Algebra 1

Unit	Time Period	Essential Skills	Standards
Data	3 Weeks	Box-and-Whisker Two-Way Tables Shape, Center, & Spread of Data Histograms	A1.SP.1: Use box plots and histograms to determine the statistics appropriate to the shape of the data distribution; compare the center and spread of two or more data sets. A1.SP.2: Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points. A1.SP.3: Summarize data from two categorical variables in a frequency table; interpret relative frequencies in the context of the data, recognizing data trends and associations. A1.LFE.21: Calculate, using technology, the correlation coefficient between two quantitative variables and interpret this quantity as a measure of the strength of the linear association. A1.LFE.22: Compare and contrast correlation and causation in real-world problems.
Linear Equations & Inequalities	4 weeks	Combining Like Terms Distribution Solving Linear Equations Solving Inequalities Literal Equations	A1.LFE.1: Represent and solve real-world problems, using linear expressions, equations, and inequalities in one variable. A1.LFE.3: Solve linear formulas for a specified variable. A1.LFE.4: Solve linear equations, linear inequalities, and absolute value equations in one variable, including those with rational number coefficients, and variables on both sides of the equal or inequality sign; solve them fluently, explaining the process used. A1.EX.4: Interpret the parts of expressions such as terms, factors, and coefficients in terms of a real-world context.
Linear Functions	4 weeks	Definition of Function/Function Notation Vertical Line Test Relation vs Function Calculate Slope Slope-Intercept Form Solving for Y Graphing Linear Functions Writing Linear Functions Line of Best Fit Real World Linear Scenarios	A1.LFE.2: Construct linear functions from arithmetic sequences with and without context. A1.LFE.5: Determine the domain and range of linear functions in mathematical problems. A1.LFE.6: Determine reasonable domain and range values of linear functions representing real-world situations, both continuous and discrete; interpret the solution as reasonable or unreasonable in context. A1.LFE.7: Interpret the key features of linear and absolute value functions that model~~s~~ a

			relationship between two quantities in a given context. A1.LFE.8: Flexibly use different representations of a linear function, including graphs, tables, and equations. A1.LFE.9: Calculate and interpret the rate of change of a linear function represented in a table, graph, or as an equation in context of real-world and mathematical problems. A1.LFE.10: Translate among equivalent forms of equations for linear functions, including standard, point-slope, and slope-intercept forms; recognize that each form reveals key features in a given context. A1.LFE.15: Write linear equations that model the relationship between two quantities and produce a graph of the equation. A1.LFE.16: Graph linear functions expressed as an equation and show intercepts of the graph without technology. A1.LFE.17: Graph absolute value functions expressed as an equation with and without technology, showing intercepts and end behavior. A1.LFE.18: Graph and generalize the effect of transformations on linear and absolute value functions. A1.LFE.19: Given the graph of a linear function, explain the effects of the transformation from the parent function, $y = x$. A1.LFE.20: Write linear functions that provide a reasonable fit to data and use them to make predictions, with and without technology; interpret the slope and y-intercept in context. A1.FN.1: Explain that a function assigns each element in the domain to exactly one element in the range. A1.FN.2: Use function notation to represent functions, understanding that if f is a function and x is an element of its domain, then $f(x)$ represents the output of f corresponding to the input x. A1.FN.3: Graph functions given in function notation, understanding that the graph contains the points $(x, f(x))$. A1.FN.4: Evaluate functions expressed in function notation for one or more elements in their domains (inputs); use function notation to describe a contextual situation.
Systems of Equations &	4 weeks	Solving Systems of Equations Solving Systems of Inequalities	A1.LFE.11: Solve systems of linear equations by substitution, elimination, and graphing with and

Inequalities		Real World Systems Scenarios	without a real-world context; understand that the solutions will be the same regardless of the method for solving. A1.LFE.12: Solve a system of equations consisting of a linear equation and a quadratic equation in two variables graphically with the assistance of technology. A1.LFE.13: Explain why a solution to the equation $f(x) = g(x)$ is the x-coordinate where the y-coordinate of $f(x)$ and $g(x)$ are the same using graphs, tables, or approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, quadratic, absolute value, and exponential. A1.LFE.14: Solve linear inequalities and systems of linear inequalities in two variables by graphing.
Exponential Functions	4 weeks	Exponential Patterns Key Features Graphing Exponential Equations Writing Exponential Equations Growth and Decay Percent Increase/Decrease Compound Interest Real World Exponential Scenarios	A1.EFE.1: Represent and solve real-world problems, using exponential equations in one variable. A1.EFE.2: Represent real-world problems (growth, decay, and compound interest), using exponential equations. A1.EFE.3: Construct exponential equations from geometric sequences with and without context. A1.EFE.4: Determine the domain and range of exponential functions in mathematical problems. A1.EFE.5: Determine reasonable domain and range values of exponential functions representing real-world situations, both continuous and discrete; interpret the solution as reasonable or unreasonable in context. A1.EFE.6: Interpret the key features of an exponential function that models a relationship between two quantities in a given context. A1.EFE.7: Flexibly use different representations of an exponential function, including graphs, tables, and equations. A1.EFE.8: Interpret the quantities in an exponential equation in the context of a real-world problem, including growth, decay, and compound interest. A1.EFE.9: Graph exponential functions that model real-world problems (growth, decay, and compound interest), showing key attributes. A1.EFE.10: Write exponential functions that provide a reasonable fit to data and use them to make predictions with technology. A1.FN.5: Differentiate between real-world scenarios that can be modeled by exponential or linear functions by determining whether the

			relationship has a common difference or a common ratio. A1.FN.6: Compare the growth pattern of exponential to linear or quadratic functions using graphs and tables and recognize how exponential growth exceeds other functions. A1.EX.4: Interpret the parts of expressions such as terms, factors, and coefficients in terms of a real-world context.
Polynomials	3 weeks	Exponent Rules Adding/Subtracting Polynomials Multiplying Polynomials Simplifying Radicals Radical Operations	A1.EX.1: Add, subtract, and multiply polynomials; compare the system of polynomials to the system of integers when performing operations. A1.EX.3: Simplify algebraic expressions using the laws of exponents. A1.EX.2: Simplify and perform operations with radical expressions without variables; rationalizing denominators should not include conjugates.
Quadratic Functions	4 weeks	Key Features Vertex, Standard, and Factored Forms of Equation Transformations Writing a Quadratic Equation Real World Quadratic Scenarios	A1.QFE.1: Represent and solve real-world problems using quadratic expressions and equations in one variable. A1.QFE.2: Write quadratic equations with real number solutions that model the relationship between two quantities and produce a graph of the equation. A1.QFE.4: Determine the domain and range of quadratic functions in mathematical problems. A1.QFE.5: Determine reasonable domain and range values of quadratic functions representing real-world situations, both continuous and discrete; interpret the solution as reasonable or unreasonable in context. A1.QFE.6: Interpret the key features of a quadratic function that models a relationship between two quantities in a given context. A1.QFE.7: Flexibly use different representations of a quadratic function, including graphs, tables, and equations. A1.QFE.9: Use factoring and completing the square to create equivalent forms of quadratic functions to reveal key attributes. A1.QFE.10: Graph quadratic functions given as an equation or in function notation, labeling key attributes, without technology. A1.QFE.11: Graph and describe the effect of transformations on quadratic functions. ● Transformations include: stretches, compressions, vertical shifts, and horizontal shifts A1.QFE.12: Given the graph of a quadratic

			function, explain the effects of the transformation from the parent function, $y = x^2$. A1.QFE.13: Write quadratic functions that provide a reasonable fit to data and use them to make predictions with technology.
Factoring Quadratics	4 weeks	Solving by Graphing Solving by Factoring Quadratic Formula Completing the Square	A1.QFE.3: Solve quadratic equations with real number solutions, containing one variable, including those with variables on both sides of the equal sign. Equations should be solved by: ● Graphing, ● Factoring (including perfect square trinomials and difference of squares binomials), ● Using the quadratic formula, ● Completing the square, or ● Taking the square root. A1.QFE.8: Explain how each form of a quadratic expression (standard, factored, and vertex form) identifies different key attributes, using the different forms to interpret quantities in context.