



Algebra II Foundations (AIIF) is a research-based course combining traditional and innovative teaching strategies. AIIF is designed to help students build the “habits of mind” needed for success in Algebra II. The course emphasizes the connections between numeric representation, graphic representation, and algebraic notation.

AIIF fosters students’ conceptual understanding of key ideas that underlie Algebra II. AIIF challenges students to think through and make sense of what they are doing, learn from one another, share and respect ideas, and make connections between mathematics and the world.

Solving One-Variable Equations

Students apply the basic equality properties and order of operations to construct understanding on solving one-variable equations.

- Lesson 1: Expressions and Properties
- Lesson 2: Solving Equations by Using Properties
- Lesson 3: Order of Operations
- Lesson 4: Solving Equations Using Order of Operations
- Lesson 5: Solving One-Variable Inequalities
- Lesson 6: Solving Absolute Value Equations and Inequalities
- Lesson 7: Ratios, Proportions, and Percent of Change

Linear Functions

Students review basic coordinate plane and linear concepts and move toward a deeper understanding of linear functions and linear function applications.

- Lesson 1: Plotting Points
- Lesson 2: Linear Equations in Slope-Intercept Form
- Lesson 3: Applications of Linear Functions in Slope-Intercept Form
- Lesson 4: Linear Function Notation
- Lesson 5: Other Forms of Linear Functions
- Lesson 6: What is a Function?
- Lesson 7: Linear Regression
- Lesson 8: Linear Inequalities

Systems of Equations

Students’ develop abstract thinking needed for solving a system of equations through a series of concrete manipulatives, diagrams, and graphs.

- Lesson 1: Two Items, One Table
- Lesson 2: Two Items and a Diagram
- Lesson 3: Balance Scales
- Lesson 4: System of Equations and Tiles
- Lesson 5: Solve Systems of Equations by Graphing

Non-Linear Functions

Students investigate the basic properties of many non-linear functions (both symbolically and graphically) using graphing calculators.

- Lesson 1: Introduction to Quadratic Functions
- Lesson 2: The Quadratic Formula
- Lesson 3: Graphing Quadratic Functions and Their Applications
- Lesson 4: Power Functions
- Lesson 5: Inverse Variation
- Lesson 6: Exponential Functions
- Lesson 7: Step Functions
- Lesson 8: Miscellaneous Non-Linear Functions

Probability & Statistics

Through a unique set of constructivist-based activities, students explore fundamental big ideas of probability and statistics.

- Lesson 1: Fundamental Counting Principle
- Lesson 2: Permutations and Factorials
- Lesson 3: Combinations
- Lesson 4: Probability
- Lesson 5: Expected Winnings
- Lesson 6: Parameters and Statistics

KEY COMPONENTS & ADVANTAGES

WHOLE-CLASS DISCOVERY

For each unit we have developed a sequence of lessons that use a variety of strategies to actively engage students and provide them with the core knowledge and mathematical approaches they need to succeed in high school mathematics.

Each lesson begins with a motivational activity designed to engage students, and it proceeds through discovery activities designed to actively involve students in the learning process. Students working in partnerships or cooperative groups complete these activities.

DIFFERENTIATED INDIVIDUAL & SMALL GROUP INSTRUCTION

Supplemental materials provide additional reinforcement of the lessons’ objectives and other fundamental mathematical concepts.