Knewton Alta

Finite Mathematics with Corequisite Support | Table of Contents

Chapter 1: Numbers and Operations

1.1 Numbers and their Properties

- Ordering of Numbers
  - Find opposites
  - Locate positive and negative numbers on the number line
  - Order positive and negative numbers
- Factors and Multiples
  - Find the least common multiple of two numbers
  - Find the prime factorization of a number
  - Identify multiples and apply divisibility tests
- Properties of Real Numbers
  - Identify rational numbers and irrational numbers
  - Use the commutative and associative properties
  - Identify additive and multiplicative inverses of a number
  - Understand the multiplication and division properties of zero
- SImplify Expressions Using Properties of Real Numbers
  - Simplify expressions using properties of identities, inverses, and zero
  - Simplify expressions using the distributive property
  - Simplify expressions by distributing a negative number

1.2 Arithmetic Operations

- Addition and Subtraction of Integers
  - Add and subtract integers using order of operations
  - Add integers
  - Subtract integers
- Division of Integers
  - Divide integers
  - Divide whole numbers using long division where there may be a remainder
  - Divide whole numbers using long division
  - Use division notation
- Applications of Integer Multiplication and Division
  - Divide whole numbers in applications
  - Multiply whole numbers in applications
  - Translate word phrases involving division to math notation
- Multiplication of Integers
  - Evaluate a whole number raised to a power and understand the terminology
  - Multiply integers
  - Use multiplication notation
- Multiplication
  - Translate word phrases involving multiplication to math notation

Knewton Alta

Chapter 2: Fractions and Decimals

2.1 Introduction to Fractions

- Addition and Subtraction of Fractions
  - Add or subtract fractions with a common denominator
  - Add or subtract fractions with different denominators
- Mixed Numbers
  - Convert between improper fractions and mixed numbers
  - Locate fractions and mixed numbers on the number line
  - Model improper fractions and mixed numbers
  - Order fractions and mixed numbers
- Equivalent Fractions
  - Find equivalent fractions
  - Identify when fractions are equivalent
  - Model equivalent fractions
  - Simplify a fraction
- Understanding Fractions
  - Locate fractions on a number line and write inequality statements involving fractions
  - Understand the meaning of fractions

2.2 Operations with Fractions

- Multiplication and Division of Fractions
  - Divide fractions
  - Divide two fractions
  - Evaluate variable expressions with fractions
  - Find reciprocals
  - Multiply fractions
  - Simplify complex fractions
  - Simplify expressions written with a fraction bar
  - Translate an English phrase to an expression with fractions
  - Use the order of operations to simplify complex fractions and expressions with multiple operations

2.3 Decimals

- Addition and Subtraction of Decimals
  - Add and subtract decimals
  - Locate decimals on a number line and write inequality statements involving decimals
  - Perform operations with decimals
- Decimals and Fractions
  - Convert between fractions and decimals
  - Simplify expressions with fractions and decimals
- Multiplication and Division of Decimals
  - Divide decimals
  - Multiply decimals

Knewton Alta

Chapter 3: Expressions and Equations

3.1 Building Expressions

- Introduction to Expressions
  - Identify expressions and equations
- Writing Expressions
  - Translate word phrases to algebraic expressions
  - Translate word phrases to expressions with integers
  - Write word phrases from applications as algebraic expressions

3.2 Evaluating Expressions

- Evaluating Expressions with Numbers
  - Evaluate a variable expression with integers
  - Simplify expressions with integers using order of operations
  - Simplify an expression using order of operations
  - Evaluate an expression
  - Identify coefficients and identify and combine like terms
- Absolute Value
  - Evaluate an absolute value expression
  - Simplify an expression involving absolute value using order of operations

3.3 Equations

- Solving Inequalities
  - Solve a formula for a specific variable
  - Solve one-step applications with linear inequalities
  - Solve an inequality using the subtraction and addition properties of inequality
  - Solve an inequality using the division and multiplication properties of inequality
- Applications of Equations
  - Solve a number problem
  - Use a problem-solving strategy for word problems
  - Use the division and multiplication properties of equality to solve application problems
  - Use the subtraction and addition properties of equality to solve application problems
- Solving Equations with Fractions and Decimals
  - Solve an equation involving fractions by eliminating the fractions
  - Solve an equation involving fractions by eliminating the fractions and other steps
- Solving Equations using Multiplication and Division
  - Solve an equation involving fractions or decimals using the division and multiplication properties of equality
  - Solve an equation that requires simplification using the division and multiplication properties of equality
  - Solve an equation using the division and multiplication properties of equality
  - Translate an English sentence to an algebraic equation and solve using the division and multiplication properties of equality
- Solving Equations using Addition and Subtraction
  - Solve an equation involving fractions or decimals using the subtraction and addition properties of equality

    - Solve an equation that requires simplification using the subtraction and addition properties of equality
    - Solve an equation using the subtraction and addition properties of equality
    - Translate an English sentence to an algebraic equation and solve using the subtraction and addition properties of equality
- Introduction to Inequalities
    - Use variables and algebraic symbols to describe inequalities
    - Graph an inequality on the number line
- Verifying Solutions
    - Verify a solution of an equation
    - Determine whether an ordered pair is a solution of a system of linear equations
    - Determine whether an ordered pair is a solution of a system of linear inequalities

Chapter 4: Ratios, Proportions, and Percents

4.1 Ratios and Proportions

- Problem Solving with Ratios
    - Find unit price
    - Find unit rates
    - Translate phrases to expressions as rates or ratios
    - Use ratios in applications
- Proportions
    - Solve a problem involving proportions
    - Use the definition of proportion
- Ratios and Fractions
    - Write a rate as a fraction
    - Write a ratio as a fraction

4.2 Percents

- Writing Percents
    - Convert between percents, decimals, and fractions
    - Convert decimals and fractions to percents
    - Convert percents to decimals
- Introduction to Percents
    - Convert percents to fractions
    - Use the definition of percent
- Financial Applications of Percents
    - Determine the final cost of an item including sales tax and discounts
    - Solve commission applications
    - Solve discount applications
    - Solve mark-up applications
    - Solve sales tax applications
- Applications of Percents
    - Find percent increase and percent decrease
    - Solve applications of percent
    - Solve basic applications of percent

- Percent Equations
  - Translate and solve basic percent equations
  - Translate and solve percent proportions
  - Write percent equations as proportions

Chapter 5: Functions

5.1 Evaluating Functions

- Evaluating Exponential Functions
  - Evaluate exponential functions
  - Evaluate exponential functions with base e
- Function Notation
  - Understand function notation
  - Evaluate a function using function notation

5.2 Slopes of Lines

- Slopes of Lines
  - Use a geoboard to model slope
  - Use the relationship between rise and run to find the slope of a line from its graph

5.3 Polynomial Functions

- Introduction to Polynomials
  - Evaluate a polynomial for a given value
  - Identify the types and degrees of polynomials
- Operations with Polynomials
  - Add and subtract monomials
  - Multiply monomials
  - Divide monomials
  - Divide a polynomial by a monomial