



## Basic Algebra 1 B: Full Course Summary

This is a full-credit course intended for a student taking the course for the first time. The student will be expected to cover all material in the course.

### Pre-Algebra B: Full Course Summary

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In the second semester of this course, the student will continue to be introduced to basic algebraic principles. The iText, *Prentice Hall Mathematics: Pre-Algebra*, provides the basis for the course content. The algebra skills learned in the first semester will be applied to solving two-step and multi-step equations and inequalities. A look into relations and functions will demonstrate how to find the slope, y-intercept, and solve systems of linear equations. Then the student will apply algebra skills across math disciplines, specifically in geometry, the study of right triangles, as well as in data analysis and probability. Finally, the student will learn about nonlinear functions.

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**Prerequisites:** This course is recommended for students who were not successful in 8th grade Pre-Algebra and/or need more reinforcement before beginning Algebra 1. It is recommended that students successfully completed Pre-Algebra A or 8th grade Pre-Algebra A.

#### Unit 1: Solving Equations and Inequalities

In this unit, you will expand your understanding of mathematical properties to solve two-step equations, two-step inequalities, and multi-step equations. These equations and inequalities are more complicated because they include fractions, decimals, and variables on both sides of the equal sign. You will also solve equations using the technique, "Write an Equation."

##### Lessons

1. Solving Two-Step Equations
2. Write an Equation
3. Solving Equations with Variables on Both Sides
4. Transforming Formulas

#### Unit 2: Linear Functions and Graphing

In this unit, you will learn how to identify relations and functions. You will develop the necessary skills to solve systems of linear equations and inequalities by graphing, including plotting points and using the slope and y-intercept. In addition to graphing linear equations, you will also write rules for linear functions from word problems and tables. Finally, you will use real-world examples to find trends and make predictions from scatter plots.

## Lessons

1. Relations and Functions
2. Equations and Two Variables: 1
3. Equations and Two Variables: 2
4. Slope and y-intercept: 1
5. Slope and y-intercept: 1
6. Writing Rules for Linear Functions
7. Scatter Plots
8. Solve by Graphing
9. Solving Systems of Linear Equations: 1
10. Solving Systems of Linear Equations: 2
11. Graphing Linear Equations: 2
12. Graphing Linear Equations: 2
13. Graphing Linear Inequalities
14. Unit Test

### Unit 3: Area and Volume

In this unit, you will learn how to find the areas of parallelograms, triangles, trapezoids, and circles using formulas. You will determine the surface areas of prisms, cylinders, pyramids, cones, and spheres. You will calculate the volume of prisms and cylinders. You will also use these formulas to determine the areas of irregular shapes. Finally, you will learn about space figures and how to identify them using a net.

#### Lessons

1. Area: Parallelograms
2. Area: Triangles and Trapezoids
3. Area: Circles
4. Space Figures
5. Surface Area: Prisms and Cylinders: 1
6. Surface Area: Prisms and Cylinders: 2
7. Surface Area: Pyramids, Cones, and Spheres
8. Volume: Prisms and Cylinders
9. Make a Model
10. Volume: Pyramids, Cones, and Spheres
11. Unit Test

### Unit 4: Data Analysis and Probability

In this unit, you will learn how to display data in many different forms. You will create frequency tables, line plots, box-and-whisker plots, and stem-and-leaf plots. You will analyze persuasive graphs to determine if and how the data being presented is misleading. You will learn the differences between theoretical and experimental probabilities, and calculate the probabilities for independent and dependent events. You will also evaluate various sampling plans for surveys, as well as estimate data about populations. Finally, you will learn the differences between permutations and combinations and how to solve a problem by simulating the problem.

#### Lessons

1. Frequency Tables and Line Plots
2. Box-and-Whisker Plots: 1
3. Box-and-Whisker Plots: 2
4. Using Graphs to Persuade
5. Counting Outcomes and Theoretical Probability: 1
6. Counting Outcomes and Theoretical Probability: 2
7. Independent and Dependent Events
8. Permutations and Combinations: 1
9. Permutations and Combinations: 2
10. Experimental Probability
11. Random Samples and Surveys
12. Simulate the Problem
13. Unit Test

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