Algebra I Learning Targets

1. Understand and correctly use properties of integers, rational and irrational numbers and correctly apply rules for using order of operations.
2. Understand and correctly apply the rules of exponents, including negative and fractional exponents, and taking roots.
3. Students simplify expressions and solve linear equations and inequalities in one variable, including equations and inequalities involving absolute value.
4. Graph linear equations, compute the x- and y- intercepts, and identify the slope of the line. Understand how the slopes of parallel and perpendicular lines are related.
5. Derive linear equations given two points on the line, or given the slope and one point on the line. Verify that a point lies on a line, given the equation of the line.
6. Solve a system of two linear equations or inequalities in two variables. Present both algebraic and graphical solutions.
7. Add, subtract, multiply and divide algebraic expressions, including monomials and polynomials.
8. Factor polynomials.
9. Simplify, add, subtract, multiply and divide rational expressions (expressions with polynomials in the numerator and denominator.
10. Solve quadratic equations by factoring, completing the square, or by using the quadratic formula.
11. Solve a variety of word problems, including rate problems, work problems and percent mixture problems.
12. Identify whether a given relation is a function and identify the domain and range of the function or relation.
13. Graph quadratic equations in two variables and identify the roots of the quadratic equation.
14. Apply quadratic equations to problems in physics and physical science (i.e. motion problems).
15. Understand inductive and deductive reasoning.
16. Prove or disprove mathematical statements using properties of the number system (to prove statements), or by providing counterexamples (to disprove statements).