



Pre-Algebra A: Full Course Summary

Course Summary

This is the first of two courses that comprise Pre-Algebra. In this course, the student will be introduced to basic algebraic principles. The student will review properties of expressions and integers. The student will solve one-step equations and inequalities with positive and negative integers, decimals, fractions, and exponents. Then, the student will explore problems involving operations of fractions and will apply their knowledge of algebra to solve real-world ratio, proportion, and percent problems. Finally, the student will be examine and evaluate two-step and multi-step equations and inequalities.

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. Students who successfully completed 8th grade Pre-Algebra A, but did poorly in 8th grade Pre-Algebra B may wish to skip Pre-Algebra A and immediately enter Pre-Algebra B.

Unit 1: Algebraic Expressions and Integers

In this unit, you will review previously learned mathematical principles and extend prior mathematical knowledge. Concepts emphasized in this unit will reappear throughout the course, so take the time to complete each lesson carefully.

You will review the concepts of order of operations, variables, writing variable expressions, and solving variable expressions. You will review integers and how to perform the four mathematical operations with integers as well as absolute values. Next, you will represent, order, and graph integers on a number line and a coordinate plane. You will learn to use inductive reasoning to determine patterns and solve real-world problems.

Lessons

1. Variables and Expressions
2. The Order of Operations
3. Evaluating Expressions
4. Integers and Absolute Value
5. Adding Integers
6. Subtracting Integers
7. Inductive Reasoning
8. Look for a Pattern
9. Multiplying and Dividing Integers
10. The Coordinate Plane
11. Review
12. Unit Test

Unit 2: Solving One-Step Equations and Inequalities

In this unit, you will review the Associative, Commutative, Identity, and Distributive properties. These properties will enable you to simplify variable expressions and solve both equations and inequalities. You will learn to solve one-step equations and inequalities by using addition, subtraction, multiplication, and division as inverse operations. You will learn a problem-solving technique, “Try, Check, and Revise,” the first of many techniques within the course. Finally, you will learn to identify inequalities by their corresponding graphs.

Lessons

1. Properties of Numbers
2. The Distributive Property: 1
3. The Distributive Property: 2
4. Simplifying Variable Expressions
5. Variables and Equations
6. Solving Equations by Adding or Subtracting: 1
7. Solving Equations by Adding or Subtracting: 2
8. Solving Equations by Multiplying or Dividing
9. Try, Test, Revise
10. Inequalities and Their Graphs
11. Solving Inequalities by Adding or Subtracting
12. Solving Inequalities by Multiplying or Dividing
13. Review
14. Unit Test

Unit 3: Decimals and Equations

In this unit, you will have the opportunity to develop and extend your understanding of how to solve equations that contain decimals. You will develop estimation and rounding skills and apply this knowledge to calculating products and quotients of decimals. You will begin to explore mean, median, and mode as used in real-world applications. You will also convert metric units of measure and use formulas to solve simple equations. Finally, you will solve problems using the technique, “Simplify the Problem.”

Lessons

1. Rounding and Estimating
2. Estimating Decimal Products and Quotients
3. Mean, Median, and Mode
4. Using Formulas
5. Solving Equations by Adding/Subtracting Decimals
6. Solving Equations by Multiplying/Dividing Decimals
7. Using the Metric System
8. Simplify the Problem
9. Review
10. Unit Test

Unit 4: Factors, Fractions, and Exponents

In this unit, you will expand your knowledge of divisibility rules and factors. This will enable you to quickly determine prime factorizations and greatest common factors which will enable you to simplify fractions more easily. You will extend your knowledge of exponents to include the addition, subtraction, multiplication, and division of expressions, which include powers with the same base. Finally, you will learn to identify and simplify rational numbers that contain powers.

Lessons

1. Divisibility and Factors
2. Exponents
3. Prime Factorization and Greatest Common Factor
4. Simplifying Fractions
5. Account for All Possibilities

6. Rational Numbers
7. Exponents and Multiplication
8. Exponents and Division
9. Scientific Notation
10. Review
11. Unit Test

Unit 5: Operations With Fractions

In this unit, you will review basic fractions concepts: comparing, ordering, adding, subtracting, multiplying, and dividing mixed numbers and fractions. You will use these concepts to solve equations by adding, subtracting, multiplying, and dividing fractions. In addition to solving equations with fractions, you will apply your knowledge to convert customary units of measure. Finally, you will learn how to convert fractions to decimals by relating the values of fractions to the values of decimals.

Lessons

1. Comparing and Ordering Fractions
2. Fractions and Decimals: 1
3. Fractions and Decimals: 2
4. Adding and Subtracting Fractions
5. Multiplying and Dividing Fractions: 1
6. Multiplying and Dividing Fractions: 2
7. Using Customary Units of Measurement
8. Work Backward
9. Solving Equations by Adding/Subtracting Fractions
10. Solving Equations by Multiplying Fractions
11. Powers of Products and Quotients
12. Review
13. Unit Test

Unit 6: Ratios, Proportions, and Percents

In this unit, you will expand your knowledge of percents and proportions by defining and solving problems involving ratios, rates, and unit rates. Then, you will use these concepts to solve similar figure, scale drawing, probability, and odds problems. You will also learn how to rewrite a percent as a ratio, in fraction form, and as a decimal in order to solve equations. Finally, you will learn how to find markup, discount, and percent of change by using percents.

Lessons

1. Ratios and Unit Rates
2. Proportions
3. Similar Figures and Scale Drawings
4. Probability
5. Fractions, Decimals, and Percents
6. Proportions and Percents
7. Percents and Equations
8. Percent of Change
9. Markup and Discount
10. Make a Table
11. Review
12. Unit Test

Unit 7: 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.”

Finally, you will gain the necessary skills to transform formulas, which are necessary for finding simple and compound interest.

Lessons

1. Solving Two-Step Equations
2. Solving Multi-Step Equations
3. Multi-Step Equations W. Fractions and Decimals: 1
4. Multi-Step Equations W. Fractions and Decimals: 2
5. Write an Equation
6. Solving Equations With Variables on Both Sides
7. Solving Two-Step Inequalities
8. Transforming Formulas
9. Simple and Compound Interest
10. Review
11. Unit Test

Unit 8: Pre-Algebra A Final

In this unit, you will have the opportunity to prepare for and take the final exam. Since this is a comprehensive exam, it may be helpful to organize your notes in the order of the course outline before you begin to review. Using the test-taking strategies that you have previously learned can help you be successful with both objective and essay questions.

Lessons

1. Pre-Algebra A Final Review
2. Pre-Algebra A Final