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## ARITHMETIC MODULES



### Unit 1: Whole Numbers

#### Introduction to Whole Numbers

- Place Value and Names for Whole Numbers
- Rounding Whole Numbers
- Comparing Whole Numbers

#### Adding and Subtracting Whole Numbers

- Adding Whole Numbers and Applications
- Subtracting Whole Numbers and Applications
- Estimation

#### Multiplying and Dividing Whole Numbers

- Multiplying Whole Numbers and Applications
- Dividing Whole Numbers and Applications

#### Properties of Whole Numbers

- Properties and Laws of Whole Numbers
- The Distributive Property

#### Exponents, Square Roots, and the Order of Operations

- Understanding Exponents and Square Roots
- Order of Operations



### Unit 2: Fractions and Mixed Numbers

#### Introduction to Fractions and Mixed Numbers

- Introduction to Fractions and Mixed Numbers
- Proper and Improper Fractions
- Factors and Primes
- Simplifying Fractions
- Comparing Fractions

#### Multiplying and Dividing Fractions and Mixed Numbers

- Multiplying Fractions and Mixed Numbers
- Dividing Fractions and Mixed Numbers

#### Adding and Subtracting Fractions and Mixed Numbers

- Adding Fractions and Mixed Numbers
- Subtracting Fractions and Mixed Numbers



### Unit 3: Decimals

#### Introduction to Decimals

- Decimals and Fractions
- Ordering and Rounding Decimals

#### Decimal Operations

- Adding and Subtracting Decimals
- Multiplying and Dividing Decimals
- Estimation with Decimals



### Unit 4: Ratios, Rates, and Proportions

#### Ratio and Rates

- Ratio and Rates

#### Proportions

- Understanding Proportions



### Unit 5: Percents

#### Introduction to Percents

- Convert Percents, Decimals, and Fractions

#### Solving Percent Problems

- Solve Percent Problems



### Unit 6: Measurement

#### U.S. Customary Units of Measurement

- Length
- Weight
- Capacity

#### Metric Units of Measurement

- The Metric System
- Converting within the Metric System
- Using Metric Conversions to Solve Problems

#### Temperature

- Temperature Scales

## BEGINNING ALGEBRA MODULES



### Unit 9: Real Numbers

#### Introduction to Real Numbers

- Variables and Expressions
- Integers
- Rational Real Numbers

#### Operations with Real Numbers

- Adding Integers
- Adding Real Numbers
- Subtracting Real Numbers
- Multiplying and Dividing Real Numbers

#### Properties of Real Numbers

- Associative, Commutative, and Distributive Properties

#### Simplifying Expressions

- Order of Operations



### Unit 10: Solving Equations and Inequalities

#### Solving Equations

- Solving One-Step Equations Using Properties of Equality
- Solving Multi-Step Equations
- Special Cases and Applications
- Formulas

#### Solving Inequalities

- Solving One-Step Inequalities
- Multi-Step Inequalities

#### Compound Inequalities and Absolute Value

- Compound Inequalities
- Equations and Inequalities and Absolute Value



### Unit 11: Exponents and Polynomials

#### Integer Exponents

- Exponential Notation
- Simplify by Using the Product, Quotient, and Power Rules
- Products and Quotients Raised to Powers
- Scientific Notation

#### Polynomials with Single Variables

- Introduction to Single Variable Polynomials
- Adding and Subtracting Polynomials
- Multiplying Polynomials
- Multiplying Special Cases
- Dividing by a Monomial
- Dividing by Binomials and Polynomials

#### Polynomials with Several Variables

- Simplifying and Evaluating Polynomials with More than One Term
- Operations with Polynomials



### Unit 12: Factoring

#### Introduction to Factoring

- Greatest Common Factor
- continued...*

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## Factoring Polynomials

- Factoring Trinomials
- Factoring: Special Cases
- Special Cases: Cubes

## Solving Quadratic Equations

- Solve Quadratic Equations by Factoring



## Unit 13: Graphing

### Graphs and Applications

- The Coordinate Plane
- Graphing Linear Equations

### Slope and Writing the Equation of a Line

- Finding the Slope of a Line
- Writing the Equation of a Line
- Parallel and Perpendicular Lines
- Graphing Linear Inequalities



## Unit 14: Systems of Equations and Inequalities

### Graphing Systems of Equations and Inequalities

- Graphing Systems of Linear Equations
- Graphing Systems of Inequalities

### Algebraic Methods to Solve Systems of Equations

- The Substitution Method
- The Elimination Method

### Systems of Equations in Three or More Variables

- Solving Systems of Three Variables

## INTERMEDIATE ALGEBRA MODULES



## Unit 15: Rational Expressions

### Operations with Rational Expressions

- Introduction to Rational Expressions
- Multiplying and Dividing Rational Expressions
- Adding and Subtracting Rational Expressions
- Complex Rational Expressions

### Rational Equations

- Solving Rational Equations and Applications

## Formulas and Variation

- Rational Formulas and Variation



## Unit 16: Radical Expressions and Quadratic Equations

### Introduction to Roots and Rational Exponents:

- Roots
- Squares, Cubes, and Beyond
- Rational Exponents

### Operations with Radicals

- Multiplying and Dividing Radical Expressions
- Adding and Subtracting Radicals
- Multiplication of Multiple Term Radicals
- Rationalizing Denominators

### Radical Equations

- Solving Radical Equations

### Complex Numbers

- Complex Numbers
- Operations with Complex Numbers

### Solving Quadratic Equations

- Square Roots and Completing the Square
- The Quadratic Formula



## Unit 17: Functions

### Introduction to Functions

- Identifying Functions

### Using Functions

- Evaluating Functions
- Graphing Types of Functions
- Finding Domain and Range

### Operations with Functions

- Arithmetic Operations with Functions



## Unit 18: Exponential and Logarithmic Functions

### Exponential Functions

- Introduction to Exponential Functions

### Logarithmic Functions

- Introduction to Logarithmic Functions
- Properties of Logarithmic Functions

### Natural Logarithms

- Introduction to Natural and Common Logarithms

## Logarithmic and Exponential Equations

- Solving Exponential and Logarithmic Equations
- Mathematical Modeling with Exponential and Logarithmic Functions

## GEOMETRY, STATISTICS, & TRIGONOMETRY TOPICS



## Unit 7: Geometry

### Basic Geometric Concepts and Figures

- Figures in 1 and 2 Dimensions
- Properties of Angles
- Triangles
- The Pythagorean Theorem

### Perimeter, Circumference, and Area

- Quadrilaterals
- Perimeter and Area
- Circles

### Volume of Geometric Solids

- Solids



## Unit 8: Concepts in Statistics

### Statistical Graphs and Tables

- Graphing Data
- Other Types of Graphs

### Measures of Center

- Measures of Center

### Graphical Representations

- Use and Misuse of Graphical Representations

### Probability

- Probability



## Unit 19: Trigonometry

### Introduction to Trigonometric Functions

- Identifying the Six Trigonometric Functions
- Right Triangle Trigonometry
- Unit Circle Trigonometry

### Graphing Trigonometric Functions

- Degree and Radian Measure
- Graphing the Sine and Cosine Function
- Amplitude and Period

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## SEMESTER 1



### Unit 1: Algebra: A New Angle

#### Lesson 1: Algebra: What's It All About?

- Algebra—Everyday and Extraordinary
- Algebra—Why and When
- Algebra—Approaching Problems



### Unit 2: Solve Linear Equations

#### Lesson 2: Writing and Solving Equations

- Solving Equations
- Solving Multi-Step Equations
- Writing Expressions and Equations
- Solving for a Specific Variable

#### Lesson 3: Absolute Value Equations

- Absolute Value
- Solving Absolute Value Equations



### Unit 3: Functions and Patterns

#### Lesson 4: Working with Patterns

- Inductive Patterns
- Representing Patterns

### Lesson 5: Graphing Functions and Relations

- Representing Functions and Relations
- Domain and Range
- Proportional Functions
- Linear Functions
- Non-Linear Functions



### Unit 4: Analyze and Graph Linear Equations, Functions, and Relations

#### Lesson 6: Graphing Linear Equations

- Rate of Change and Slope
- Intercepts of Linear Equations
- Graphing Equations in Slope Intercept Form
- Point Slope Form and Standard Form of Linear Equations

#### Lesson 7: Parallel and Perpendicular Lines

- Parallel Lines
- Perpendicular Lines



### Unit 5: Analyze, Solve, and Graph Linear Inequalities

### Lesson 8: Writing, Solving, and Graphing Inequalities in One Variable

- Writing, Solving, and Graphing Inequalities in One Variable
- Solving and Graphing Absolute Value Inequalities
- Writing and Using Inequalities

### Lesson 9: Solving and Graphing Linear Inequalities in Two Variables

- Solving and Graphing Linear Inequalities in Two Variables



### Unit 6: Systems of Linear Equations and Inequalities

#### Lesson 10: Solving Systems of Linear Equations

- Solving Systems by Graphing
- Solving Systems by Substitution
- Solving Systems by Elimination

#### Lesson 11: Applying Systems of Equations

- Rate Problems
- Mixture Problems

#### Lesson 12: Graphing Systems of Inequalities

- Graphing Systems of Inequalities

## SEMESTER 2



### Unit 7: Radical Expressions

#### Lesson 13: Exponents

- Rules of Exponents
- Scientific Notation
- Simplifying Expressions with Exponents

#### Lesson 14: The Pythagorean Theorem

- Applications of the Pythagorean Theorem

#### Lesson 15: Radical Expressions and Equations

- Simplifying Radical Expressions
- Solving Radical Equations
- Applying Radical Equations
- Fractional Exponents



### Unit 8: Polynomials

#### Lesson 16: Operations on Monomials

- Multiplying and Dividing Monomials

#### Lesson 17: Operations on Polynomials

- Polynomials
- Adding and Subtracting Polynomials

- Multiplying Polynomials
- Special Products of Polynomials



### Unit 9: Factoring

#### Lesson 18: Factoring Monomials and Polynomials

- Factoring and the Distributive Property
- Factoring Trinomials by Grouping 1
- Factoring Trinomials by Grouping 2

#### Lesson 19: Factoring Special Products of Polynomials

- Factoring Special Products
- Solving Quadratic Equations by Factoring



### Unit 10: Quadratic Functions

#### Lesson 20: Quadratic Functions

- Graphing Quadratic Functions
- Solving Quadratic Equations by Completing the Square
- Solving Quadratic Equations Using the Quadratic Formula

#### Lesson 21: Applying Quadratic Functions

- Applications of Quadratic Functions
- Systems of Non-Linear Equations



### Unit 11: Rational Expressions and Equations

#### Lesson 22: Rational Expressions

- Simplifying Rational Expressions
- Multiplying and Dividing Rational Expressions
- Adding and Subtracting Rational Expressions

#### Lesson 23: Rational Equations

- Solving Rational Equations
- Applying Rational Equations



### Unit 12: Extensions and Applications

#### Lesson 24: Logical Reasoning and Number Sets

- Number Sets
- Understanding Logic Statements
- Inductive Reasoning
- Deductive Reasoning

#### Lesson 25: Probability

- Events and Outcomes (Counting)
- Permutations and Combinations
- Probability of Independent Events
- Probability of Compound Events