



TOPICAL OUTLINE FOR BASIC MATHEMATICS/PRE-ALGEBRA

A. WHOLE NUMBERS

1. Understanding Numbers
2. Natural Numbers Versus Whole Numbers
3. Place Value with Whole Numbers
4. Rounding of Whole Numbers
5. Addition of Whole Numbers
6. Subtraction of Whole Numbers
7. Translation of Whole Numbers Between Words and Numerals
8. Multiplication of Whole Numbers
9. Exponents Applied to Whole Numbers
10. Roots of Whole Numbers
11. Division of Whole Numbers
12. Order of Operations
13. Applications and Word Problems Involving Whole Numbers

B. PROPER FRACTIONS

1. Understanding Fractions
2. Translating Fractions Between Words and Numerals
3. Prime Factorization
4. Prime and Composite Numbers
5. Reducing Fractions
6. Multiplying Fractions
7. Exponents Applied to Fractions
8. Dividing Fractions
9. Roots of Fractions
10. Addition and Subtraction of Fractions
11. Order of Operations Applied to Fractions
12. Applications and Word Problems Involving Fractions

C. IMPROPER FRACTIONS, COMPLEX FRACTIONS, AND MIXED NUMBERS

1. Understanding Improper Fractions, Complex Fractions, and Mixed Numbers
2. Converting Between Improper Fractions and Mixed Numbers
3. Multiplication of Mixed Numbers

4. Division of Mixed Numbers
5. Exponents Applied to Mixed Numbers
6. Roots of Mixed Numbers
7. Addition and Subtraction of Mixed Numbers
8. Applications and Word Problems Involving Mixed Numbers
9. Simplifying Complex Fractions
10. Order of Operations Applied to Mixed Numbers

D. DECIMALS

1. Understanding Decimals
2. Translation of Whole Numbers Between Words and Numerals
3. Place Value with Decimals
4. Rounding Decimals
5. Addition and Subtraction of Decimals
6. Multiplying Decimals
7. Dividing Decimals
8. Exponents Applied to Decimals
9. Roots of Decimals
10. Order of Operations Applied to Decimals
11. Applications and Word Problems Involving Decimals

E. CONVERSIONS, RATIOS, AND PROPORTIONS

1. Fraction and Decimal Conversions
2. Understanding and Converting Repeating Decimals
3. Understanding and Simplifying Ratios and Rates
4. Conversions involving Time, Length, and Weight
5. Unit Pricing
6. Solving Basic Proportion Equations
7. Solving Complex Proportion Equations
8. Applications and Word Problems Involving Ratios and Proportions

F. PERCENT

1. Understanding Percent
2. Converting Between Fraction, Decimal, and Percent
3. Simplifying Basic Percent Problems
4. Solving Basic Percent Equations
5. Applications and Word Problems Involving Percent

G. PRE-ALGEBRA

1. Basic Operations Involving Signed Numbers
2. Simplifying Basic Algebraic Expressions
3. Solving Basic Algebraic Equations
4. Solving Complex Algebraic Equations
5. Simplifying Algebraic Expressions Involving Addition and Subtraction
6. Simplifying Algebraic Expressions Involving Multiplication and Division