

Pre-Algebra

0. Review of Whole Numbers

0.1 Place Value System: A Quick Review

- 0.1.1 Place Value of a Digit
- 0.1.2 Write a Whole Number in Words

0.2 Number Lines, Inequality Symbols, and Rounding Whole Numbers

- 0.2.1 Draw and use a Number Line
- 0.2.2 Compare two Whole Numbers
- 0.2.3 Round a Whole Number to a given Place

0.3 Fundamental Operations with Whole Numbers

- 0.3.1 Add and Subtract Whole Numbers
- 0.3.2 Multiply and Divide Whole Numbers

1. Integers and Order of Operations

1.1 Definition of Integers

- 1.1.1 Graphing Integers; Finding the Opposite of an Integer; and Comparing Two Integers
- 1.1.2 Finding the Absolute Value of an Integer

1.2 Addition and Subtraction with Integers

- 1.2.1 Add Integers and Properties of Addition
- 1.2.2 Subtract integers
- 1.2.3 Estimate the Sum and Difference of Integers

1.3 Multiplication and Division with Integers

- 1.3.1 Multiply integers, and Estimate Product
- 1.3.2 Divide Integers and Estimating Quotients

1.4 Exponents; Order of Operations; Evaluating Numerical Expressions

- 1.4.1 Exponential Form of the Product of Integers
- 1.4.2 Multiply or Divide an Integers by Power of 10
- 1.4.3 Evaluate Numerical Expressions involving Integers

2. Applications of Integers

2.1 Translations; Simplifying and Evaluating Expressions; and Computing Averages

- 2.1.1 Translate Phrases or Statements into Expressions
- 2.1.2 Identify Coefficients of the Terms of an Expression
- 2.1.3 Simplify Expressions by Combining Like Terms
- 2.1.4 Evaluate Algebraic Expressions
- 2.1.5 Average of a Group of Integers

2.2 Solving Equation with Integers

- 2.2.1 Determine if a Number is a Solution of an Equation
- 2.2.2 Solve Equations using the Addition and Division Properties
- 2.2.3 Solve General Linear Equations with Integers

2.3 Applications using Integers

2.3.1 Application of Linear Equations

2.4 Basic Geometry

2.4.1 Lines and Angles

2.4.2 Properties of Angles

2.4.3 Polygons, Triangles, and Quadrilaterals

2.4.4 Perimeter and Area Applications

3. Introduction to Fractions

3.1 Divisibility Test, Divisors, Multiples, and Factors

3.1.1 Divisibility Tests

3.1.2 Identify Multiples and Factors

3.2 Prime Factors

3.2.1 Prime and Composite Numbers

3.2.2 Prime Factorizations

3.3 Least Common Multiples and Greatest Common Factor

3.3.1 Finding the LCM

3.3.2 Applications of LCM

3.3.3 Greatest Common Factor

3.3.4 Factoring out the G.C.F

3.4 Rational Numbers: Identifying and Graphing

3.4.1 Identify Rational Numbers

3.4.2 Graph Rational Numbers on a Number Line

3.5 Building Equivalent Fractions and Reducing Fractions

3.5.1 Building Equivalent Fractions

3.5.2 Reduce Fractions to Lowest Terms

3.6 Least Common Denominator, Comparing Fractions

3.6.1 Build equivalent Fractions

3.6.2 Comparing and Listing Fractions

3.7 Introduction to Mixed Numbers

3.7.1 Change Mixed Numbers to Improper Fractions

3.7.2 Graphing Mixed Numbers on a Number Line

3.8 Translating Expressions, Ratios, Rates, and Percents as Fractions

3.8.1 Translating to Expressions involving Fractions

3.8.2 Express Ratios, Rates, and Percents as Fractions

4. Operations with Fractions

4.1 Addition and Subtraction with Fractions

4.1.1 Adding Fractions

4.1.2 Recognize and use the Addition Properties with Fractions

4.1.3 Subtracting Fractions

4.2 Multiplication and Division with Fractions

- 4.2.1 Multiplying Fractions
- 4.2.2 Recognize and use the Multiplication Properties with Fractions
- 4.2.3 Dividing Fractions

4.3 Order of Operations with Fractions

- 4.3.1 Simplifying Expressions involving Fractions
- 4.3.2 Simplify Complex Fractions

5. Applications with Fractions

5.1 Equations with Fractions and Proportions

- 5.1.1 Solve Simple Equations Involving Fractions
- 5.1.2 Solve Proportions Using Cross Products

5.2 General Applications of Fractions

- 5.2.1 Use of Equations to solve Application Problems
- 5.2.2 Averages of Group of Fractions
- 5.2.3 Applications to demonstrate the use for "of" to "Multiply"
- 5.2.4 Applications related to Rates, Unit Rates, and Proportions

5.3 Geometric Applications

- 5.3.1 Perimeters and Areas of polygons (Lengths in Fractions)
- 5.3.2 Volume and Surface Areas
- 5.3.3 Find the Missing side(s) in Similar Figures

6. Decimal Numbers

6.1 Reading and Writing Decimal Numbers Rounding Decimal Numbers

- 6.1.1 Word Names of Decimals
- 6.1.2 Rounding Decimals
- 6.1.3 Graph Decimals, find Absolute Values, and Compare Decimals

6.2 Addition and Subtraction with Decimal Numbers

- 6.2.1 Perform Addition and Subtraction with Decimal Numbers (+/-)
- 6.2.2 Estimate Decimals Sums and Difference (+/-)

6.3 Multiplication and Division with Decimal Numbers

- 6.3.1 Multiplying Decimals (+/-)
- 6.3.2 Perform Division with Decimal Numbers (+/-)
- 6.3.3 Estimate Products and Quotients(+/-)

6.4 Decimals and Fractions

- 6.4.1 Changing numbers in Fraction to Decimal and Vice versa
- 6.4.2 Simplify Expressions containing Decimals or Fractions (+/-)
- 6.4.3 Use Decimal Number Estimates for Fractional ...
- 6.4.4 Average of a Group of Decimals

7. Application of Decimals

7.1 Solving Equations with Decimal Numbers

- 7.1.1 Solve Equations involving decimals : Variable on one side
- 7.1.2 Solve Equations involving decimals : Variable on both sides
- 7.1.3 Solving Equations Containing Several Unknowns

7.2 Applications using Decimals

- 7.2.1 Application using Formulas
- 7.2.2 Applications involving " %of "
- 7.2.3 Applications involving Ratios, Rates, Unit Rates, or Unit Prices

7.3 Square Roots and the Pythagorean Theorem

- 7.3.1 Evaluate Expressions involving Square Roots
- 7.3.2 Applications involving the use of Pythagorean Theorem

7.4 Applications to Geometry

- 7.4.1 Perimeter and Area of Polygons : Lengths in decimals
- 7.4.2 Circumference and Area of a Circle : Lengths in decimals
- 7.4.3 Volumes and Surface Areas of Solids : Lengths in decimals

8. Percent with Business Applications

8.1 Understanding Percent

- 8.1.1 Change Percents to Numbers in Fraction or De...
- 8.1.2 Converting Fractions to Percents
- 8.1.3 Determine the Percentage and Base for common Percent Expressions

8.2 Solving Percent Problems

- 8.2.1 Solve Problems using Percent Formula
- 8.2.2 Solve Business Applications

8.3 Business Applications (I):Markup, Discount, Sales Tax, Profit, Commission and Tipping

- 8.3.1 Application Problems involving Markup, Discount, Sales Tax, and Profit
- 8.3.2 Application Problems involving Percent Commission and Tipping

8.4 Business Applications (II) Simple Interest and Compound Interest

- 8.4.1 Applications involving Simple Interest, using the Formula $I=Prt$
- 8.4.2 Applications involving Compound Interest

8.5 Business Applications (III): Buying a Home or a Car

- 8.5.1 Calculate the Expenses involved in Buying a Car
- 8.5.2 Calculate Expenses involvedsssss in Buying a Home

9. Basic Statistics, Probability, Plotting Points and Lines

9.1 Mean, Median, Mode and Range

- 9.1.1 Find the Mean, Median, Mode and Range of a set of a Data Items

9.2 Variance and Standard Deviation

- 9.2.1 Variation, Range, Variance and standard deviation

9.3 Reading Graphs: Bar, Line, Circle, Pictographs

- 9.3.1 Reading Data from Bar and Line Graphs
- 9.3.2 Reading Data from Pie Charts
- 9.3.3 Reading Data from Pictograph

9.4 Constructing Graphs

- 9.4.1 Construct a Bar Graph for a given set of Data
- 9.4.2 Construct a Pie Graph for a given set of Data

9.5 Plotting Points, Linear Equations in Two Variables and Graphing Lines

- 9.5.1 Plot a Set of Ordered Pairs
- 9.5.2 Identify solutions of Linear Equation in two variables
- 9.5.3 Graph Linear Equations in two variables

9.6 Probability

- 9.6.1 Chance and Probability

10. Measurements

10.1 Basic Operations on Measurements in the same System

- 10.1.1 Multiply or Divide any Measurement by a Number
- 10.1.2 Add or Subtract two Measurements with common Units

10.2 Unit Conversions in the same System

- 10.2.1 Convert units in the English System
- 10.2.2 Convert units in the Metric System

10.3 Unit conversions between English and Metric System

- 10.3.1 Convert from English to Metric System
- 10.3.2 Convert Temperatures from Celsius to Fahrenheit

10.4 Estimating Measurements in the Metric System

- 10.4.1 Estimate Measurements in the Metric System

11. Review of Basic Geometry

11.1 Review of Basic Geometry