

# Pre-Algebra A



## Course Overview

In the first half of the K<sup>12</sup> Pre-Algebra sequence, students sharpen their computational and problem-solving skills while learning the language of Algebra. Students will:

- Change word phrases and sentences into mathematical expressions and equations
- Solve equations and inequalities
- Continue to develop computational skills using fractions and decimals
- Study circles, polygons, and space figures
- Add, subtract, multiply, and divide positive and negative integers
- Solve problems involving percents, ratios, and proportions
- Draw graphs and compute statistics to communicate about data
- Compute the probability of an event and combined events
- Communicate strategies for solving word problems

## Course Outline

### Operations with Whole Numbers

- Mathematical Expressions, Part 1
- Mathematical Expressions, Part 2
- Properties of Addition and Multiplication
- Inverse Operations
- The Distributive Property
- Order of Operations
- A Problem-Solving Model
- Problem Solving

### Using Variables

- Writing Mathematical Expressions
- Writing Equations
- Writing Inequalities, Part 1
- Writing Inequalities, Part 2
- Solving Equations and Inequalities
- Solving Other Equations and Inequalities
- Problem Solving: Using Mathematical Expressions, Part 1
- Problem Solving: Using Mathematical Expressions, Part 2
- Justifying Statements
- Error Analysis

### The Decimal System

- Exponents and Powers of Ten
- The Decimal System
- Comparing Decimals
- Rounding
- Adding and Subtracting Decimals
- Multiplying or Dividing by a Power of Ten
- Multiplying Decimals
- Dividing Decimals
- Problem Solving: Using Estimation

### Geometric Figures

- Points, Lines, Planes
- Measuring Segments
- Angles and Angle Measure, Part 1
- Angles and Angle Measure, Part 2
- Triangles
- Polygons
- Circles, Part 1
- Circles, Part 2
- Congruent Figures
- Geometric Constructions

### Number Theory

- Finding Factors and Multiples
- Tests for Divisibility
- Square Numbers and Square Roots
- Prime Numbers and Composite Numbers
- Greatest Common Factor
- Least Common Multiple
- Introduction to Sets
- Set Operations

### Fractions: Definitions and Relationships

- Fractions
- Equivalent Fractions
- Fractions and Mixed Numbers, Part 1
- Fractions and Mixed Numbers, Part 2
- Comparing Fractions
- Changing Between Fractions and Decimals

### Operations with Fractions

- Addition and Subtraction of Fractions, Part 1
- Addition and Subtraction of Fractions, Part 2
- Addition and Subtraction of Mixed Numbers, Part 1



- Addition and Subtraction of Mixed Numbers, Part 2
- Multiplication of Fractions
- Division of Fractions
- Multiplication and Division of Mixed Numbers, Part 1
- Multiplication and Division of Mixed Numbers, Part 2
- Ratios, Part 1
- Ratios, Part 2
- Proportions
- Problem Solving: Using Proportion
- Scale Drawing

## Solving Equations

- Equations and Variables
- Equations: Addition and Subtraction
- Equations: Multiplication and Division
- Equations: Decimals and Fractions, Part 1
- Equations: Decimals and Fractions, Part 2
- Combined Operations, Part 1
- Combined Operations, Part 2
- Word Sentences and Equations, Part 1
- Word Sentences and Equations, Part 2
- Translating Problems into Equations, Part 1
- Translating Problems into Equations, Part 2
- Problem Solving, Part 1
- Problem Solving, Part 2

## Percent

- Percents and Fractions, Part 1
- Percents and Fractions, Part 2
- Percents and Decimals
- Computing with Percents, Part 1
- Computing with Percents, Part 2
- Percent of Increase or Decrease, Part 1
- Percent of Increase or Decrease, Part 2
- Discount and Markup, Part 1
- Discount and Markup, Part 2
- Commission and Profit
- Simple Interest
- Compound Interest, Part 1
- Compound Interest, Part 2

## Areas and Volumes

- Areas of Rectangles and Parallelograms, Part 1
- Areas of Rectangles and Parallelograms, Part 2
- Areas of Triangles and Trapezoids
- Areas of Circles, Part 1
- Areas of Circles, Part 2
- Using Symmetry to Find Areas
- Polyhedrons
- Volumes of Prisms, Part 1
- Volumes of Prisms, Part 1

- Volumes of Cylinders, Part 1
- Volumes of Cylinders, Part 2
- The Mass of an Object
- Surface Area, Part 1
- Surface Area, Part 2

## Integers and Graphs

- Negative Numbers
- Adding Integers, Part 1
- Adding Integers, Part 2
- Subtracting Integers, Part 1
- Subtracting Integers, Part 2
- Products with One Negative Factor
- Products with Several Negative Factors
- Quotients of Integers
- Solving Equations
- Graphs of Ordered Pairs
- Graphs of Equations, Part 1
- Graphs of Equations, Part 2
- Introduction to Functions
- Finding a Function Rule

## Statistics and Probability

- Picturing Numerical Data
- Pictographs and Circle Graphs
- Mean, Median, and Range
- Frequency Distributions
- Stem-and-Leaf Plots
- Box-and-Whisker Plots
- Histograms and Frequency Polygons, Part 1
- Histograms and Frequency Polygons, Part 2
- Using Graphs and Plots
- Probability of an Event
- Probability and Odds, Part 1
- Probability and Odds, Part 2
- Combined Probabilities, Part 1
- Combined Probabilities, Part 2