table, graphs, and situations.	F-IF.1
Identify key features (domain, range, increasing/decreasing/no change intervals, max, min) of functions from a table, graph, or situation.	F-IF.4
Given an equation in function notation or a graph of a function, evaluate the function when given an input value.	F-IF.2
Given an equation in function notation, solve for the input when given an output.	F-IF.2
Interpreting the meaning of inputs and outputs in the context of a situation.	F-IF.2

Unit 3: Linear Functions	
Learning Targets	**Standard(s) Aligned**
Given two points (in a table, graph, or situation), write a linear equation in point-slope form $(y - y_1) = m(x - x_1)$ and slope-intercept form $(y = mx + b)$.	F-LE.2
Rearrange linear equations in standard form, point-slope form, and slope-intercept form to identify key features of a situation.	F-LE.5
Model situations with a constant rate of change with a linear function.	A-CED.2
Graph linear models and identify and interpret key features of the model in context.	F-IF.4
Model and graph two linear situations.	A-REI.6 A-REI.11
Interpret the solution to a linear-linear system in context.	F-IF.4

Unit 4: Exponents & Exponential Functions	
Learning Targets	**Standard(s) Aligned**
Determine differences in linear and exponential representations.	F-LE.1a
Graph exponential functions from a table and/or equation.	F-IF.7e
Identify key features of an exponential function: x- and y-intercepts and end behavior, domain and range.	F-IF.7e
Write exponential equations from a table and graph.	F-LE.2
Identify situations that represent exponential functions, in comparison to situations that can be modeled with linear functions and justifying the decisions.	F-LE.1c
Model exponential growth and decay, appreciation and depreciation.	A-CED.2
Identify the key features of the model and interpret them in context.	F-IF.4 F-IF.5
Model situations involving interest that compounds annually.	A-CED.2
Identify the key features of the model and interpret them in context.	F-IF.4 F-IF.5
Model and graph two exponential situations or a linear and exponential situation.	A-CED.2 A-REI.11
Interpret the solution to an exponential-exponential or a linear-exponential system in context.	F-IF.4

Unit 5: Quadratic Functions	
Learning Targets	**Standard(s) Aligned**
Identify the degree of a polynomial.	A-APR.1
Add and subtract single variable polynomials.	A-APR.1
Multiply single variable monomials, binomials, and trinomials, algebraically and using an area model.	A-APR.1
Factor quadratic expressions given in standard form with leading coefficients of 1, algebraically and using an area model.	A-REI.4b
Factor quadratic expressions given in standard form with leading coefficients greater than 1, algebraically and using an area model.	A-REI.4b
Factor perfect square quadratic expressions.	A-REI.4b
Factor quadratic expressions that are a difference of two squares.	A-REI.4b
Solve a quadratic equation equal to zero by factoring.	A-REI.4b
Transform a quadratic expression from standard form to vertex form using an area model.	A-REI.4a
Algebraically transform a quadratic expression (with leading coefficients equal to and great than 1) from standard form to vertex form.	A-REI.4a
Solve a quadratic equation equal to zero in standard form by completing the square.	A-REI.4a
Solve a quadratic equation equal to zero in standard form using the quadratic formula.	A-REI.4a
Graph the quadratic parent function and identify the key features.	F-IF.7a
Graph a quadratic function in standard form using technology and identify the key features.	F-IF.7a
Convert a quadratic function in standard form to factored form to reveal key features and graph the function using the key features.	A-SSE.3a
Convert a quadratic function in standard form to vertex form to reveal key features and graph the function using the key features.	A-SSE.3b
Describe the transformation of a quadratic function in vertex form.	F-BF.3
Model projectile motion using a quadratic function.	F-IF.4

Unit 8: Statistics	
Learning Targets	**Standard(s) Aligned**
Represent data with dot plots, histograms, and box plots using technology.	S-ID.1
Describe the shape of the data distribution from a plot and identify possible outliers.	S-ID.3
Identify and calculate the measure of center appropriate for the shape of the data in a histogram.	S-ID.2
Describe the variability of a data set by calculating and interpreting the standard deviation.	S-ID.2
Compare two or more distributions based on measures of center and spread.	S-ID.2
Graph a two variable data set and determine the linear regression using technology.	S-ID.6
Interpret the slope and intercept of the linear regression equation in context.	S-ID.6c S-ID.7
Use the regression line to predict values for the given data set.	S-ID.6a
Calculate the residual and create a residual plot using technology.	S-ID.6b
Interpret the shape of the residual plot to determine if the association is linear.	S-ID.6b
Explain the difference between correlation and causation.	S-ID.9
Calculate the correlation coefficient (r-value) with technology and interpret the meaning of the value.	S-ID.8

Common Core Standards taught and assessed in Algebra 1:

Conceptual Category: Algebra
Standards
Seeing Structure in Expressions **A-SSE.3** Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. **A.** Factor a quadratic expression to reveal the zeros of the function it defines. **B.** Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.
Arithmetic with Polynomials and Rational Expressions **A-APR.1** Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.
Creating Equations **A-CED.2** Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. **A-CED.4** Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.
Reasoning with Equations and Inequalities **A-REI.4** Solve quadratic equations in one variable. **A.** 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. **B.** 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. **A-REI.6** Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables. **A-REI.11** Explain why the x-coordinates of the points where the graphs of the equations y = f(x) and y = g(x) intersect are the solutions of the equation f(x) = g(x); find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where f(x) and/or g(x) are linear, ~~polynomial, rational, absolute value,~~ exponential~~, and logarithmic~~ functions.

Conceptual Category: Functions
Standards
Interpreting Functions **F-IF.1** Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then $f(x)$ denotes the output of f corresponding to the input x. The graph of f is the graph of the equation $y = f(x)$. **F-IF.2** Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context. **F-IF.4** For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. **F-IF.5** Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. **F-IF.7** Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. **A.** Graph linear and quadratic functions and show intercepts, maxima, and minima. **E.** Graph exponential ~~and logarithmic~~ functions, showing intercepts and end behavior~~, and trigonometric functions, showing period, midline, and amplitude.~~
Building Functions **F-BF.3** Identify the effect on the graph of replacing *f*(*x*) by *f*(*x*) + *k*, *k f*(*x*), *f*(*kx*), and *f*(*x* + *k*) for specific values of *k* (both positive and negative); find the value of *k* given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.
Linear, Quadratic, and Exponentials Models **F-LE.1** Distinguish between situations that can be modeled with linear functions and with exponential functions. **A.** Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals. **C.** Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another. **F-LE.2** Construct linear and exponential functions~~,~~ given a graph, a description of a relationship, or two input-output pairs (include reading these from a table). **F-LE.5** Interpret the parameters in a linear or exponential function in terms of a context.

Conceptual Category: Statistics and Probability
Standards
Interpreting Categorical and Quantitative Data **S-ID.1** Represent data with plots on the real number line (dot plots, histograms, and box plots). **S-ID.2** Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (~~interquartile range~~, standard deviation) of two or more different data sets. **S-ID.3** Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers). **S-ID.6** Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. **A.** 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. **B.** Informally assess the fit of a function by plotting and analyzing residuals. **C.** Fit a linear function for a scatter plot that suggests a linear association. **S-ID.7** Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data. **S-ID.8** Compute (using technology) and interpret the correlation coefficient of a linear fit. **S-ID.9** Distinguish between correlation and causation.