Algebra 1 Timeline

Expressions, Equations and Inequalities 6 weeks August 17 – October 5

- Polynomial expressions can be simplified and evaluated.
- Polynomial expressions can be written as factors.
- Square and cube roots can be added, subtracted, multiplied, divided, and simplified
- Equations and inequalities can be solved in both algebraic and real-world contexts

Objectives

A1.A.3.2 Simplify polynomial expressions by adding, subtracting or multiplying.

A1.A.3.4 Evaluate linear, absolute value, rational, and radical expressions. Include applying a nonstandard operation such as $a \odot b = 2a + b$.

A1.A.3.3 Factor common monomial factors from polynomial expressions and factor quadratic expressions with a leading coefficient of 1.

A1.N.1.1 Write square roots and cube roots of monomial algebraic expressions in simplest radical form.

A1.N.1.2 Add, subtract, multiply, and simplify square roots of monomial algebraic expressions and divide square roots of whole numbers, rationalizing the denominator when necessary.

A1.A.1.1 Use knowledge of solving equations with rational values to represent and solve mathematical and real-world problems (e.g., angle measures, geometric formulas, science, or statistics) and interpret the solutions in the original context.

A1.A.1.2 Solve absolute value equations and interpret the solutions in the original context.

A1.A.3.1 Solve equations involving several variables for one variable in terms of the others.

A1.A.2.2 Represent relationships in various contexts with compound and absolute value inequalities and solve the resulting inequalities by graphing and interpreting the solutions on a number line.

Algebra 1 Timeline

Data   1-2 weeks   October 8 – October 17

Data sets can be described with various models, both mathematical and graphical.

- When displayed in a scatter plot, data often takes on a recognizable, definable, pattern.

Objectives

A1.D.1.1 Describe a data set using data displays, describe and compare data sets using summary statistics, including measures of central tendency, location and spread. Know how to use calculators, spreadsheets, or other appropriate technology to display data and calculate summary statistics.

A1.D.1.2 Collect data and use scatterplots to analyze patterns and describe linear relationships between two variables. ~~Using graphing technology, determine regression lines and correlation coefficients; use regression lines to make predictions and correlation coefficients to assess the reliability of those predictions.~~

A1.D.1.3 Interpret graphs as being discrete or continuous.

Algebra 1 Timeline

Functions   4-6 weeks   October 22 – December 7

- A function is a rule that describes a set of data for which each input has one and only one output
- Functions are written and manipulated using function notation.
- Functions can be evaluated and interpreted both algebraically and graphically.
- Function families share similar graphs, behaviors, and properties.

Objectives

A1.F.1.1 Distinguish between relations and functions.

A1.F.1.2 Identify the dependent and independent variables as well as the domain and range given a function, equation, or graph. Identify restrictions on the domain and range in real-world contexts.

A1.F.1.3 Write linear functions, using function notation, to model real-world and mathematical situations.

A1.F.3.3 Add, subtract, and multiply functions using function notation.

A1.F.1.4 Given a graph modeling a real-world situation, read and interpret the linear piecewise function (excluding step functions).

A1.F.3.2 Use function notation; evaluate a function, including nonlinear, at a given point in its domain algebraically and graphically. Interpret the results in terms of real-world and mathematical problems.

A1.F.2.1 - Distinguish between linear and nonlinear (including exponential) functions arising from real-world and mathematical situations that are represented in tables, graphs, and equations. Understand that linear functions grow by equal intervals and that exponential functions grow by equal factors over equal intervals.

A1.F.2.2 Recognize the graph of the functions $f(x)=x$ and $f(x)=|x|$ and predict the effects of transformations [$f(x+c)$ and $f(x)+c$, where c is a positive or negative constant] algebraically and graphically using various methods and tools that may include graphing calculators.

Algebra 1 Timeline

Linear Functions   4-6 weeks   December 10 – February 1

- Linear functions describe data sets that have a direct correlation.
- Linear functions can be represented in multiple equivalent ways.
- Linear Functions can be used to to solve real world problems and make predictions.
- Linear inequalities represent relationships with multiple solutions.

Objectives

A1.D.1.2 Collect data and use scatterplots to analyze patterns and describe linear relationships between two variables. Using graphing technology, determine regression lines and correlation coefficients; use regression lines to make predictions and correlation coefficients to assess the reliability of those predictions.

A1.A.4.4 Translate between a graph and a situation described qualitatively.

A1.A.3.5 Recognize that arithmetic sequences are linear using equations, tables, graphs, and verbal descriptions. Use the pattern, find the next term.

A1.A.4.1 Calculate and interpret slope and the x and y intercepts of a line using a graph, an equation, two points, or a set of data points to solve real-world and mathematical problems.

A1.A.4.3 Express linear equations in slope-intercept, point-slope, and standard forms and convert between these forms. Given sufficient information (slope and y-intercept, slope and one-point on the line, two points on the line, x- and y-intercept, or a set of data points), write the equation of a line.

A1.F.1.3 Write linear functions, using function notation, to model real-world and mathematical situations.

A1.F.3.1 Identify and generate equivalent representations of linear equations, graphs, tables, and real-world situations.

A1.A.4.2 Solve mathematical and real-world problems involving lines that are parallel, perpendicular, horizontal, or vertical.

A1.A.2.1 Represent relationships in various contexts with linear inequalities; solve the resulting inequalities, graph on a coordinate plane, and interpret the solutions.

Algebra 1 Timeline

Systems 6 weeks February 4 – March 15

- Systems of linear equations (and inequalities) contain functions that share the same set of variables.
- A solution to a system makes each function rule true.

Objectives

A1.A.1.3 Analyze and solve real-world and mathematical problems involving systems of linear equations with a maximum of two variables by graphing (may include graphing calculator or other appropriate technology), substitution, and elimination. Interpret the solutions in the original context.
A1.A.2.3 Solve systems of linear inequalities with a maximum of two variables; graph and interpret the solutions on a coordinate plane.

Algebra 1 Timeline

Probability   3 weeks March 25 – April 12

- Probability is calculated with multiplication or additional principles.
- Probability is used to predict possible outcomes.
- Experiments can model real-world probability situations.

Objectives

A1.D.2.1 Select and apply counting procedures, such as the multiplication and addition principles and tree diagrams, to determine the size of a sample space (the number of possible outcomes) and to calculate probabilities.

A1.D.2.2 Describe the concepts of intersections, unions, and complements using Venn diagrams to evaluate probabilities. Understand the relationships between these concepts and the words AND, OR, and NOT.

A1.D.2.4 Apply probability concepts to real-world situations to make informed decisions.

A1.D.2.3 Calculate experimental probabilities by performing simulations or experiments involving a probability model and using relative frequencies of outcomes.

Culminating Review 4-6 weeks   April 15 – May 24

Algebra 1 Showcase