

# Algebra I

## Course Outline

- I. The Language of Algebra
  - A. Variables and Expressions
  - B. Order of Operations
  - C. Open Sentences
  - D. Identity and Equality Properties
  - E. The Distributive Property
  - F. Commutative and Associative Properties
  - G. Logical Reasoning
  - H. Graphs and Functions
  - I. Statistics: Analyzing Data by Using Tables and Graphs
  
- II. Real Numbers
  - A. Rational Numbers on the Number Line
  - B. Adding and Subtracting Rational Numbers
  - C. Multiplying Rational Numbers
  - D. Dividing Rational Numbers
  - E. Statistics: Displaying and Analyzing Data
  - F. Probability: Simple Probability and Odds
  - G. Square Roots and Real Numbers
  
- III. Solving Linear Equations
  - A. Writing Equations
  - B. Solving Equations by Using Addition and Subtraction

- C. Solving Equations by Using Multiplication and Division
- D. Solving Multi-Step Equations
- E. Solving Equations with the Variable on Each Side
- F. Ratios and Proportions
- G. Percent of Change
- H. Solving Equations and Formulas
- I. Weighted Averages

IV. Graphing Relations and Functions

- A. The Coordinate Plane
- B. Transformations on the Coordinate Plane
- C. Relations
- D. Equations as Relations
- E. Graphing Linear Equations
- F. Functions
- G. Arithmetic Sequences
- H. Writing Equations from Patterns

V. Analyzing Linear Equations

- A. Slope
- B. Slope and Direct Variation
- C. Slope-Intercept Form
- D. Writing Equations in Slope-Intercept Form
- E. Writing Equations in Point-Slope Form
- F. Geometry: Parallel and Perpendicular Lines
- G. Statistics: Scatter Plots and Lines of Fit

- VI. Solving Linear Inequalities
  - A. Solving Inequalities by Addition and Subtraction
  - B. Solving Inequalities by Multiplication and Division
  - C. Solving Multi-Step Inequalities
  - D. Solving Compound Inequalities
  - E. Solving Open Sentences Involving Absolute Value
  - F. Graphing Inequalities in Two Variables
  
- VII. Solving Systems of Linear Equations and Inequalities
  - A. Graphing Systems of Equations
  - B. Substitution
  - C. Elimination Using Addition and Subtraction
  - D. Elimination Using Multiplication
  - E. Graphing Systems of Inequalities
  
- VIII. Polynomials
  - A. Multiplying Monomials
  - B. Dividing Monomials
  - C. Scientific Notation
  - D. Polynomials
  - E. Adding and Subtracting Polynomials
  - F. Multiplying a Polynomial by a Monomial
  - G. Multiplying Polynomials
  - H. Special Products
  
- IX. Factoring
  - A. Factors and Greatest Common Factors

- B. Factoring Using the Distributive Property
  - C. Factoring Trinomials with Leading Coefficient of 1
  - D. Factoring Trinomials with Leading Coefficient other than 1
  - E. Factoring Differences of Squares
  - F. Perfect Squares and Factoring
- X. Quadratic and Exponential Functions
- A. Graphing Quadratic Functions
  - B. Solving Quadratic Equations by Graphing
  - C. Solving Quadratic Equations by Completing the Square
  - D. Solving Quadratic Equations by Using the Quadratic Formula
  - E. Exponential Functions
  - F. Growth and Decay
  - G. Geometric Sequences
- XI. Radical Expressions and Triangles
- A. Simplifying Radical Expressions
  - B. Operations with Radical Expressions
  - C. Radical Equations
  - D. The Pythagorean Theorem
  - E. The Distance Formula
  - F. Similar Triangles
  - G. Trigonometric Ratios
- XII. Rational Expressions and Equations
- A. Inverse Variation
  - B. Rational Expressions

- C. Multiplying Rational Expressions
- D. Dividing Rational Expressions
- E. Dividing Polynomial Expressions
- F. Rational Expressions with Like Denominators
- G. Rational Expressions with Unlike Denominators
- H. Mixed Expressions and Complex Fractions
- I. Solving Rational Equations