Introductory Algebra provides a curriculum focused on foundational concepts that prepare students for success in Algebra I. Through a "Discovery-Confirmation-Practice"-based exploration of basic concepts, students are challenged to work toward a mastery of computational skills, to deepen their understanding of key ideas and solution strategies, and to extend their knowledge through a variety of problem-solving applications.

Course topics include integers; the language of algebra; solving equations with addition, subtraction, multiplication, and division; fractions and decimals; measurement; exponents; solving equations with roots and powers; multi-step equations; and linear equations.

Within each Introductory Algebra lesson, students are supplied with a scaffolded note-taking guide, called a Study Sheet, as well as a post-study Checkup activity that provides them the opportunity to hone their computational skills by working through a low-stakes, 10-question problem set before starting formal assessment. Unit-level Introductory Algebra assessments include a computer-scored test and a scaffolded, teacher-scored test.

The course is built to state standards and informed by the National Council of Teachers of Mathematics (NCTM).

Length: Two Semesters

Unit 1: Integers

- Whole Numbers
- Number Lines and Inequalities
- Rounding Whole Numbers
- Operations and Numerical Expressions
- Properties of Operations
- The Operations on a Number Line
- Reverse Operations
- Negative Numbers
- Absolute Value
- Adding Integers
- Subtracting Integers
- Multiplying Integers
- Dividing Integers
- Wrap-Up

Unit 2: The Language of Algebra

- What is a Variable?
- Finding and Naming Variables
- Units and Reasonable Values
- Graphs Tables and Equations

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- Solving Problems with Tables and Graphs
- Variable Expressions
- Simplifying and Evaluating Expressions
- Mathematical Sentences
- Solving Mathematical Sentences
- Some Guidelines for Problem Solving
- Wrap-Up

Unit 3: Solving Equations with Addition and Subtraction

- Solving Equations Graphically
- Solving Equations with Larger Numbers
- Solving x + a = b
- Solving with a Number Line
- Solving Inequalities
- Variations of Equations and Inequalities
- Density
- The King's Crown Problem
- Wrap-Up

Unit 4: Fractions and Decimals

- Fraction Fundamentals
- Introduction to Fraction Arithmetic
- Equivalent Fractions
- Simplifying Fractions
- Mixed Numbers
- Dividing Fractions
- Adding and Subtracting Fractions
- Decimals and Percents
- The Set of Rational Numbers
- Wrap-Up

Unit 5: Measurement

- Metric and Customary Units
- Converting Units
- Estimation and Scale
- Precision in Measurement
- Applications of Measurement
- Wrap-Up

Unit 6: Semester 1 Review and Exam

Unit 7: Solving Equations with Multiplication and Division

- Solving ax = b
- The Lightning Problem
- Solving x/a = b
- Inequalities

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- Wrap-Up

Unit 8: Exponents

- Definitions and Examples of Exponents
- Exponents and the Order of Operations
- Laws of Exponents
- Scientific Notation
- Exponents in Geometry
- Square Roots
- Radical Notation
- Wrap-Up

Unit 9: Solving Equations with Roots and Powers

- Solving |x| = b
- Solving x² = b
- Solving √x = b
- Inequalities and Absolute Value
- Inequalities and x²
- Inequalities and <rt>√x</rt>
- The Pythagorean Theorem
- Wrap-Up

Unit 10: Multi-Step Equations

- Solving ax + b = c
- Collecting Like Terms
- Using the Distributive Property
- Variables on Both Sides of the Equation
- The Profit Problem
- Wrap-Up

Unit 11: Linear Equations

- Cartesian Coordinate Systems
- Lines in the xy-plane
- Slope
- Parallel and Perpendicular Lines
- Slope and Equations
- Slope-Intercept Form
- Point-Slope Form
- Linear Inequalities
- Wrap-Up

Unit 12: Semester 2 Review and Exam

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