

READINESS STANDARDS - Algebra 1

(A.1) **Foundations for functions.** The student understands that a function represents a dependence of one quantity on another and can be described in a variety of ways. The student is expected to

(D) represent relationships among quantities using [concrete] models, tables, graphs, diagrams, verbal descriptions, equations, and inequalities	Equation, Inequality, Positive, Negative, Axes, Table, Independent, Dependent, Function, Area, Relationship
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(E) interpret and make decisions, predictions, and critical judgments from functional relationships	Equation, Inequality, Positive, Negative, Axes, Table, Independent, Dependent, Function, Area, Relationship
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(A.2) **Foundations for functions.** The student uses the properties and attributes of functions. The student is expected to

(B) identify mathematical domains and ranges and determine reasonable domain and range values for given situations, both continuous and discrete; equations, and inequalities	Domain, Range, Continuous, Discrete, Intervals
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(D) collect and organize data, make and interpret scatter plots (including recognizing positive, negative, or no correlation for data approximating linear situations), and model, predict, and make decisions and critical judgments in problem situations	Scatter plot, Positive correlation, Negative correlation
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(A.4) **Foundations for functions.** The student understands the importance of the skills required to manipulate symbols in order to solve problems and uses the necessary algebraic skills required to simplify algebraic expressions and solve equations and inequalities in problem situations. The student is expected to

(A) find specific function values, simplify polynomial expressions, transform and solve equations, and factor as necessary in problem situations	Polynomial, Expression, Factor
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(A.5) **Linear functions.** The student understands that linear functions can be represented in different ways and translates among their various representations. The student is expected to

(C) use, translate, and make connections among algebraic, tabular, graphical, or verbal descriptions of linear functions	Function, Linear, Standard form, Slope, Intercept, Slope-intercept form, Data set
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(A.6) **Linear functions.** The student understands the meaning of the slope and intercepts of the graphs of linear functions and zeros of linear functions and interprets and describes the effects of changes in parameters of linear functions in real-world and mathematical situations. The student is expected to

(B) interpret the meaning of slope and intercepts in situations using data, symbolic representations, or graphs	X-intercept, Y-intercept, Slope, Rate of change
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(C) investigate, describe, and predict the effects of changes in m and b on the graph of $y = mx + b$	Linear function, X-intercept, Y-intercept, Increasing function, Decreasing function, Steeper
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(F) interpret and predict the effects of changing slope and y -intercept in applied situations	Linear function, X-intercept, Y-intercept, Increasing function, Decreasing function, Steeper
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READINESS STANDARDS - Algebra 1

(A.7) **Linear functions.** The student formulates equations and inequalities based on linear functions, uses a variety of methods to solve them, and analyzes the solutions in terms of the situation. The student is expected to

(B) investigate methods for solving linear equations and inequalities using [concrete] models, graphs, and the properties of equality, select a method, and solve the equations and inequalities

Solution set, Inequality, Linear function, Intersection, Standard form

(A.8) **Linear functions.** The student formulates systems of linear equations from problem situations, uses a variety of methods to solve them, and analyzes the solutions in terms of the situation. The student is expected to

(B) solve systems of linear equations using [concrete] models, graphs, tables, and algebraic methods

System of linear equations, Standard form, Plot

(A.9) **Quadratic and other nonlinear functions.** The student understands that the graphs of quadratic functions are affected by the parameters of the function and can interpret and describe the effects of changes in the parameters of quadratic functions. The student is expected to

(D) analyze graphs of quadratic functions and draw conclusions

Parabola, Quadratic, Projectile, Time versus distance

(A.10) **Quadratic and other nonlinear functions.** The student understands there is more than one way to solve a quadratic equation and solves them using appropriate methods. The student is expected to

(A) solve quadratic equations using [concrete] models, tables, graphs, and algebraic methods

Roots, Quadratic equation, Solution, Zeros of a quadratic, X-intercept

SUPPORTING STANDARDS - Algebra 1

(A.1) **Foundations for functions.** The student understands that a function represents a dependence of one quantity on another and can be described in a variety of ways. The student is expected to

(A) describe independent and dependent quantities in functional relationships

Independent, Dependent, Function, Relationship, Quantity, Equation, Variable

(B) gather and record data and use data sets to determine functional relationships between quantities

Independent, Dependent, Function, Relationship, Quantity, Equation, Variable

(C) describe functional relationships for given problem situations and write equations or inequalities to answer questions arising from the situations

Independent, Dependent, Function, Equation, Inequalities

(A.2) **Foundations for functions.** The student uses the properties and attributes of functions. The student is expected to

(A) identify and sketch the general forms of linear ($y = x$) and quadratic ($y = x^2$) parent functions

Linear, Line, Quadratic, Parabola, Parent function, Correlation, Scatter plot

(C) interpret situations in terms of given graphs or create situations that fit given graphs

Increasing, Decreasing, Decline, Rate, Scatter plot, Linear, Parabolic, Correlation, Exponential

(A.3) **Foundations for functions.** The student understands how algebra can be used to express generalizations and recognizes and uses the power of symbols to represent situations. The student is expected to

(A) use symbols to represent unknowns and variables

Variables, Equations, Expressions, Inequalities

SUPPORTING STANDARDS - Algebra 1

(A.3) **Foundations for functions.** The student understands how algebra can be used to express generalizations and recognizes and uses the power of symbols to represent situations. The student is expected to

(B) look for patterns and represent generalizations algebraically Expression, Equation, Variable, Functional notation

(A.4) **Foundations for functions.** The student understands the importance of the skills required to manipulate symbols in order to solve problems and uses the necessary algebraic skills required to simplify algebraic expressions and solve equations and inequalities in problem situations. The student is expected to

(B) use the commutative, associative, and distributive properties to simplify algebraic expressions Commutative, Associative, Distributive, Equality, Expressions, Equation, Equivalent, Monomial, Binomial, Trinomial, Polynomial

(C) connect equation notation with function notation, such as $y = x + 1$ and $f(x) = x + 1$ Function, Functional notation, Equality, Dependent, Independent, Variable

(A.5) **Linear functions.** The student understands that linear functions can be represented in different ways and translates among their various representations. The student is expected to

(A) determine whether or not given situations can be represented by linear functions Linear function, Line, Constant rate, Rate of change

(B) determine the domain and range for linear functions in given situations Domain, Range, Variable, Independent, Dependent, Set notation, Inequality, Real numbers, Discrete, Continuous

(A.6) **Linear functions.** The student understands the meaning of the slope and intercepts of the graphs of linear functions and zeros of linear functions and interprets and describes the effects of changes in parameters of linear functions in real-world and mathematical situations. The student is expected to

(A) develop the concept of slope as rate of change and determine slopes from graphs, tables, and algebraic representations Slope, Rate of change, Linear function, Line

(D) graph and write equations of lines given characteristics such as two points, a point and a slope, or a slope and Y-intercept Point, Y-intercept, Slope, Linear function, Function rule

(E) determine the intercepts of the graphs of linear functions and zeros of linear functions from graphs, tables, and algebraic representations X-intercept, Y-intercept, Zeros, Roots, Solution, Linear function, Function rule

(G) relate direct variation to linear functions and solve problems involving proportional change Proportion, Direct variation, Constant rate of change, Unit rate, Slope, Linear function

(A.7) **Linear functions.** The student formulates equations and inequalities based on linear functions, uses a variety of methods to solve them, and analyzes the solutions in terms of the situation. The student is expected to

(A) analyze situations involving linear functions and formulate linear equations or inequalities to solve problems Linear functions, Inequalities, Function rules

(C) interpret and determine the reasonableness of solutions to linear equations and inequalities Reasonableness, Estimate, Linear equations, Linear equalities, Solution

SUPPORTING STANDARDS - Algebra 1

(A.8) **Linear functions.** The student formulates systems of linear equations from problem situations, uses a variety of methods to solve them, and analyzes the solutions in terms of the situation. The student is expected to

(A) analyze situations and formulate systems of linear equations in two unknowns to solve problems

Linear systems, Solution, Variable, Linear equations, Inequalities

(C) interpret and determine the reasonableness of solutions to systems of linear equations

Reasonableness, Estimate, Linear equations, Linear equalities, Linear systems, Solution

(A.9) **Quadratic and other nonlinear functions.** The student understands that the graphs of quadratic functions are affected by the parameters of the function and can interpret and describe the effects of changes in the parameters of quadratic functions. The student is expected to

(A) determine the domain and range for quadratic functions in given situations

Domain, Range, Quadratic functions, Variable, Set notation, Inequality, Real numbers

(B) investigate, describe, and predict the effects of changes in a on the graph of $y = ax^2 + c$

Quadratic function, Coefficient, Constant, Y-intercept

(C) investigate, describe, and predict the effects of changes in c on the graph of $y = ax^2 + c$

Quadratic function, Coefficient, Constant, Y-intercept

(A.10) **Quadratic and other nonlinear functions.** The student understands there is more than one way to solve a quadratic equation and solves them using appropriate methods. The student is expected to

(B) make connections among the solutions (roots) of quadratic equations, the zeros of their related functions, and the horizontal intercepts (x-intercepts) of the graph of the function

X-intercept, Y-intercept, Zeros, Roots, Solution, Quadratic function, Function rule

(A.11) **Quadratic and other nonlinear functions.** The student understands there are situations modeled by functions that are neither linear nor quadratic and models the situations. The student is expected to

(A) use patterns to generate the laws of exponents and apply them in problem-solving situations

Exponents, Exponential functions, Exponent laws, Quadratic functions, Rate of change

(B) analyze data and represent situations involving inverse variation using [concrete] models, tables, graphs, or algebraic methods

Inverse variation, Nonlinear functions, Quadratic functions, Linear function

(C) analyze data and represent situations involving exponential growth and decay using [concrete] models, tables, graphs, or algebraic methods

Exponential growth and decay, Exponent laws, Exponents, Nonlinear functions, Quadratic functions, Linear function