

Algebra 1 Math Year at a Glance

1st 9 Weeks

Unit 1: Equations and Inequalities in 1 Variable

A.10(A) add & subtract polynomials of degree one and degree two
 A.10(D) rewrite polynomial expressions of degree one & degree two in equivalent forms using the distributive property

A.5(A) solve linear equations in one variable, including those for which the application of the distributive property is necessary and for which variables are included on both sides
 A.5(B) solve linear inequalities in one variable, including those for which the application of the distributive property is necessary & for which variables are included on both sides

Unit 2: Functions

A.12(A) decide whether relations represented verbally, tabularly, graphically, and symbolically define a function

A.12(B) evaluate functions, expressed in function notation, given one or more elements in their domains

A.2(A) determine the domain and range of a linear function in mathematical problems; determine reasonable domain and range values for real-world situations, both continuous and discrete; and represent domain and range using inequalities (also A.6(A) quadratic & A.12(A) exponential)

A.4(B) compare & contrast association & causation in real-world problems

Unit 3: Graphing and Writing Linear Equations

A.2(B) write linear equations in 2 variables in various forms, including $y = mx + b$, $Ax + By = C$, and $y - y_1 = m(x - x_1)$, given 1 point & the slope & given 2 pts

A.2(C) write linear equations in 2 variables given a table, equation or verbal description

A.2(D) write & solve equations involving direct variation.

A.3(A) determine the slope of a line given a table of values, a graph, 2 points on the line, & an equation written in various forms, including $y = mx + b$, $Ax + By = C$, and $y - y_1 = m(x - x_1)$

A.3(B) calculate the rate of change of a linear function represented tabularly, graphically, or algebraically in context of mathematical and real-world problems

A.3(C) graph linear function on the coordinate plane & identify key features, including x-intercept, y-intercept, zeros, and slope, in math & real-world problems

A.12(E) solve mathematic and scientific formulas, and other literal equations, for a specified variable

2nd 9 Weeks

Unit 4: Systems

A.3(F) graph systems of 2 linear equation in 2 variables on the coordinate plane & determine the solutions if they exist

A.3(G) estimate graphically the solutions to systems of two linear equations w/2 variables in real world problems

A.2(I) write systems of 2 linear equations given a table of values, a graph, & a verbal description

A.5(C) solve systems of 2 linear equations w/ 2 variables for mathematical & real-world problems

A.3(C) graph linear function on the coordinate plane & identify key features, including x-intercept, y-intercept, zeros, and slope, in math & real-world problems

Unit 5: Linear Inequalities

A.4(A) calculate, using technology, the correlation coefficient between two quantitative variables and interpret as a measure of the strength of the linear association

A.4(C) write, with and without technology, linear functions that provide a reasonable fit to data to estimate solutions and make predictions for real-world problems

A.2(H) write linear inequalities in 2 variables given a table of values, a graph, & a verbal description

A.3(D) graph the solution set of linear inequalities in 2 variables on the coordinate plane

A.3(H) graph the solution set of systems of 2 linear inequalities in 2 variables on the coordinate plane

A.2(E) write the equation of a line that contains a given point & is parallel to a given line

A.2(F) write the equation of a line that contains a given point & is perpendicular to a given line

A.2(G) write the equation of a line that is parallel or perpendicular to the x or y-axis & determine whether the slope of the line is 0 or undefined

3rd 9 Weeks

Unit 6: Exponents, Roots & Polynomial Operations

A.11(B) simplify numeric and algebraic expressions using the laws of exponents, including integral and rational exponents

A.10(A) add and subtract polynomials of degree one and degree two

A.10(B) multiply polynomials of degree one and degree two

A.10(C) determine the quotient of a polynomial of degree one and polynomial of degree two when divided by a polynomial of degree one and polynomial of degree two when the degree of the divisor does not exceed the degree of the dividend (by factoring or standard algorithm)

A.10(D) rewrite polynomial expressions of degree one & degree two in equivalent forms using the distributive property

Unit 7: Factoring

A.10(E) factor, if possible, trinomials with real factors in the form $ax^2 + bx + c$, including perfect square trinomials of degree two

A.10(F) decide if a binomial can be written as the difference of two squares and, if possible, use the structure of a difference of two squares to rewrite the binomial.

Unit 8: Quadratic Functions

A.7(A) graph quadratic functions on the coordinate plane and use the graph to identify key attributes, if possible, including x-intercept, y-intercept, zeros, maximum value, minimum values, vertex, and the equation of the axis of symmetry

A.6(A) determine the domain and range of quadratic functions and represent the domain and range using inequalities

A.6(B) write equations of quadratic functions given the vertex and another point on the graph, write the equation in vertex form ($f(x) = a(x - h)^2 + k$), and rewrite the equation from vertex form to standard form ($f(x) = ax^2 + bx + c$)

A.6(C) write quadratic functions when given real solutions and graphs of their related equations.

A.7(B) describe the relationship between the linear factors of quadratic expressions and the zeros of their associated quadratic functions

A.7(C) determine the effects on the graph of the parent function $f(x) = x^2$ when $f(x)$ is replaced by $af(x)$, $f(x) + d$, $f(x - c)$, $f(bx)$ for specific values of a , b , c , and d .

A.8(A) solve quadratic equations having real solutions by factoring, taking square roots, completing the square, and applying the quadratic formula

A.8(B) write, using technology, quadratic functions that provide a reasonable fit to data to estimate solutions and make predictions for real-world problems

A.11(A) simplify numerical radical expressions involving square roots

A.3(E) determine the effects on the graph of the parent function $f(x) = x$ when $f(x)$ is replaced by $af(x)$, $f(x) + d$, $f(x - c)$, $f(bx)$ for specific value of a , b , c , & d 3rd 9 weeks

4th 9 Weeks

Unit 9: Exponential Functions

A.9(D) graph exponential functions that model growth and decay and identify key features, including y-intercept and asymptote, in mathematical and real-world problems

A.9(A) determine the domain and range of exponential functions of the form $f(x) = ab^x$ and represent using inequalities

A.9(B) interpret the meaning of the values of a and b in exponential functions of the form $f(x) = ab^x$ in real-world problems

A.9(C) write exponential functions in the form $f(x) = ab^x$ (where b is a rational number) to describe problems arising from mathematical and real-world situations, including growth and decay

A.9(E) write, using technology, exponential functions that provide a reasonable fit to data and make predictions for real-world problems

Unit 10: Patterns, Sequences & Regression (all forms)

A.12(C) identify terms of arithmetic and geometric sequences when the sequences are given in function form using recursive processes

A.12(D) write a formula for the n^{th} term of arithmetic and geometric sequences, given the value of several of their terms