

Algebra I- Part A

COURSE DESCRIPTION: In K12 High School Algebra I, students explore the tools of algebra. Students learn to identify the structure and properties of the real number system; complete operations with integers and other rational numbers; work with square roots and irrational numbers; graph linear equations; solve linear equations and inequalities in one variable; solve systems of linear equations; use ratios, proportions, and percentages to solve problems; use algebraic applications in geometry, including the Pythagorean theorem and formulas for measuring area and volume; complete an introduction to polynomials; and understand logic and reasoning.

PREREQUISITES: K12 MS Pre-Algebra, MTH112: Pre-Algebra, or equivalent

COURSE LENGTH: One Semester

REQUIRED TEXT: Algebra I: Reference Guide and Problem Sets

MATERIALS LIST: No required materials for this course

COURSE OUTLINE:

Unit 1: Algebra Basics

- Semester Introduction
- Foundations
- Expressions
- Variables
- Translating Words into Variable Expressions
- Equations
- Translating Words into Equations
- Replacement Sets
- Problem Solving
- Unit Review
- Unit Test

Unit 2: Properties of Real Numbers

- Number Lines

- Sets
- Comparing Expressions
- Number Properties
- Threaded Discussion Board
- Distributive Property
- Algebraic Proof
- Opposites and Absolute Value
- Unit Review
- Unit Test

Unit 3: Operations with Real Numbers

- Foundations
- Addition 1
- Addition 2
- Subtraction
- Multiplication
- Reciprocals and Division
- Unit Review
- Unit Test

Unit 4: Solving Equations

- Foundations
- Addition and Subtraction Equations
- Multiplication and Division Equations 1
- Multiplication and Division Equations 2
- Multiple Transformations
- Variables on Both Sides of an Equation
- Transforming Formulas
- Unit Review
- Unit Test

Unit 5: Solving Inequalities

- Foundations
- Inequalities

- Solving Inequalities
- Combined Inequalities
- Absolute Value Equations and Inequalities
- Applications: Inequalities
- Unit Review
- Unit Test

Unit 6: Applying Fractions

- Foundations
- Ratios 1
- Ratios 2
- Proportions
- Your Choice
- Percents 1
- Percents 2
- Applications: Percents
- Unit Review
- Unit Test

Unit 7: Linear Equations and Inequalities

- Foundations
- Graphs
- Equations in Two Variables
- Lines and Intercepts
- Slope
- Slope-Intercept Form
- Point-Slope Form
- Parallel and Perpendicular Lines
- Equations from Graphs
- Applications: Linear Models
- Graphing Linear Inequalities
- Unit Review
- Unit Test

Unit 8: Systems of Equations

- Foundations
- Systems of Equations
- Substitution Method
- Linear Combination
- Applications: Systems of Linear Equations
- Systems of Linear Inequalities
- Unit Review
- Unit Test

Unit 9: Semester Review and Test

- Semester Review
- Semester Test