

Algebra 1

Quarter 1 Standards

- 1. Alg1.M.A.CED.A.01:** The Highly Proficient student can create equations and inequalities in one variable and use them to solve problems. Include problem-solving opportunities utilizing real-world context. Focus on equations and inequalities that are linear, quadratic, or exponential.
- 2. Alg1.M.A.CED.A.02:** The Highly Proficient student can compare and contrast equations and graphs that model linear and exponential relationships.
- 3. Alg1.M.A.REI.A.01:** The Highly Proficient student can 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.
- 4. Alg1.M.A.REI.B.03:** The Highly Proficient student can create, solve and graph linear equations and inequalities in one variable.
- 5. Alg1.M.A.S.ID.B.06a:** The Highly Proficient student can compare the fit of linear functions to data and determine which function has the best fit.
- 6. Alg1.M.A.S.ID.C.08:** The Highly Proficient student can calculate and interpret the correlation coefficient of a set of linear data and determine whether a correlation implies causation.
- 7. Alg1.M.A.SSE.A.01:** The Highly Proficient student can explain the context of different parts of a formula presented as an expression.
- 8. Alg1.M.F.BF.A.01:** The Highly Proficient student can 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, absolute value, quadratic, exponential, and piecewise-defined functions (limited to the aforementioned functions).
- 9. Alg1.M.F.IF.A.02:** The Highly Proficient student can apply and extend knowledge of domain and range to real-world contexts and situations. Additionally, they can create a function for a given context where the domain meets certain parameters.
- 10. Alg1.M.F.IF.A.03:** The Highly Proficient Student can recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers.

- 11. Alg1.M.F.IF.B.04:** The Highly Proficient student can create a story or context modeling key features of linear, quadratic, exponential, absolute value and step functions.
- 12. Alg1.M.F.IF.B.05:** The Highly Proficient Student can relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.
- 13. Alg1.M.F.IF.B.06:** The Highly Proficient student can calculate and describe the rate of change of a graph or table given specific intervals.
- 14. Alg1.M.N.Q.A.01:** The Highly Proficient student can 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, include utilizing real-real-world context.
- 15. Alg1.M.N.Q.A.02:** The Highly Proficient student can define appropriate quantities for the purpose of descriptive modeling. Include problem-solving opportunities utilizing real-real-world context.
- 16. Alg1.M.N.Q.A.03:** The Highly Proficient student can choose a level of accuracy appropriate to limitations on measurement when reporting quantities utilizing real-real-world context.
- 17. Alg1.M.N.RN.B.03:** The Highly Proficient student can 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.
- 18. Alg1.M.S.ID.B.05:** The Highly Proficient student can 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.
- 19. Alg1.M.S.ID.B.06b:** The Highly Proficient student can represent data on two quantitative variables on a scatter plot, and describe how the variables are related. b. Informally assess the fit of a function by plotting and analyzing residuals.
- 20. Alg1.M.S.ID.C.07:** The Highly Proficient student can interpret the slope as a rate of change and the constant term of a linear model in the context of the data.
- 21. Alg1.M.S.ID.C.09:** The Highly Proficient student can distinguish between correlation and causation.

Quarter 2 Standards

1. **Alg1.M.A.APR.A.01:** The Highly Proficient student can use addition, subtraction, and multiplication to create equivalent polynomial expressions.
2. **Alg1.M.A.CED.A.03:** The Highly Proficient student can 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.
3. **Alg1.M.A.CED.A.04:** The Highly Proficient student can rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.
4. **Alg1.M.A.REI.C.05:** The Highly Proficient student can 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.
5. **Alg1.M.A.REI.C.06:** The Highly Proficient student can analyze a system of equations and choose a method to solve exactly or approximately given a real-world situation.
6. **Alg1.M.A.REI.D.10:** The Highly Proficient student can 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.
7. **Alg1.M.A.REI.D.11:** The Highly Proficient student can 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, absolute value, quadratic, and exponential functions.
8. **Alg1.M.A.REI.D.12:** The Highly Proficient student can create and graph a system of inequalities in two variables and find the solution set.
9. **Alg1.M.A.SSE.A.02:** The Highly Proficient student can use structure to identify ways to rewrite numerical and polynomial expressions. Focus on polynomial multiplication and factoring patterns.
10. **Alg1.M.F.BF.B.03:** The Highly Proficient student can identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k f(x)$, 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, absolute value, quadratic, exponential and piecewise-defined functions (limited to the aforementioned functions).

- 11. Alg1.M.F.IF.C.07a:** The Highly Proficient student can graph and compare linear functions.
- 12. Alg1.M.F.LE.A.01:** The Highly Proficient student can describe the rate of change of a function and can prove that over equal intervals, linear functions grow by equal differences and exponential functions grow by equal factors.
- 13. Alg1.M.F.LE.A.02:** The Highly Proficient student can create both linear and exponential functions from graphs, patterns, tables, and descriptions of relationships.
- 14. Alg1.M.F.LE.A.03:** The Highly Proficient student can observe, using graphs and tables, that a quantity increasing exponentially eventually exceeds a quantity increasing linearly or quadratically.
- 15. Alg1.M.F.LE.B.05:** The Highly Proficient student can interpret the parameters in a linear or exponential functions utilizing real-world context.

Quarter 3 Standards

- 1. Alg1.M.A.APR.B.03:** The Highly Proficient student can identify the zeros of a quadratic function and use the zeros to construct the graph of the function.
- 2. Alg1.M.A.REI.B.04ab:** The Highly Proficient student can determine and use the most efficient method for solving quadratic equations and justify their choice. The Highly Proficient student can recognize when a quadratic equation has no real solutions.
- 3. Alg1.M.A.S.ID.A.01:** The Highly Proficient student can represent data with the most appropriate data plot for the given set of data. The Highly Proficient student can determine and justify the most appropriate type of data plot for a set of data.
- 4. Alg1.M.A.S.ID.A.02:** The Highly Proficient student can plot multiple data sets and compare and discuss the data plots using measures of center and spread for the data. Additionally, they can explore and manipulate additional data sets and justify which measures are most appropriate for comparison. They will be able to identify advantages and disadvantages of using each type of measure of center and spread.
- 5. Alg1.M.A.SSE.B.03:** The Highly Proficient student can 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. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.

6. **Alg1.M.F.IF.C.07b:** The Highly Proficient student can graph and compare linear, quadratic, piecewise, exponential, step, and absolute value functions in various forms.
7. **Alg1.M.F.IF.C.08:** The Highly Proficient student can write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.
8. **Alg1.M.F.IF.C.09:** The Highly Proficient student can construct linear, quadratic, piecewise, step, absolute value and exponential functions over integer domains given certain function characteristics or given values greater than or lesser than a given function.
9. **Alg1.M.S.CP.A.01:** The Highly Proficient student can describe events as subsets of a sample space using characteristics of the outcomes, or as unions, intersections, or complements of other events.
10. **Alg1.M.S.CP.A.02:** The Highly Proficient student can 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.
11. **Alg1.M.S.ID.A.03:** The Highly Proficient student can interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of outliers if present.

Quarter 4 Standards

1. **Alg1.M.F.IF.A.01:** The Highly Proficient student can apply and extend knowledge of domain and range to real-world situations and contexts.