

# All Things Algebra® ALGEBRA 1 CURRICULUM

## Unit 1: Algebra Basics

- Real Number System
- Properties of Real Numbers
- Order of Operations & Absolute Value
- Evaluating Expressions
- Simplifying Expressions
- Matrices
- Combining Like Terms
- Simplify Expressions (Distribute/Combine)
- Translating Expressions/Equations/Inequalities
- Solving Two-Step Equations
- Solving & Graphing Two-Step Inequalities
- Translate & Solve

## Unit 2: Multi-Step Equations & Inequalities

- Multi-Step Equations
- Variables on Both Sides
- Infinite & No Solution Equations
- Algebraic Proportions
- Absolute Value Equations
- Multi-Variable (Literal Equations)
- Word Problems
- Multi-Step Inequalities
- Compound Inequalities
- Absolute Value Inequalities

## Unit 3: Relations & Functions

- Relations, Domain, Range
- Functions vs. Relations
- Continuous Relations, Domain, Range
- Functions
- Real World Graphs
- Graphing Functions
- Function Tables
- Function Notation
- Zeros of Functions
- Analyzing Graphs
- Arithmetic Sequences

## Unit 4a: Linear Equations

- Slope from a Graph & Slope Formula
- Slope-Intercept Form vs. Standard Form
- Graphing Linear Equations (Slope-Intercept Form)
- Graphing Linear Equations (X- and Y-Intercepts)
- Vertical and Horizontal Lines
- Writing Linear Equations given Point & Slope
- Writing Linear Equations given Two Points
- Linear Equation Word Problems
- Parallel & Perpendicular Lines
- Writing Parallel or Perpendicular Lines
- Scatter Plots
- Line of Best Fit
- Linear Regression

**Unit 4b: Direct & Inverse Variation**

- Direct Variation
- Inverse Variation
- Applications of Direct & Inverse Variation

**Unit 5: Systems of Equations & Inequalities**

- Solving Systems of Equations by Graphing
- Solving Systems of Equations by Substitution
- Solving Systems of Equations by Elimination
- Comparing Methods to Solving Systems
- Word Problems
- Solving Systems by Matrices
- Linear Inequalities
- Systems of Linear Inequalities
- Systems of Linear Inequalities Word Problems

**Unit 6: Exponents & Exponential Functions**

- Monomials: Add, Subtract, Multiply (Product Rule)
- Product Rule & Geometric Applications
- Quotient Rule
- Negative Exponents
- Scientific Notation
- Graphing Exponential Functions
- Exponential Growth & Decay
- Geometric Sequences
- Simplifying Radicals: Square and Cube Roots
- Monomial Square Roots

**Unit 7: Polynomials & Factoring**

- Intro to Polynomials: Classify, Add, Subtract
- Multiplying Polynomials
- Dividing Polynomials by a Monomial
- Factoring Polynomials: GCF
- Factoring Polynomials: Difference of Squares
- Factoring Polynomials: Trinomials ( $x^2 + bx + c$ )
- Factoring Polynomials: Trinomials ( $ax^2 + bx + c$ )
- Factoring Polynomials: Four Terms
- Dividing Polynomials by a Binomial

**Unit 8: Quadratic Equations**

- Intro to Quadratic Equations:  
Axis of Symmetry, Vertex, Minimum, Maximum, Parabolas
- Graphing Quadratic Equations
- Vertex Form of a Quadratic Equations
- Transformations
- Quadratic Roots
- Solving Quadratic Equations by Factoring
- Solving Quadratic Equations by Square Roots
- Solving Quadratic Equations by Completing the Square
- Solving Quadratic Equations by the Quadratic Formula
- Methods Comparison: Choosing the Best Method
- Area and Consecutive Integer Problems
- Projectile Motion
- Linear vs. Quadratic Modes

**Unit 10: Radical Expressions & Equations**

- Simplifying Radicals (Square & Cube Roots)
- Simplifying Radicals with Variables
- Adding & Subtracting Radicals
- Multiplying Radicals
- Dividing Radicals (includes Rationalizing the Denominator)
- Dividing Radicals with Binomials (Conjugates)
- Solving Radical Equations (Linear)
- Solving Radical Equations (Quadratic)

**Unit 10: Rational Expressions & Equations**

- Simplifying Rational Expressions
- Multiplying Rational Expressions
- Dividing Rational Expressions
- Adding & Subtracting Rational Expressions
- Application of Rational Expressions
- Rational Equations

**Unit 11: Statistics**

- Statistics Overview: Measures of Center
- Box-and- Whisker Plots, Stem-and-Leaf Plots, Histograms
- Statistics on the Calculator
- Measures of Dispersion
- Normal Distribution
- Z-Scores