Ganado Unified School District
Algebra 1

PACING Guide SY 2021-2022

QUARTER 1				
Timeline & Resources	**AZ CCRS - Mathematics**	**Essential Questions HESS Matrix**	**Learning Goal**	**Vocabulary Content/Academic**
Glencoe Algebra 1 Textbook **Chapter 0: Preparing for Algebra** **Chapter 1: Expressions, Equations, and Functions** **ALEKS online integration** **Triumph Learning Common Core Coach Algebra I** **ATIONLINE** **Mathaid.com** **Kuta.com**	**A1.N-Q.A.1** Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays. **A1.N-Q.A.2** Define appropriate quantities for the purpose of descriptive modeling. Include problem-solving opportunities utilizing real-world context. **A1.N-Q.A.3** Choose a level of accuracy appropriate to limitations on measurement when reporting quantities utilizing real-world context. **A1.A-SSE.A.1** Interpret expressions that represent a quantity in terms of its context. a. Interpret parts of an expression, such as terms, factors, and coefficients. b. Interpret complicated expressions by viewing one or more of their parts as a single entity. **A1.A-SSE.A.2** Use the structure of an expression to identify ways to rewrite it.	• How can I recognize and write rules for number patterns? • How do you write an expression to represent a real world situation ?	• Write verbal expression for algebraic expressions • Write algebraic expressions for verbal expressions • Evaluate numerical expression by using the order of operations • Evaluate algebraic expressions by using the order of operations • Recognize the properties of equality and identity • Recognize the Commutative and Associative Properties • Use the Distributive Property to evaluate expressions • Use the Distributive Property to simplify expressions. • Solve equations with one variable • Solve equations with two variables • Represent relations • Interpret graphs of relations • Determine whether a relation is a function • Find function values	Algebraic Expressions Variable Term Factor Product Power Exponent Base Evaluate Order of Operations Equivalent Expressions Additive Identity Multiplicative Identity Multiplicative Inverse Reciprocal Accuracy Like Terms Simplest Form Coefficient Open Sentence Equation Solving Solutions Replacement Set Set Element Solution Set

	A1.A-CED.A.1 Create equations and inequalities in one variable and use them to solve problems. Include problem-solving opportunities utilizing real-world context. *Focus on linear, quadratic, exponential and piecewise functions (limited to absolute value and step).* **A1.A-REI.B.3** Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters. **A1.F-IF.A.1** Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If *f* is a function and *x* is an element of its domain, then *f*(*x*) denotes the output of *f* corresponding to the input *x*. The graph of *f* is the graph of the equation *y* = *f*(*x*). **A1.F-IF.B.4** For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. *Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums. Focus on linear, quadratic, exponential and piecewise-defined functions (limited to absolute value and step).*		● Interpret intercepts, and symmetry of graphs of functions ● Interpret positive, negative, increasing and decreasing behavior, extrema, and end behavior of graphs of functions.	Identify Coordinate System Coordinate Plane X- and Y- Axes Origin Ordered Pair X- and Y- Coordinates Relation Mapping Domain Range Independent Variable Dependent Variable Function Discrete Function Continuous Function Vertical Line Test Function Notation Nonlinear Function Intercept X-Intercept Y-Intercept Symmetry Positive Negative Increasing Decreasing Extrema Relative Maximum Relative Minimum End Behavior

	A1.F-IF.A.2 Evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context. **A1.F-IF.B.5** Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. **A1.A-REI-D.10** Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve, which could be a line. **A1.S-ID.A.1** Represent real-value data with plots for the purpose of comparing two or more data sets.			
Glencoe Algebra 1 Textbook Chapter 2: Linear Equations **ALEKS online integration**	**A1.A-CED.A.1** Create equations and inequalities in one variable and use them to solve problems. Include problem-solving opportunities utilizing real-world context. *Focus on linear, quadratic, exponential and piecewise functions (limited to absolute value and step).* **A1.A-REI.A.1** Explain each step in solving linear and quadratic equations 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. **A1.A-REI.B.3** Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	● How do we solve equation using addition, subtraction, multiplication and division? ● How do we utilize equations to solve problems? ● How do you rearrange formulas to highlights points of interest? ● How do you write equation and inequalities? ● How do solve equation with variable in both sides?	● Translate sentences into equations ● Translate equations into sentences ● Use algebra tiles to solve addition, subtraction, and multiplication equations ● Solve Equations by using addition or subtraction ● Solve equations by using multiplication or division ● Use algebra tiles to solve multi-step equations ● Solve equations involving more than one operation. ● Solve equations involving consecutive integers ● Solve equations with the variables on each side ● Solve equations involving	Formula Solve an Equation Equivalent Equations Multi-Step Equation Consecutive Integers Number Theory Identity Ratio Proportion Means Extremes Rate Unite Rate Scale Scale Model Percent of Change Percent of Increase Percent of Decrease Literal Equation Dimensional Analysis

	A1.A-CED.A.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. *For example, rearrange Ohm's law V = IR to highlight resistance R.* **A1.N-Q.A.1** Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.		grouping symbols ● Evaluate absolute value expressions ● Solve absolute value equations ● Compare ratios ● Solve proportions ● Find the percent of change ● Solve problems involving percent of change ● Solve equations for given variables ● Use formulas to solve real-world problems ● Solve mixture problems ● Solve uniform motion problems	Unit Analysis Weighted average Mixture problem Uniform motion problem Rate problem
Glencoe Algebra 1 Textbook Chapter 3: Linear Functions **ATIONLINE** **Mathaid.com** **Kuta.com**	**A1.F-IF.B.4** For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. *Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums. Focus on linear, quadratic, exponential and piecewise-defined functions (limited to absolute value and step).* **A1.F-IF.C.7** Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. *Focus on linear, quadratic, exponential and piecewise-defined functions (limited to absolute value and step).*	● How do we graph linear equations in two variables? ● How do we represent function as tables, rules and graphs? ● How do we use graph of a function to solve real-world problems? ● How do changes in linear equations and functions affects the graph? ● What types of relationships can be modeled by linear graphs?	● Analyze the key features of linear graphs ● Identify linear equations, intercepts, and zeros ● Graph linear equations ● Solve linear equations by graphing ● Estimate solutions to an equation by graphing ● Use rate of change to solve problems ● Find the slope of a line ● Write and graph direct variation equations ● Solve problems involving direct variation ● Recognize arithmetic sequences ● Relate arithmetic sequences to linear functions ● Write an equation for a	Linear Function Constant Function Linear Equation Standard Form Constant X-Intercept Y-Intercept Linear Function Parent Function Family of Graphs Root Zeros Rate of Change Slope Direct Variation Constant of Variation Constant of Proportionality Sequence Terms Arithmetic Sequence Common Difference

	A1.A-REI.D.10 Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve, which could be a line. **A1.F-IF.B.6** Calculate and interpret the average rate of change of a continuous function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph. Include problem-solving opportunities utilizing real-world context. *Focus on linear, quadratic, exponential and piecewise-defined functions (limited to absolute value and step).* **A1.F-LE.A.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. b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. c. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another. **A1.F-LE.A.2** Construct linear and		proportional relationship ● Write an equation for a non-proportional relationship	

	exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or input-output pairs. **A1.F-BF.A.1** Write a function that describes a relationship between two quantities. Determine an explicit expression, a recursive process, or steps for calculation from real-world context. Focus on linear, quadratic, exponential and piecewise-defined functions (limited to absolute value and step).			
QUARTER 2				
Glencoe Algebra 1 Textbook **Chapter 4: Equations of Linear Functions**	**A1.F-IF.A.2** Evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context. **A1.F-IF.C.7** Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. Focus on linear, quadratic, exponential and piecewise-defined functions (limited to absolute value and step). **A1.F-BF.A.1** Write a function that describes a relationship between two quantities. Determine an explicit expression, a recursive process, or steps for calculation from a context. Focus on linear, quadratic, exponential and piecewise-defined functions (limited to absolute value and step).	● How can you distinguish between real-world situation using linear, quadratic and exponential function? ● How do equations relate to functions? ● When is a linear model appropriate for describing a relationship between two quantities?	● Write and graph linear equations in slope-intercept form ● Model real-world data with equations in slope-intercept form ● Use a graphing calculator to collect data and investigate slope-intercept form. ● Use a graphing a calculator to investigate families of linear functions ● Write an equation of a line in slope-intercept form given the slope and one point ● Write an equation of a line in slope-intercept form given two points. ● Write an equation of lines in point-slope form ● Write linear equations in different forms	Slope-Intercept Form Constant Function Identity Function Constraint Linear Extrapolation Point-Slope Form Parallel Lines Perpendicular Lines Bivariate Data Scatter Plot Line of Fit Linear Interpolation Causation Best-Fit Line Linear Regression Correlation Coefficient Residual Median-Fit Line Inverse Relation Inverse Function

	A1.F-BF.B.3 Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k\,f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph. *Focus on linear, quadratic, exponential and piecewise-defined functions (limited to absolute value and step).* **A1.F-LE.A.2** Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs. **A1.F-IF.A.2** Evaluate a function for inputs in the domain, and interpret statements that use function notation in terms of context. **A1.S-ID.C.7** Interpret the slope as a rate of change and the constant term of a linear model in the context of the data. **A1.S-ID.B.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. Focus on linear models. b. Informally assess the fit of a function by plotting and analyzing residuals.		● Write an equation of the line that passes through a given point, parallel to a given line ● Write an equation of the line that passes through a given point, perpendicular to a given line ● Investigate relationships between quantities by using points on scatter plots ● Use lines of fit to make and evaluate predictions ● Explore the difference between correlation and causation ● Write equations of best-fit lines using linear regression ● Write equations of median-fit lines ● Find the inverse of a relation ● Find the inverse of a linear function ● Draw the inverse of a relation and determine whether the inverse is a function	

	A1.S-ID.C.9 Distinguish between correlation and causation. **A1.S-ID.C.8** Compute and interpret the correlation coefficient of a linear relationship. **A1.A-CED.A.2** Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. **A1.F-LE.B.5** Interpret the parameters in a linear or exponential function with integer exponents utilizing real world context.			
Glencoe Algebra 1 Textbook **Chapter 5: Linear Inequalities** **ATIONLINE** **Mathaid.com** **Kuta.com**	**A1.A-CED.A.1** Create equations and inequalities in one variable and use them to solve problems. Include problem-solving opportunities utilizing real-world context. Focus on linear, quadratic, exponential and piecewise-defined functions (limited to absolute value and step). **A1.A-REI.B.3** Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters. **A1.A-CED.A.3** Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context.	● Why do we want to compare rather than get an exact answer?	● Solve linear inequalities by using o Addition o Subtraction o Multiplication o Division ● Use algebra tiles to model solving inequalities ● Solve linear inequalities involving more than one operation ● Solve linear inequalities involving the Distributive Property ● Identify compound statements connected by the word *and* or *or* as true or false. ● Solve compound inequalities containing the word *and* and	Set-builder notation Compound Inequality Intersection Union Boundary Half-Pane Closed (Open) Half-Pane

	A1.A-REI.D.12 Graph the solutions to a linear inequality in two variables as a half-plane, excluding the boundary in the case of a strict inequality, and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.		graph their solution set ● Solve compound inequalities containing the word *or* and graph their solution set ● Solve and graph absolute value inequalities ● Graph linear inequalities on the coordinate plane solve inequalities by graphing ● Use a graphing calculator to investigate the graphs of inequalities	
Glencoe Algebra 1 Textbook Chapter 6: **Systems of Linear Equations and Inequalities** **ATIONLINE** **Mathaid.com** **Kuta.com**	**A1.A-CED.A.3** Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context. **A1.A-CED.A.2**. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. **A1.A-REI.C.5** Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions. **A1.A-REI.C.6** Solve systems of linear equations exactly and approximately, focusing on pairs of linear equations in two variables. Include problem solving opportunities utilizing real-world context.	● How can we utilize equations to solve problems?	● Determine the number of solutions a system of linear equations has, if any ● Solve systems of linear equations by graphing ● Use a graphing calculator to solve a system of equations ● Solve systems of equations by using substitution ● Solve real-world problems involving systems of equations by using substitution. ● Solve systems of equations by using elimination with multiplication ● Solve real-world problems involving systems of equations ● Determine the best method for solving systems of equations ● Apply systems of equations ● Use matrices to solve systems of equations ● Solve systems of linear inequalities by graphing	System of Equations Consistent Independent Dependent Inconsistent Substitution Elimination Matrix Elements Dimensions Augmented Matrix Row Reduction Identity Matrix System of Inequalities

	A1.A-REI.D.12 Graph the solutions to a linear inequality in two variables as a half-plane, excluding the boundary in the case of a strict inequality, and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.		• Apply systems of linear inequalities.	
QUARTER 3				
Glencoe Algebra 1 Textbook **Chapter 7:** **Exponents and Exponential Functions** **ATIONLINE** **Mathaid.com** **Kuta.com** **ATIONLINE** **Mathaid.com** **Kuta.com**	**A1.A-SSE.A.2** Use the structure to identify ways to rewrite numerical and polynomial expressions. Focus on polynomial multiplication and factoring patterns. **A1.F-IF.C.7** Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. Focus on linear, quadratic, exponential and piecewise-defined functions (limited to absolute value and step). **A1.F-BF.B.3** Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k\,f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph. *Focus on linear, quadratic, exponential and piecewise-defined functions (limited to absolute value and step).* **A1.F-LE.A.2** Construct linear and exponential functions, including arithmetic	• How can you distinguish between real-world situation using linear, quadratic and exponential function ?	• Multiply monomials using the properties of exponents • Simplify expressions using the multiplication properties of exponents • Divide monomials using the properties of exponents • Simplify expressions containing negative and zero exponents • Evaluate and rewrite expressions involving rational exponents • Solve equations involving expressions with rational exponents • Express numbers in scientific notation • Find products and quotient of numbers expressed in scientific notation • Graph exponential functions • Identify data that display exponential behavior • Solve problems involving exponential growth • Solve problems involving	Monomial Constant Zero Exponents Negative Exponent Order of Magnitude Rational Exponent Cube Root Nth Root Exponential Equation Scientific Notation Exponential Function Exponential Growth Function Exponential Decay Function Compound Interest Geometric Sequence Common Ratio Recursive Formula

	and geometric sequences, given a graph, a description of a relationship, or input-output pairs. **A1.A-REI.D.11** Explain why the *x*-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately (e.g., using technology to graph the functions, make tables of values, or find successive approximations. Focus on cases where $f(x)$ and/or $g(x)$ are linear, quadratic, exponential and piecewise-defined function (limited to absolute value and step). **A1.F-LE.A.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. b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. c. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another. **A1.F-IF.A.3** Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers.		exponential decay ● Identify and generate geometric sequences ● Relate geometric sequences to exponential functions ● Use a recursive formula to list the terms in a sequence ● Write recursive formulas for arithmetic and geometric sequences.	
Glencoe Algebra 1 Textbook	**A1.A-APR.A.1** Understand that polynomials form a system analogous to the integers, namely, they are closed	● Why do we need to use quadratic functions to model situations? Why should we	● Use algebra tiles to model using the Distributive Property to	Factoring Factoring by Grouping Zero Product Property

Chapter 8: **Quadratic Expressions and Equations** **ATIONLINE** **Mathaid.com** **Kuta.com**	under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials. **A1.N-RN.B.3** Explain why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational. **A1.A-SSE.A.1** Understand expressions that represent a quantity in terms of its context. a. Interpret parts of an expression, such as terms, factors, and coefficients. b. Interpret expressions by viewing one or more of their parts as a single entity. **A1.A-SSE.A.2** Use the structure to identify ways to rewrite numerical and polynomial expressions. Focus on polynomial multiplication and factoring patterns. **A1.A-SSE.B.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. **A1.A-REI.B.4** Solve quadratic equations in one variable. a. Use the method of completing the	factor? How does the graph of a quadratic function relate to its algebraic equation?	factor binomials ● Use the Distributive Property to factor polynomials ● Solve quadratic equations of the form $ax^2 + bx = 0$ ● Factor trinomials of the form $x^2 + bx + c$ ● Solve quadratic equations of the form $x^2 + bx + c = 0$ ● Factor trinomials of the form $ax^2 + bx + c$ ● Solve quadratic equations of the form $ax^2 + bx + c = 0$ ● Factor binomials that are the difference of squares. ● Use the difference of squares to solve equations. ● Factor perfect square trinomials ● Solve equations involving perfect squares	Quadratic Equation Prime Polynomial Difference of Two Squares Perfect Square Trinomial

	square to transform any quadratic equation in x into an equation of the form $(x - k)^2 = q$ 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. Focus on solutions for quadratic equations that have real roots. Include cases that recognize when a quadratic equation has no real solutions. **A1.A-REI.A.1** Explain each step in solving linear and quadratic equations 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. . **A1.A-APR.B.3** 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. Focus on quadratic and cubic polynomials in which linear and quadratic factors are available. **A1.F-IF.C.9** Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). Focus on linear, quadratic, exponential and piecewise-defined functions (limited to absolute value and step).			

QUARTER 4				
Glencoe Algebra 1 Textbook **Chapter 9:** **Quadratic Functions and Equations**	***A1.F-IF.B.4*** *For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.* *Include problem-solving opportunities utilizing real-world context. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums. Focus on linear, quadratic, exponential and piecewise-defined functions (limited to absolute value and step).* **A1.F-IF.B.6**. Calculate and interpret the average rate of change of a function (presented symbolically or as a table) on a closed interval. Estimate the rate of change from a graph. *Focus on linear, quadratic, exponential and piecewise-defined functions (limited to absolute value and step).* **A1.F-IF.C.7** Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. *Focus on linear, quadratic, exponential and piecewise-defined functions (limited to absolute value and step).* **A1.F-IF.C.8** Write a function defined by an expression in different but equivalent forms to reveal and explain different	● Why do we need to use exponential notation to model situations?	● Analyze the characteristics of the graphs of quadratic functions ● Graph quadratic function ● use a given quadratic function to investigate the rate of change of a quadratic function ● solve quadratic equations by graphing ● estimate solutions of quadratic equations by graphing ● apply translations of quadratic functions ● apply dilations and reflections to quadratic functions ● Use a graphing calculator to solve a system of one linear and one quadratic equation ● complete the square to write perfect square trinomials ● solve quadratic equations by completing the square ● solve quadratic equations by using the Quadratic Formula. ● use the discriminant to determine the number of solutions to a quadratic equation. identify linear, quadratic, and exponential functions from given data ● write equations that model data ● identify and graph step	Quadratic Function Standard Form Parabola Axis of Symmetry Vertex Minimum Maximum Double Root Transformation Translation Dilation Reflection Vertex Form Completing the Square Quadratic Formula Discriminant Step Function Piecewise-Linear Function Greatest Integer Function Absolute Value Function Piecewise-Defined Function

	properties of the function. a. 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. **A1.F-BF.B.3** Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k\,f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph. *Focus on linear, quadratic, exponential and piecewise-defined functions (limited to absolute value and step).* **A1.A-REI.B.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 $(x - k)^2 = q$ 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. Focus on solutions for quadratic equations that have real roots. Include cases that recognize when a quadratic equation has no real solutions.		functions ● identify and graph step functions ● identify and graph absolute value and piecewise-defined functions	

	A1.A-SSE.B.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. **A1.F-LE.A.1** Distinguish between situations that can be modeled with linear functions and with exponential functions. d. Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals. e. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. f. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another. **A1.F-LE.A.3** Observe, using graphs and tables, that a quantity increasing exponentially eventually exceeds a quantity increasing linearly or quadratically. **A1.F-LE.B.5** Interpret the parameters in a linear or exponential function with integer			

	exponents utilizing real world context. **A1.F-IF.C.9** Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). Focus on linear, quadratic, exponential and piecewise-defined functions (limited to absolute value and step).			
Glencoe Algebra 1 Textbook **Chapter 12:** **Statistics and Probability**	**A1.S-ID.A.1** Represent real-value data with plots for the purpose of comparing two or more data sets. **A1.S-ID.A.2**. Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets. **A1.S-ID.A.3**. Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of outliers if present. **A1.S-ID.B.5.** Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data, including joint, marginal, and conditional relative frequencies. Recognize possible associations and trends in the data. **A1.S-CP.A.1** Describe events as subsets of a sample space using characteristics of	● Why are statistics preferred over parameters? ● What is a good sample? ● What do descriptive statistics tell about a sample? ● What are measures of center and when is one preferred? ● What are measures of variability and why is it important to know it? ● How does probability help us make decisions?	● classify and analyze samples ● classify and analyze studies ● identify sample statistics and population parameters ● analyze data sets using statistics ● describe the shape of a distribution ● use the shapes of distributions to select appropriate statistics ● determine the effect that transformations of data have on measures of central tendency and variation ● compare data using measures of central tendency and variation ● calculate experimental probabilities ● design simulations and summarize data from simulations.	population sample simple random sample systematic sample self-selected sample convenience sample stratified sample bias survey observational study experiment statistical inference statistic parameter mean absolute deviation standard deviation variance distribution negatively skewed distribution symmetric distribution positively skewed distribution linear transformation theoretical probability experimental probability relative frequency simulation probability model

	the outcomes, or as unions, intersections, or complements of other events. **A1.S-CP.A.2** Use the Multiplication Rule for independent events to 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.		● use permutations ● use combinations ● find probabilities of independent events ● find probabilities of mutually exclusive events ● find probabilities by using random variables ● find the expected value of a probability distribution.	permutation factorial combination compound event joint probability independent events dependent events mutually exclusive events two-way frequency table joint-frequencies marginal frequencies relative frequency conditional relative frequency random variable discrete random variable probability distribution probability graph expected value

Standards for Mathematical Practice are embedded in each unit of study:
Make sense of problems and persevere in solving them.
Reason abstractly and quantitatively.
Construct viable arguments and critique the reasoning of others.
Model with mathematics.
Use appropriate tools strategically.
Attend to precision.
Look for and make use of structure.
Look for and express regularity in repeated reasoning.