

Upon completion of Algebra I, students should have mastered the following skills:

- Utilize the order of operations to successfully simplify numerical and algebraic expressions using grouping symbols.
- Write and solve word problems involving distance = rate x time.
- Understand and implement basic algebraic properties, specifically DISTRIBUTIVE and COMMUTATIVE.
- Classify and order real numbers (i.e. rational, irrational, whole, integers)
- Understand the significance of absolute value when working with signed numbers.
- Determine the probability (with replacement) of various events.
- Organize and analyze raw data using spreadsheets.
- Simplify algebraic expressions.
- Solve various types of single variable equations and inequalities containing integral and rational coefficients.
- Manipulate literal equations to solve for a given variable.
- Derive (in some cases) and utilize formulas, specifically:
 - perimeter (polygons)
 - area (polygons)
 - Pythagorean Theorem
- Write and solve equations involving consecutive integers.
- Graph solutions to single variable equations.
- Plot linear and non-linear functions using table of values.
- Graph linear equations via
 - table of values
 - slope-intercept form
 - general form
 - point-slope form
- Determine the slope of any linear equation.
- Recognize that slope is a *rate of change*.
- Determine the slope of, and graph parallel and perpendicular lines.

Make a scatter plot and describe the correlation.

Algebra I - continued

Identify patterns in number sequences

Identify the domain and the range

- Graph quadratic, cubic, and absolute value functions.
- Solve various types of single variable inequalities containing integral and rational coefficients.
- Graph linear inequalities, including discrete inequalities (interpret the meaning of *lattice point*).
- Graph solutions to single variable inequalities.
- Solve systems of linear and non-linear equations via
 - graphing method
 - substitution method
 - elimination or linear combination
- Express very large and very small numbers in scientific notation.
- Multiply and divide numbers written in scientific notation.
- Apply the rules of exponents.
- Determine the degree of monomials and polynomials.
- Add, subtract, and multiply polynomials.
- Factor binomials and trinomials.
- Identify and factor special products (i.e. difference of squares).
- Simplify radical expressions.
- Solve quadratic equations using factoring and the quadratic formula.
- Simplify rational expressions.
- Solve rational equations.
- Add, subtract, and multiply radical expressions.
- Derive and use the distance and midpoint formulas.
- Derive and use the Pythagorean Theorem