

Math, Algebra I

Course Standards

A1.NQ.A	
Extend and use properties of rational exponents.	
A1.NQ.A.1	Explain how the meaning of rational exponents extends from the properties of integer exponents.
A1.NQ.A.2	Rewrite expressions involving radicals and rational exponents using the properties of exponents. Limit to rational exponents with a numerator of 1.
A1.NQ.B	
Use units to solve problems.	
A1.NQ.B.3.a	Identify, label and use appropriate units of measure within a problem.
A1.NQ.B.3.b	Convert units and rates
A1.NQ.B.3.c	Use units within problems.
A1.NQ.B.3.d	Choose and interpret the scale and the origin in graphs and data displays.
A1.NQ.B.4	Define and use appropriate quantities for representing a given context or problem.
A1.NQ.B.5	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.
A1.SSE.A	
Interpret and use structure.	
A1.SSE.A.1	Interpret the contextual meaning of individual terms or factors from a given problem that utilizes formulas or expressions.
A1.SSE.A.2	Analyze the structure of polynomials to create equivalent expressions or equations.
A1.SSE.A.3.a	Choose and produce equivalent forms of a quadratic expression or equations to reveal and explain properties. a) Find the zeros of a quadratic function by rewriting it in factored form.
A1.SSE.A.3.b	Choose and produce equivalent forms of a quadratic expression or equations to reveal and explain properties. b) Find the maximum or minimum value of a quadratic function by completing the square.
A1.CED.A	
Create equations that describe linear, quadratic and exponential relationships.	
A1.CED.A.1	Create equations and inequalities in one variable and use them to model and/or solve problems.
A1.CED.A.2	Create and graph linear, quadratic and exponential equations in two variables.
A1.CED.A.3	Represent constraints by equations or inequalities and by systems of equations or inequalities, and interpret the data points as a solution or nonsolution in a modeling context.
A1.CED.A.4	Solve literal equations and formulas for a specified variable that highlights a quantity of interest.
A1.REI.A	
Understanding solving equations as a process, and solve equations and inequalities in one variable.	
A1.REI.A.1	Explain how each step taken when solving an equation or inequality in one variable creates an equivalent equation or inequality that has the same solution(s) as the original.
A1.REI.A.2.a	Solve problems involving quadratic equations.

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	a) Use the method of completing the square to create an equivalent quadratic equation.
A1.REI.A.2.b	Solve problems involving quadratic equations. b) Derive the quadratic formula.
A1.REI.A.2.c	Solve problems involving quadratic equations. c) Analyze different methods of solving quadratic equations.
A1.REI.B	
Solve systems of equations.	
A1.REI.B.3	Solve a system of linear equations algebraically and/or graphically
A1.REI.B.4	Solve a system consisting of a linear equation and a quadratic equation algebraically and/or graphically.
A1.REI.B.5	Justify that the technique of linear combination produces an equivalent system of equations.
A1.REI.C	
Represent and solve linear and exponential equations and inequalities graphically.	
A1.REI.C.6	Explain that the graph of an equation in two variables is the set of all its solutions plotted in the Cartesian coordinate plane
A1.REI.C.7	Graph the solution to a linear inequality in two variables
A1.REI.C.8	Solve problems involving a system of linear inequalities.
A1.APR.A	
Perform operations on polynomials	
A1.APR.A.1	Add, subtract and multiply polynomials, and understand that polynomials follow the same general rules of arithmetic and are closed under these operations.
A1.APR.A.2	Divide polynomials by monomials.
A1.IF.A	
Understand the concept of a function and use function notation.	
A1.IF.A.1.a	Understand that a function from one set (domain) to another set (range) assigns to each element of the domain exactly one element of the range. a) Represent a function using function notation.
A1.IF.A.1.b	Understand that a function from one set (domain) to another set (range) assigns to each element of the domain exactly one element of the range. b) Understand that the graph of a function labeled f is the set of all ordered pairs (x, y) that satisfy the equation $y=f(x)$
A1.IF.A.2	Use function notation to evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context
A1.IF.B	
Interpret linear, quadratic and exponential functions in terms of the context.	
A1.IF.B.3	Using tables, graphs and verbal descriptions, interpret key characteristics of a function that models the relationship between two quantities.
A1.IF.B.4	Relate the domain and range of a function to its graph and, where applicable, to the quantitative relationship it describes.

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A1.IF.B.5	Determine the average rate of change of a function over a specified interval and interpret the meaning.
A1.IF.B.6	Interpret the parameters of a linear or exponential function in terms of the context.
A1.IF.C	
Analyze linear, quadratic and exponential functions using different representations.	
A1.IF.C.7	Graph functions expressed symbolically and identify and interpret key features of the graph.
A1.IF.C.8	Translate between different but equivalent forms of a function to reveal and explain properties of the function and interpret these in terms of a context.
A1.IF.C.9	Compare the properties of two functions given different representations.
A1.BF.A	
Build new functions from existing functions (linear, quadratic and exponential)	
A1.BF.A.1	Analyze the effect of translations and scale changes on functions.
A1.LQE.A	
Construct and compare linear, quadratic and exponential models and solve problems.	
A1.LQE.A.1.a	Distinguish between situations that can be modeled with linear or exponential functions. a) Determine that linear functions change by equal differences over equal intervals.
A1.LQE.A.1.b	Distinguish between situations that can be modeled with linear or exponential functions. b) Recognize exponential situations in which a quantity grows or decays by a constant percent rate per unit interval.
A1.LQE.A.2	Describe, using graphs and tables, that a quantity increasing exponentially eventually exceeds a quantity increasing linearly or quadratically.
A1.LQE.A.3	Construct linear equations given graphs, verbal descriptions or tables.
A1.LQE.A.3	Construct quadratic and exponential equations given graphs, verbal descriptions or tables.
A1.LQE.B	
Use arithmetic and geometric sequences.	
A1.LQE.B.4	Write arithmetic and geometric sequences in recursive and explicit forms, and use them to model situations and translate between the two forms.
A1.LQE.B.5	Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the set of integers.
A1.LQE.B.6	Find the terms of sequences given an explicit or recursive formula.
A1.DS.A	
Summarize, represent and interpret data.	
A1.DS.A.1	Analyze and interpret graphical displays of data
A1.DS.A.2	Use statistics appropriate to the shape of the data distribution to compare center and spread of two or more different data sets.
A1.DS.A.3	Interpret differences in shape, center and spreads in the context of the data sets, accounting for possible effects of outliers.
A1.DS.A.4.a	Summarize data in two-way frequency tables.

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	a) Interpret relative frequencies in the context of the data
A1.DS.A.4.b	Summarize data in two-way frequency tables. b) Recognize possible associations and trends in the data.
A1.DS.A.5.a	Construct a scatter plot of bivariate quantitative data describing how the variables are related; determine and use a function that models the relationship. a) Construct a linear function to model bivariate data represented on a scatter plot that minimizes residuals
A1.DS.A.5.b	Construct a scatter plot of bivariate quantitative data describing how the variables are related; determine and use a function that models the relationship. b) Construct an exponential function to model bivariate data represented on a scatter plot that minimizes residuals.
A1.DS.A.6	Interpret the slope (rate of change) and the y-intercept (constant term) of a linear model in the context of the data.
A1.DS.A.7	Determine and interpret the correlation coefficient for a linear association.
A1.DS.A.8	Distinguish between correlation and causation.