

## *Corequisite Support for Liberal Arts Mathematics/Quantitative Reasoning*

This course covers the topics shown below.

Students navigate learning paths based on their level of readiness.

Institutional users may customize the scope and sequence to meet curricular needs.

Curriculum (444 topics + 801 additional topics)

- Arithmetic Readiness (107 topics)
  - ◆ Whole Numbers (28 topics)
    - ◇ Whole number place value: Problem type 1
    - ◇ Whole number place value: Problem type 2
    - ◇ Expanded form: 2 and 3–digit numbers
    - ◇ Expanded form: 4 and 5–digit numbers
    - ◇ Introduction to inequalities
    - ◇ Multiplication as repeated addition
    - ◇ Division involving zero
    - ◇ Word problem with multiplication and addition or subtraction of whole numbers
    - ◇ Word problem on unit rates associated with ratios of whole numbers: Whole number answers
    - ◇ Time unit conversion with whole number values
    - ◇ Rounding to tens or hundreds
    - ◇ Rounding to hundreds or thousands
    - ◇ Writing expressions using exponents
    - ◇ Introduction to exponents
    - ◇ Power of 10: Positive exponent
    - ◇ Introduction to parentheses
    - ◇ Introduction to order of operations
    - ◇ Order of operations with whole numbers
    - ◇ Order of operations with whole numbers and exponents: Basic
    - ◇ Expanded forms of numbers less than 10,000 using powers of ten
    - ◇ Expanded forms of numbers greater than 10,000 using powers of ten
    - ◇ Even and odd numbers
    - ◇ Divisibility rules for 2, 5, and 10
    - ◇ Factors
    - ◇ Prime numbers
    - ◇ Prime factorization
    - ◇ Greatest common factor of 2 numbers
    - ◇ Least common multiple of 2 numbers
  - ◆ Integers (13 topics)
    - ◇ Plotting integers on a number line
    - ◇ Ordering integers
    - ◇ Writing a signed number for a real–world situation
    - ◇ Absolute value of a number
    - ◇ Integer addition: Problem type 1
    - ◇ Integer addition: Problem type 2
    - ◇ Integer subtraction: Problem type 1
    - ◇ Integer subtraction: Problem type 2
    - ◇ Integer subtraction: Problem type 3

- ◇ Addition and subtraction with 3 integers
- ◇ Computing the distance between two integers on a number line
- ◇ Integer multiplication and division
- ◇ Multiplication of 3 or 4 integers
- ◆ Introduction to Expressions and Equations (12 topics)
  - ◇ Evaluating an algebraic expression: Whole number addition or subtraction
  - ◇ Evaluating an algebraic expression: Whole number multiplication or division
  - ◇ Evaluating an algebraic expression: Whole numbers with two operations
  - ◇ Evaluating a formula
  - ◇ Evaluating an algebraic expression: Whole numbers with one operation and an exponent
  - ◇ Evaluating a linear expression: Integer multiplication with addition or subtraction
  - ◇ Identifying solutions to a one–step linear equation: Problem type 1
  - ◇ Identifying solutions to a one–step linear equation: Problem type 2
  - ◇ Additive property of equality with whole numbers
  - ◇ Multiplicative property of equality with whole numbers
  - ◇ Writing an equation and solving a multiplicative comparison word problem
  - ◇ Using two steps to solve an equation with whole numbers
- ◆ Introduction to Perimeter and Area (4 topics)
  - ◇ Perimeter of a polygon
  - ◇ Perimeter of a square or a rectangle
  - ◇ Area of a square or a rectangle
  - ◇ Word problem involving the area of a rectangle: Problem type 2
- ◆ Fractions (19 topics)
  - ◇ Introduction to non–unit fractions
  - ◇ Understanding equivalent fractions
  - ◇ Equivalent fractions
  - ◇ Introduction to simplifying a fraction
  - ◇ Simplifying a fraction
  - ◇ Plotting fractions on a number line
  - ◇ Ordering fractions with the same denominator
  - ◇ Using a common denominator to order fractions
  - ◇ Product of a unit fraction and a whole number
  - ◇ Product of a fraction and a whole number: Problem type 1
  - ◇ Introduction to fraction multiplication
  - ◇ Fraction multiplication
  - ◇ Product of a fraction and a whole number: Problem type 2
  - ◇ Multiplication of 3 fractions
  - ◇ Addition or subtraction of fractions with the same denominator
  - ◇ Addition or subtraction of fractions with the same denominator and simplification
  - ◇ Finding the LCD of two fractions
  - ◇ Writing fractions with a common denominator to add or subtract
  - ◇ Addition or subtraction of fractions with different denominators
- ◆ Decimals (24 topics)
  - ◇ Decimal place value: Tenths and hundredths
  - ◇ Introduction to ordering decimals
  - ◇ Ordering decimals
  - ◇ Rounding decimals
  - ◇ Decimal addition with 2 numbers
  - ◇ Subtraction of aligned decimals
  - ◇ Decimal subtraction: Basic
  - ◇ Decimal subtraction: Advanced
  - ◇ Signed decimal addition and subtraction
  - ◇ Word problem with addition or subtraction of 2 decimals

- ◇ Word problem with addition of 3 or 4 decimals and whole numbers
- ◇ Multiplying a decimal less than 1 by a whole number
- ◇ Multiplying a decimal by a whole number
- ◇ Multiplying decimals less than 1: Problem type 1
- ◇ Decimal multiplication: Problem type 1
- ◇ Multiplication of a decimal by a power of ten
- ◇ Multiplication of a decimal by a power of 0.1
- ◇ Word problem with multiplication of a decimal and a whole number
- ◇ Word problem with decimal addition and multiplication
- ◇ Division of a decimal by a whole number
- ◇ Division of a decimal by a 1–digit decimal: Problem type 1
- ◇ Division of a decimal by a power of ten
- ◇ Word problem with division of a decimal and a whole number
- ◇ Word problem with decimal subtraction and division
- ◆ Converting Between Fractions and Decimals (7 topics)
  - ◇ Converting a decimal to a proper fraction without simplifying: Basic
  - ◇ Converting a decimal to a proper fraction in simplest form: Basic
  - ◇ Converting a fraction with a denominator of 10 or 100 to a decimal
  - ◇ Converting a proper fraction with a denominator of 2, 4, or 5 to a decimal
  - ◇ Converting a fraction to a terminating decimal: Basic
  - ◇ Converting a fraction to a repeating decimal: Basic
  - ◇ Using a calculator to convert a fraction to a rounded decimal
- Ratios, Proportions, and Percents (50 topics)
  - ◆ Ratios and Unit Rates (7 topics)
    - ◇ Simplifying a ratio of whole numbers: Problem type 1
    - ◇ Finding a unit price
    - ◇ Using tables to compare ratios
    - ◇ Computing unit prices to find the better buy
    - ◇ Solving a word problem on proportions using a unit rate
    - ◇ Solving a one–step word problem using the formula  $d = rt$
    - ◇ Finding missing values in a table of equivalent ratios
  - ◆ Introduction to Proportions (3 topics)
    - ◇ Solving a proportion of the form  $x/a=b/c$ : Basic
    - ◇ Solving a proportion of the form  $x/a = b/c$
    - ◇ Word problem on proportions: Problem type 1
  - ◆ Scale Factors and Scale Drawings (1 topics)
    - ◇ Finding lengths using scale models
  - ◆ Congruent and Similar Figures (2 topics)
    - ◇ Identifying congruent shapes on a grid
    - ◇ Finding a missing side length given two similar triangles
  - ◆ Converting Between Fractions, Decimals, and Percentages (10 topics)
    - ◇ Converting a fraction with a denominator of 100 to a percentage
    - ◇ Converting a percentage to a fraction with a denominator of 100
    - ◇ Finding the percentage of a grid that is shaded
    - ◇ Representing benchmark percentages on a grid
    - ◇ Introduction to converting a percentage to a decimal
    - ◇ Introduction to converting a decimal to a percentage
    - ◇ Converting between percentages and decimals
    - ◇ Converting a fraction to a percentage: Denominator of 4, 5, or 10
    - ◇ Converting a fraction to a percentage: Denominator of 20, 25, or 50
    - ◇ Using a calculator to convert a fraction to a rounded percentage
  - ◆ Applications Involving Percentages (16 topics)
    - ◇ Finding a percentage of a whole number

- ◇ Finding a percentage of a whole number without a calculator: Basic
- ◇ Finding a percentage of a total amount: Real–world situations
- ◇ Finding a percentage of a total amount without a calculator: Sales tax, commission, discount
- ◇ Estimating a tip without a calculator
- ◇ Writing a ratio as a percentage
- ◇ Finding the rate of a tax or commission
- ◇ Computing a percentage from a table of values
- ◇ Applying the percent equation: Problem type 1
- ◇ Finding the multiplier to give a final amount after a percentage increase or decrease
- ◇ Finding the final amount given the original amount and a percentage increase or decrease
- ◇ Finding the sale price given the original price and percent discount
- ◇ Finding the total cost including tax or markup
- ◇ Combined effect of more than one markup or discount
- ◇ Finding the percentage increase or decrease: Basic
- ◇ Finding the percentage increase or decrease: Advanced
- ◆ Income and Expenses (4 topics)
  - ◇ Hourly gross pay with overtime
  - ◇ Gross pay with commission and salary
  - ◇ Calculating income tax
  - ◇ Computing percentages for categories of a budget
- ◆ Simple Interest (3 topics)
  - ◇ Finding the interest and future value of a simple interest loan or investment
  - ◇ Computing the total cost and interest for a loan
  - ◇ Computing the interest and repayment amount for a simple interest loan whose term is given in months or days
- ◆ Compound Interest (4 topics)
  - ◇ Introduction to compound interest
  - ◇ Calculating and comparing simple interest and compound interest
  - ◇ Using a calculator to evaluate exponential expressions
  - ◇ Finding the future value and interest for an investment earning compound interest
- Measurement (29 topics)
  - ◆ U.S. Customary Units of Length (7 topics)
    - ◇ Choosing U.S. Customary measurement units
    - ◇ U.S. Customary length conversion with whole number values
    - ◇ Conversions involving measurements in feet and inches
    - ◇ U.S. Customary length conversions involving rounding decimals
    - ◇ Word problem involving a U.S. Customary length conversion
    - ◇ U.S. Customary length conversions involving dimensional analysis
    - ◇ Word problem involving U.S. Customary length conversions using dimensional analysis
  - ◆ Perimeter, Area, and Volume (10 topics)
    - ◇ Finding the missing length in a figure
    - ◇ Perimeter of a piecewise rectangular figure
    - ◇ Area of a piecewise rectangular figure
    - ◇ Area between two rectangles
    - ◇ Area of a triangle
    - ◇ Circumference of a circle
    - ◇ Area of a circle
    - ◇ Volume of a rectangular prism
    - ◇ Volume of a rectangular prism made of unit cubes
    - ◇ Surface area of a cube or a rectangular prism
  - ◆ U.S. Customary Units of Area and Volume (1 topics)
    - ◇ Word problem on area involving conversions of U.S. Customary units: Problem type 1
  - ◆ U.S. Customary Units of Weight and Volume (2 topics)

- ◇ U.S. Customary weight conversions with whole number values
  - ◇ U.S. Customary volume conversion with whole number values
- ◆ Metric Units of Measurement (4 topics)
  - ◇ Choosing metric measurement units
  - ◇ Metric distance conversion with whole number values
  - ◇ Metric distance conversion with decimal values
  - ◇ Metric mass or volume conversion with whole numbers
- ◆ Converting Between Measurement Systems (3 topics)
  - ◇ Converting between metric and U.S. Customary unit systems
  - ◇ Converting between compound units: Basic
  - ◇ Conversions with currency
- ◆ Time and Temperature (2 topics)
  - ◇ Simplifying a ratio of whole numbers: Problem type 2
  - ◇ Converting between temperatures in Fahrenheit and Celsius
- Real Numbers (26 topics)
  - ◆ Plotting and Ordering (3 topics)
    - ◇ Square root of a perfect square
    - ◇ Using a calculator to approximate a square root
    - ◇ Estimating a square root
  - ◆ Venn Diagrams and Sets of Real Numbers (5 topics)
    - ◇ Identifying numbers as integers or non-integers
    - ◇ Identifying rational decimal numbers
    - ◇ Identifying numbers as rational or irrational
    - ◇ Interpreting a Venn diagram with 2 sets for a real-world situation
    - ◇ Constructing a Venn diagram to classify real numbers
  - ◆ Operations with Rational Numbers (2 topics)
    - ◇ Signed fraction addition or subtraction: Basic
    - ◇ Signed fraction multiplication: Basic
  - ◆ Exponents and Order of Operations (4 topics)
    - ◇ Exponents and fractions
    - ◇ Exponents and integers: Problem type 1
    - ◇ Evaluating expressions with exponents of zero
    - ◇ Order of operations with integers
  - ◆ Evaluating Expressions (1 topics)
    - ◇ Evaluating a quadratic expression: Integers
  - ◆ Properties of Operations (11 topics)
    - ◇ Introduction to properties of addition
    - ◇ Introduction to properties of multiplication
    - ◇ Combining like terms: Whole number coefficients
    - ◇ Combining like terms: Integer coefficients
    - ◇ Multiplying a constant and a linear monomial
    - ◇ Distributive property: Whole number coefficients
    - ◇ Distributive property: Integer coefficients
    - ◇ Identifying equivalent algebraic expressions
    - ◇ Using distribution and combining like terms to simplify: Univariate
    - ◇ Identifying properties used to simplify an algebraic expression
    - ◇ Combining like terms in a quadratic expression
- Linear Equations and Inequalities (62 topics)
  - ◆ One-Step Linear Equations (6 topics)
    - ◇ Additive property of equality with decimals
    - ◇ Additive property of equality with integers
    - ◇ Multiplicative property of equality with fractions
    - ◇ Multiplicative property of equality with decimals

- ◇ Multiplicative property of equality with integers
- ◇ Multiplicative property of equality with signed fractions
- ◆ Multi-Step Linear Equations (12 topics)
  - ◇ Identifying solutions to a linear equation in one variable: Two-step equations
  - ◇ Solving a two-step equation with integers
  - ◇ Introduction to using substitution to solve a linear equation
  - ◇ Introduction to solving an equation with parentheses
  - ◇ Solving a multi-step equation given in fractional form
  - ◇ Identifying properties used to solve a linear equation
  - ◇ Introduction to solving an equation with variables on the same side
  - ◇ Solving a linear equation with several occurrences of the variable: Variables on the same side
  - ◇ Introduction to solving a linear equation with a variable on each side
  - ◇ Solving a linear equation with several occurrences of the variable: Variables on both sides
  - ◇ Solving a linear equation with several occurrences of the variable: Variables on the same side and distribution
  - ◇ Solving a linear equation with several occurrences of the variable: Variables on both sides and distribution
- ◆ Solving Formulas for a Variable (4 topics)
  - ◇ Solving for a variable in terms of other variables using addition or subtraction: Basic
  - ◇ Solving for a variable in terms of other variables using multiplication or division: Basic
  - ◇ Solving for a variable in terms of other variables using multiplication or division: Advanced
  - ◇ Solving for a variable in terms of other variables using addition or subtraction with division
- ◆ Writing Expressions and Equations (4 topics)
  - ◇ Writing a one-step expression for a real-world situation
  - ◇ Translating a phrase into a one-step expression
  - ◇ Translating a phrase into a two-step expression
  - ◇ Translating a sentence into a one-step equation
- ◆ Applications of Linear Equations (5 topics)
  - ◇ Solving a fraction word problem using a linear equation of the form  $Ax = B$
  - ◇ Solving a word problem with two unknowns using a linear equation
  - ◇ Writing an equation of the form  $Ax + B = C$  to solve a word problem
  - ◇ Solving a decimal word problem using a linear equation of the form  $Ax + B = C$
  - ◇ Writing an equation to represent a real-world problem: Variable on both sides
- ◆ Writing and Graphing Inequalities (5 topics)
  - ◇ Translating a sentence by using an inequality symbol
  - ◇ Translating a sentence into a one-step inequality
  - ◇ Introduction to identifying solutions to an inequality
  - ◇ Writing an inequality for a real-world situation
  - ◇ Graphing a linear inequality on the number line
- ◆ Linear Inequalities (8 topics)
  - ◇ Identifying solutions to a one-step linear inequality
  - ◇ Additive property of inequality with whole numbers
  - ◇ Additive property of inequality with integers
  - ◇ Multiplicative property of inequality with whole numbers
  - ◇ Multiplicative property of inequality with integers
  - ◇ Solving a two-step linear inequality with whole numbers
  - ◇ Solving a two-step linear inequality: Problem type 1
  - ◇ Solving a two-step linear inequality: Problem type 2
- ◆ Applications of Linear Inequalities (2 topics)
  - ◇ Solving a word problem using a one-step linear inequality
  - ◇ Solving a word problem using a two-step linear inequality
- ◆ Set Notation and Operations with Sets (6 topics)
  - ◇ Identifying elements of sets for a real world situation

- ◇ Writing sets of numbers using descriptive and roster forms
- ◇ Identifying well defined sets
- ◇ Finding sets and complements of sets
- ◇ Finding sets and complements of sets for a real–world situation
- ◇ Union and intersection of finite sets
- ◆ Venn Diagrams (5 topics)
  - ◇ Interpreting Venn diagram cardinalities with 2 sets for a real–world situation
  - ◇ Interpreting a Venn diagram with 3 sets for a real–world situation
  - ◇ Constructing a Venn diagram with 2 sets
  - ◇ Constructing a Venn diagram with 2 sets to solve a word problem
  - ◇ Interpreting Venn diagram cardinalities with 3 sets for a real–world situation
- ◆ The Rectangular Coordinate System (5 topics)
  - ◇ Reading a point in the coordinate plane
  - ◇ Plotting a point in the coordinate plane
  - ◇ Finding distances between points that share a common coordinate given the graph
  - ◇ Function tables with two–step rules
  - ◇ Finding x– and y–intercepts given the graph of a line on a grid
- Probability and Statistics (66 topics)
  - ◆ Fundamental Counting Principle (3 topics)
    - ◇ Interpreting a tree diagram
    - ◇ Introduction to the counting principle
    - ◇ Counting principle
  - ◆ Permutations and Combinations (3 topics)
    - ◇ Factorial expressions
    - ◇ Computing permutations and combinations
    - ◇ Introduction to permutations and combinations
  - ◆ Probability and Odds of an Event (10 topics)
    - ◇ Determining a sample space and outcomes for a simple event
    - ◇ Determining a sample space and outcomes for a compound event
    - ◇ Introduction to the probability of an event
    - ◇ Probability involving one die or choosing from n distinct objects
    - ◇ Probability involving choosing from objects that are not distinct
    - ◇ Understanding likelihood
    - ◇ Probabilities of an event and its complement
    - ◇ Outcomes and event probability
    - ◇ Experimental and theoretical probability
    - ◇ Finding the odds in favor and against
  - ◆ Expected Value (2 topics)
    - ◇ Introduction to expectation
    - ◇ Computing expected value in a game of chance
  - ◆ Probability of Independent and Dependent Events (6 topics)
    - ◇ Probability of independent events: Decimal answers
    - ◇ Probability of dependent events: Decimal answers
    - ◇ Determining outcomes for compound events and complements of events
    - ◇ Computing conditional probability using a sample space
    - ◇ Computing conditional probability using a two–way frequency table
    - ◇ Conditional probability: Basic
  - ◆ Interpreting and Displaying Data (17 topics)
    - ◇ Choosing an appropriate method for gathering data: Problem type 2
    - ◇ Classifying samples
    - ◇ Constructing a bar graph for non–numerical data
    - ◇ Interpreting a bar graph
    - ◇ Interpreting a double bar graph

- ◇ Interpreting a pictograph table
- ◇ Interpreting a pie chart
- ◇ Finding a percentage of a total amount in a circle graph
- ◇ Measuring an angle with the protractor
- ◇ Angle measure in a circle graph
- ◇ Constructing a frequency distribution for non–grouped data
- ◇ Constructing a frequency distribution for grouped data
- ◇ Constructing a frequency distribution and a histogram
- ◇ Constructing a relative frequency distribution for grouped data
- ◇ Interpreting a histogram
- ◇ Interpreting a line graph
- ◇ Interpreting a stem–and–leaf display
- ◆ Measures of Average (14 topics)
  - ◇ Mean of a data set
  - ◇ Computations involving the mean, sample size, and sum of a data set
  - ◇ Finding the value for a new score that will yield a given mean
  - ◇ Rejecting unreasonable claims based on average statistics
  - ◇ Weighted mean: Tabular data
  - ◇ Introduction to summation notation
  - ◇ Approximating the mean of a data set given a frequency distribution
  - ◇ Median of a data set
  - ◇ Mode of a data set
  - ◇ Mean, median, and mode: Computations
  - ◇ How changing a value affects the mean and median
  - ◇ Finding outliers in a data set
  - ◇ Choosing the best measure to describe data
  - ◇ Mean, median, and mode: Comparisons
- ◆ Measures of Variation (5 topics)
  - ◇ Range of a data set
  - ◇ Comparing measures of center and variation
  - ◇ Identifying the center, spread, and shape of a data set
  - ◇ Using back–to–back stem–and–leaf displays to compare data sets
  - ◇ Population standard deviation
- ◆ Measures of Position (3 topics)
  - ◇ Percentage of data below a specified value
  - ◇ Percentiles
  - ◇ Interpreting percentile ranks
- ◆ The Normal Distribution (3 topics)
  - ◇ Using the graph of a distribution to find probabilities: Basic
  - ◇ Using the empirical rule to identify values and percentages of a normal distribution
  - ◇ Word problem involving calculations from a normal distribution
- Lines (38 topics)
  - ◆ Graphing and Intercepts (11 topics)
    - ◇ Table for a linear equation
    - ◇ Identifying solutions to a linear equation in two variables
    - ◇ Finding a solution to a linear equation in two variables
    - ◇ Graphing a linear equation of the form  $y = mx$
    - ◇ Graphing a line given its equation in slope–intercept form: Integer slope
    - ◇ Graphing a line given its equation in slope–intercept form: Fractional slope
    - ◇ Graphing a line given its equation in standard form
    - ◇ Graphing a vertical or horizontal line
    - ◇ Finding  $x$ – and  $y$ –intercepts of a line given the equation: Basic
    - ◇ Graphing a line given its  $x$ – and  $y$ –intercepts



- ◇ Graphing a line by first finding its x- and y-intercepts
- ◆ Proportional Relationships (2 topics)
  - ◇ Writing an equation to represent a proportional relationship
  - ◇ Finding outputs and rate of increase given the graph of a line that models a real-world situation
- ◆ Slope (5 topics)
  - ◇ Finding slope given the graph of a line in quadrant 1 that models a real-world situation
  - ◇ Classifying slopes given graphs of lines
  - ◇ Finding slope given the graph of a line on a grid
  - ◇ Finding slope given two points on the line
  - ◇ Graphing a line given its slope and y-intercept
- ◆ Equations of Lines (8 topics)
  - ◇ Writing a function rule given a table of ordered pairs: One-step rules
  - ◇ Finding the slope and y-intercept of a line given its equation in the form  $y = mx + b$
  - ◇ Finding the slope and y-intercept of a line given its equation in the form  $Ax + By = C$
  - ◇ Writing an equation of a line given its slope and y-intercept
  - ◇ Writing an equation in slope-intercept form given the slope and a point
  - ◇ Writing an equation of a line given the y-intercept and another point
  - ◇ Writing the equation of the line through two given points
  - ◇ Identifying parallel and perpendicular lines
- ◆ Applications (9 topics)
  - ◇ Finding outputs of a one-step function that models a real-world situation: Two variable equation
  - ◇ Finding outputs of a two-step function with decimals that models a real-world situation: Two variable equation
  - ◇ Finding inputs and outputs of a two-step function that models a real-world situation: Two variable equation
  - ◇ Writing and evaluating a function that models a real-world situation: Basic
  - ◇ Writing and evaluating a function that models a real-world situation: Advanced
  - ◇ Writing an equation and drawing its graph to model a real-world situation: Basic
  - ◇ Writing an equation and drawing its graph to model a real-world situation: Advanced
  - ◇ Finding the intercepts and rate of change given a graph of a linear function
  - ◇ Interpreting the parameters of a linear function that models a real-world situation
- ◆ Scatterplots and Lines of Best Fit (3 topics)
  - ◇ Constructing a scatter plot
  - ◇ Sketching the line of best fit
  - ◇ Scatter plots and correlation
- Functions (5 topics)
  - ◆ Function Evaluation and Applications (5 topics)
    - ◇ Table for a linear function
    - ◇ Evaluating functions: Linear and quadratic or cubic
    - ◇ Finding outputs of a one-step function that models a real-world situation: Function notation
    - ◇ Finding outputs of a two-step function with decimals that models a real-world situation: Function notation
    - ◇ Finding inputs and outputs of a two-step function that models a real-world situation: Function notation
- Systems (12 topics)
  - ◆ Systems of Linear Equations (7 topics)
    - ◇ Identifying solutions to a system of linear equations
    - ◇ Identifying the solution of systems of linear equations from graphs
    - ◇ Graphically solving a system of linear equations both of the form  $y=mx+b$
    - ◇ Solving a system of linear equations of the form  $y = mx + b$
    - ◇ Solving a system of linear equations using substitution
    - ◇ Solving a system of linear equations using elimination with addition
    - ◇ Solving a system of linear equations using elimination with multiplication and addition

- ◆ Applications (5 topics)
  - ◇ Interpreting the graphs of two functions
  - ◇ Solving a word problem involving a sum and another basic relationship using a system of linear equations
  - ◇ Solving a word problem using a system of linear equations of the form  $Ax + By = C$
  - ◇ Writing and solving a system of two linear equations given a table of values
  - ◇ Solving a word problem using a system of linear equations of the form  $y = mx + b$
- Exponents and Polynomials (22 topics)
  - ◆ Product, Power, and Quotient Rules (6 topics)
    - ◇ Understanding the product rule of exponents
    - ◇ Introduction to the product rule of exponents
    - ◇ Product rule with positive exponents: Univariate
    - ◇ Introduction to the power of a power rule of exponents
    - ◇ Introduction to the power of a product rule of exponents
    - ◇ Introduction to the quotient rule of exponents
  - ◆ Negative Exponents (3 topics)
    - ◇ Evaluating an expression with a negative exponent: Whole number base
    - ◇ Evaluating an expression with a negative exponent: Positive fraction base
    - ◇ Rewriting an algebraic expression without a negative exponent
  - ◆ Scientific Notation (5 topics)
    - ◇ Introduction to scientific notation with positive exponents
    - ◇ Scientific notation with positive exponent
    - ◇ Introduction to scientific notation with negative exponents
    - ◇ Scientific notation with negative exponent
    - ◇ Converting between scientific notation and standard form in a real-world situation
  - ◆ Operations with Polynomials (4 topics)
    - ◇ Simplifying a sum or difference of two univariate polynomials
    - ◇ Multiplying binomials with leading coefficients of 1
    - ◇ Multiplying binomials with leading coefficients greater than 1
    - ◇ Squaring a binomial: Univariate
  - ◆ Factoring Using the GCF (1 topics)
    - ◇ Factoring a linear binomial
  - ◆ Factoring Quadratic Trinomials (2 topics)
    - ◇ Factoring a quadratic with leading coefficient 1
    - ◇ Factoring a quadratic with leading coefficient greater than 1: Problem type 1
  - ◆ Factoring Special Products (1 topics)
    - ◇ Factoring a perfect square trinomial with leading coefficient 1
- Nonlinear Functions (14 topics)
  - ◆ Radicals (4 topics)
    - ◇ Square root of a rational perfect square
    - ◇ Square roots of perfect squares with signs
    - ◇ Introduction to square root addition or subtraction
    - ◇ Introduction to square root multiplication
  - ◆ The Pythagorean Theorem and Distance Formula (3 topics)
    - ◇ Introduction to the Pythagorean Theorem
    - ◇ Pythagorean Theorem
    - ◇ Word problem involving the Pythagorean Theorem
  - ◆ Quadratic Equations (4 topics)
    - ◇ Solving an equation written in factored form
    - ◇ Finding the roots of a quadratic equation with leading coefficient 1
    - ◇ Applying the quadratic formula: Exact answers
    - ◇ Solving a word problem using a quadratic equation with irrational roots
  - ◆ Exponential Functions (3 topics)

- ◇ Table for an exponential function
- ◇ Evaluating an exponential function that models a real–world situation
- ◇ Finding a final amount in a word problem on exponential growth or decay
- Geometry (13 topics)
  - ◆ Lines, Angles, and Triangles (9 topics)
    - ◇ Acute, obtuse, and right angles
    - ◇ Finding supplementary and complementary angles
    - ◇ Finding the complement or supplement of an angle given a figure
    - ◇ Identifying supplementary and vertical angles
    - ◇ Finding angle measures given two intersecting lines
    - ◇ Identifying corresponding and alternate angles
    - ◇ Acute, obtuse, and right triangles
    - ◇ Classifying scalene, isosceles, and equilateral triangles by side lengths
    - ◇ Finding an angle measure of a triangle given two angles
  - ◆ Polygons and Quadrilaterals (1 topics)
    - ◇ Identifying parallelograms, rectangles, and squares
  - ◆ Areas of Polygons (1 topics)
    - ◇ Area of a parallelogram
  - ◆ Volume (2 topics)
    - ◇ Volume of a triangular prism
    - ◇ Volume of a cylinder
- Other Topics Available(\*) (801 additional topics)
  - ◆ Arithmetic Readiness (116 topics)
    - ◇ Numeral translation: Problem type 1
    - ◇ Numeral translation: Problem type 2
    - ◇ Expanded form with zeros
    - ◇ Ordering large numbers
    - ◇ Word problem with division of whole numbers and rounding: Problem type 1
    - ◇ Examining a savings plan for college
    - ◇ Calculations involving paying for college
    - ◇ Rounding to thousands, ten thousands, or hundred thousands
    - ◇ Estimating a sum of whole numbers: Problem type 2
    - ◇ Estimating a difference of whole numbers: Problem type 2
    - ◇ Estimating a product or quotient of whole numbers
    - ◇ Comparing numerical expressions with parentheses
    - ◇ Divisibility rules for 3 and 9
    - ◇ Greatest common factor of 3 numbers
    - ◇ Least common multiple of 3 numbers
    - ◇ Word problem involving the least common multiple of 2 numbers
    - ◇ Word problem with common multiples
    - ◇ Constructing a two–way frequency table: Advanced
    - ◇ Describing an increasing or decreasing pattern from a table of values
    - ◇ Finding the next terms of an arithmetic sequence with whole numbers
    - ◇ Finding the next terms of a geometric sequence with whole numbers
    - ◇ Finding patterns in shapes
    - ◇ Plotting opposite integers on a number line
    - ◇ Using a number line to compare integers
    - ◇ Interpreting a table of signed numbers that relate to a real–world situation: Problem type 1
    - ◇ Interpreting a table of signed numbers that relate to a real–world situation: Problem type 2
    - ◇ Comparing signed numbers relating to a real–world situation
    - ◇ Finding opposites of integers

- ◇ Finding all numbers with a given absolute value
- ◇ Identifying a sum as a point located a given distance from another point
- ◇ Identifying relative change when combining two quantities
- ◇ Addition and subtraction with 4 or 5 integers
- ◇ Word problem with addition or subtraction of integers
- ◇ Operations with absolute value: Problem type 1
- ◇ Operations with absolute value: Problem type 2
- ◇ Computing and understanding distances between integers on a number line
- ◇ Word problem with multiplication or division of integers
- ◇ Distinguishing between expressions and equations
- ◇ Perimeter of a rectangle on a grid
- ◇ Word problem on finding the perimeter of a rectangle
- ◇ Area of a rectangle on a grid
- ◇ Modeling and writing equivalent fractions
- ◇ Fractional position on a number line
- ◇ Ordering fractions with the same numerator
- ◇ Modeling multiplication of proper fractions
- ◇ Word problem involving multiplying a fraction and a whole number
- ◇ Word problem involving fractions and multiplication
- ◇ Multi-step word problem involving fractions and multiplication
- ◇ Determining if a quantity is increased or decreased when multiplied by a fraction
- ◇ The reciprocal of a number
- ◇ Division involving a whole number and a fraction
- ◇ Fraction division
- ◇ Modeling division of a whole number by a fraction
- ◇ Word problem involving fractions and division
- ◇ Introduction to adding fractions with variables and common denominators
- ◇ Decomposing a fraction into a sum of fractions with the same denominator
- ◇ Word problem involving addition or subtraction of fractions with the same denominator
- ◇ Addition or subtraction of unit fractions
- ◇ Addition and subtraction of 3 fractions with different denominators
- ◇ Word problem involving addition or subtraction of fractions with different denominators
- ◇ Fractional part of a circle
- ◇ Complex fraction without variables: Problem type 1
- ◇ Writing a mixed number and an improper fraction for a shaded region
- ◇ Writing an improper fraction as a mixed number
- ◇ Writing a mixed number as an improper fraction
- ◇ Addition or subtraction of mixed numbers with the same denominator
- ◇ Mixed number addition with the same denominator and renaming
- ◇ Mixed number subtraction with the same denominator and renaming
- ◇ Addition or subtraction of mixed numbers with different denominators without renaming
- ◇ Addition of mixed numbers with different denominators and renaming
- ◇ Subtraction of mixed numbers with different denominators and renaming
- ◇ Addition and subtraction of 3 mixed numbers with different denominators
- ◇ Word problem involving addition or subtraction of mixed numbers with different denominators
- ◇ Mixed number multiplication
- ◇ Multiplication of a mixed number and a whole number
- ◇ Division with a mixed number and a whole number
- ◇ Mixed number division
- ◇ Word problem involving multiplication or division with mixed numbers
- ◇ Writing a decimal and a fraction for a shaded region
- ◇ Decimal place value: Hundreds to ten thousandths
- ◇ Writing a decimal number less than 1 given its name

- ◇ Writing a decimal number greater than 1 given its name
- ◇ Writing a decimal number given its name: Advanced
- ◇ Reading decimal position on a number line: Tenths
- ◇ Reading decimal position on a number line: Hundredths
- ◇ Understanding decimal position on a number line using zoom: Hundredths
- ◇ Understanding decimal position on a number line using zoom: Thousandths
- ◇ Decimal addition with 3 numbers
- ◇ Decimal addition and subtraction with 3 or more numbers
- ◇ Estimating a decimal sum or difference
- ◇ Average of two numbers
- ◇ Word problem with subtraction of a whole number and a decimal: Regrouping with zeros
- ◇ Decimal multiplication: Problem type 2
- ◇ Multiplying decimals less than 1: Problem type 2
- ◇ Estimating a product of decimals
- ◇ Word problem with multiplication of two decimals
- ◇ Whole number division with decimal answers
- ◇ Division of a decimal by a 2–digit decimal
- ◇ Division of a decimal by a power of 0.1
- ◇ Decimal division with rounding
- ◇ Word problem with division of two decimals
- ◇ Converting a decimal to a proper fraction without simplifying: Advanced
- ◇ Converting a decimal to a proper fraction in simplest form: Advanced
- ◇ Converting a decimal to a mixed number and an improper fraction without simplifying
- ◇ Converting a decimal to a mixed number and an improper fraction in simplest form: Basic
- ◇ Converting a decimal to a mixed number and an improper fraction in simplest form: Advanced
- ◇ Converting a fraction with a denominator of 100 or 1000 to a decimal
- ◇ Converting a mixed number with a denominator of 2, 4, or 5 to a decimal
- ◇ Converting a fraction to a terminating decimal: Advanced
- ◇ Converting a fraction to a repeating decimal: Advanced
- ◇ Converting a mixed number to a terminating decimal: Basic
- ◇ Converting a mixed number to a terminating decimal: Advanced
- ◇ Converting a fraction or mixed number to a rounded decimal
- ◇ Ordering fractions and decimals
- ◇ Addition or subtraction with a decimal and a mixed number
- ◇ Multiplication with a decimal and a fraction
- ◆ Ratios, Proportions, and Percents (43 topics)
  - ◇ Writing ratios using different notations
  - ◇ Writing ratios for real–world situations
  - ◇ Identifying statements that describe a ratio
  - ◇ Simplifying a ratio of decimals
  - ◇ Word problem on unit rates associated with ratios of fractions
  - ◇ Word problem on unit rates associated with ratios of whole numbers: Decimal answers
  - ◇ Using a table of equivalent ratios to find a missing quantity in a ratio
  - ◇ Word problem on proportions: Problem type 2
  - ◇ Word problem with powers of ten
  - ◇ Finding a scale factor: Same units
  - ◇ Using a scale drawing to find actual area
  - ◇ Reproducing a scale drawing at a different scale
  - ◇ Identifying similar or congruent shapes on a grid
  - ◇ Similar polygons
  - ◇ Similar right triangles
  - ◇ Indirect measurement
  - ◇ Investigating the effects on the area for non–proportional and proportional figures

- ◇ Converting a mixed number percentage to a decimal
- ◇ Converting between percentages and decimals in a real–world situation
- ◇ Converting a percentage to a fraction in simplest form
- ◇ Converting a decimal percentage to a fraction
- ◇ Finding benchmark fractions and percentages for a figure
- ◇ Converting a fraction to a percentage in a real–world situation
- ◇ Finding a percentage of a whole number without a calculator: Advanced
- ◇ Applying the percent equation: Problem type 2
- ◇ Finding the total amount given the percentage of a partial amount
- ◇ Comparing discounts
- ◇ Finding the original amount given the result of a percentage increase or decrease
- ◇ Finding the original price given the sale price and percent discount
- ◇ Gross pay with variable commission scale
- ◇ Calculating income tax using a tax bracket table
- ◇ Comparing costs of checking accounts
- ◇ Balancing a check register
- ◇ Distinguishing between fixed and variable expenses
- ◇ Calculations involving purchases with debit and credit cards
- ◇ Reading a credit report
- ◇ Finding the principal, rate, or time of a simple interest loan or investment
- ◇ Finding the principal, rate, or time for a simple interest loan whose term is given in months or days
- ◇ Finding the effective annual interest rate of a loan or investment
- ◇ Calculating and comparing monthly payments using the ALEKS loan calculator
- ◇ Calculating monthly payment, total payment, and interest using the ALEKS loan calculator
- ◇ Calculating and comparing total loan payments using the ALEKS loan calculator
- ◇ Using the ALEKS periodic deposit calculator to compute savings which include periodic deposits
- ◆ Measurement (34 topics)
  - ◇ Measuring length to the nearest inch
  - ◇ Measuring length to the nearest quarter or half inch
  - ◇ Adding measurements in feet and inches
  - ◇ Finding the absolute error and percent error of a measurement
  - ◇ Sides of polygons having the same perimeter
  - ◇ Perimeter of a polygon involving mixed numbers and fractions
  - ◇ Area involving rectangles and triangles
  - ◇ Circumference and area of a circle
  - ◇ Word problem involving the volume of a rectangular prism
  - ◇ Computations involving density, mass, and volume
  - ◇ Word problem on density involving the volume of a rectangular solid
  - ◇ Surface area of a rectangular prism made of unit cubes
  - ◇ Word problem involving the surface area of a rectangular prism
  - ◇ Word problem on area involving conversions of U.S. Customary units: Problem type 2
  - ◇ Word problem on volume involving conversions of U.S. Customary units
  - ◇ Word problem involving U.S. Customary conversions, surface area, and cost
  - ◇ Unit conversions involving acres and hectares
  - ◇ U.S. Customary unit conversion with whole number values: Two–step conversion
  - ◇ Converting between U.S. Customary units of volume: Problem type 1
  - ◇ U.S. Customary unit conversion with mixed number values: One–step conversion
  - ◇ U.S. Customary unit conversion with mixed number values: Two–step conversion
  - ◇ Measuring length to the nearest centimeter
  - ◇ Measuring length to the nearest millimeter
  - ◇ Metric distance conversions between the base unit m and dm, dam, hm
  - ◇ Metric conversion with decimal values: Two–step problem
  - ◇ Metric area unit conversion with decimal values

- ◇ Converting between metric units of volume and capacity
- ◇ Word problem on area involving conversions between systems
- ◇ Word problem involving a conversion between U.S. Customary units of weight and metric units of mass
- ◇ Converting between compound units: Advanced
- ◇ Word problem involving conversion between compound units using dimensional analysis
- ◇ Adding time
- ◇ Elapsed time
- ◇ Reading the temperature from a thermometer
- ◆ Real Numbers (49 topics)
  - ◇ Plotting rational numbers on a number line
  - ◇ Ordering real numbers
  - ◇ Using numerical methods to approximate a square root to the nearest tenth
  - ◇ Using numerical methods to approximate a square root to the nearest hundredth
  - ◇ Approximating the location of irrational numbers on a number line
  - ◇ Constructing a Venn diagram to classify rational numbers
  - ◇ Constructing a Venn diagram to describe relationships between sets of rational numbers
  - ◇ Constructing a Venn diagram to describe relationships between sets of real numbers
  - ◇ Identifying equivalent signed fractions
  - ◇ Signed fraction subtraction involving double negation
  - ◇ Signed fraction addition or subtraction: Advanced
  - ◇ Addition and subtraction of 3 fractions involving signs
  - ◇ Signed fraction multiplication: Advanced
  - ◇ Signed fraction division
  - ◇ Signed decimal addition and subtraction with 3 numbers
  - ◇ Signed decimal multiplication
  - ◇ Signed decimal division
  - ◇ Computing distances between decimals on a number line
  - ◇ Finding a point on a number line given the length of a segment and another point
  - ◇ Order of operations with whole numbers and grouping symbols
  - ◇ Order of operations with whole numbers and exponents: Advanced
  - ◇ Order of operations with fractions: Problem type 1
  - ◇ Order of operations with fractions: Problem type 2
  - ◇ Order of operations with fractions: Problem type 3
  - ◇ Squaring decimal bases: Products greater than 0.1
  - ◇ Exponents and decimals: Products less than 0.1
  - ◇ Order of operations with decimals: Problem type 1
  - ◇ Order of operations with decimals: Problem type 2
  - ◇ Order of operations with decimals: Problem type 3
  - ◇ Exponents and integers: Problem type 2
  - ◇ Exponents and signed fractions
  - ◇ Order of operations with integers and exponents
  - ◇ Evaluating a linear expression: Signed fraction multiplication with addition or subtraction
  - ◇ Evaluating a linear expression: Signed decimal addition and subtraction
  - ◇ Evaluating a linear expression: Signed decimal multiplication with addition or subtraction
  - ◇ Evaluating an algebraic expression: Whole number operations and exponents
  - ◇ Identifying like terms
  - ◇ Combining like terms: Fractional coefficients
  - ◇ Combining like terms: Decimal coefficients
  - ◇ Introduction to the distributive property
  - ◇ Understanding the distributive property
  - ◇ Introduction to factoring with numbers
  - ◇ Distributive property: Fractional coefficients

- ◇ Properties of addition
- ◇ Properties of real numbers
- ◇ Using algebra tiles to determine if two expressions are equivalent
- ◇ Identifying parts in an algebraic expression
- ◇ Using distribution with double negation and combining like terms to simplify: Multivariate
- ◇ Adding rational expressions with different denominators and a single occurrence of a variable
- ◆ Linear Equations and Inequalities (77 topics)
  - ◇ Additive property of equality with fractions and mixed numbers
  - ◇ Plotting the solution for a one–step equation on a number line
  - ◇ Additive property of equality with signed fractions
  - ◇ Multiplicative property of equality with whole numbers: Fractional answers
  - ◇ Additive property of equality with a negative coefficient
  - ◇ Solving an equation to find the value of an expression
  - ◇ Solving a two–step equation with signed decimals
  - ◇ Solving a linear equation with several occurrences of the variable: Variables on both sides and two distributions
  - ◇ Clearing fractions in an equation
  - ◇ Solving a linear equation with several occurrences of the variable: Fractional forms with monomial numerators
  - ◇ Solving a two–step equation with signed fractions
  - ◇ Solving a linear equation with several occurrences of the variable: Variables on both sides and fractional coefficients
  - ◇ Solving a linear equation with several occurrences of the variable: Fractional forms with binomial numerators
  - ◇ Solving equations with zero, one, or infinitely many solutions
  - ◇ Solving a proportion of the form  $(x+a)/b = c/d$
  - ◇ Introduction to solving an absolute value equation
  - ◇ Solving an absolute value equation: Problem type 1
  - ◇ Solving for a variable in terms of other variables using addition or subtraction: Advanced
  - ◇ Solving for a variable inside parentheses in terms of other variables
  - ◇ Solving for a variable in terms of other variables in a linear equation with fractions
  - ◇ Translating a sentence into a multi–step equation
  - ◇ Comparing arithmetic and algebraic solutions to a word problem
  - ◇ Writing an equation of the form  $A(x + B) = C$  to solve a word problem
  - ◇ Writing a multi–step equation for a real–world situation
  - ◇ Writing and solving a real–world problem given an equation with the variable on both sides
  - ◇ Solving a decimal word problem using a linear equation with the variable on both sides
  - ◇ Solving a fraction word problem using a linear equation with the variable on both sides
  - ◇ Solving a word problem with three unknowns using a linear equation
  - ◇ Solving a word problem involving consecutive integers
  - ◇ Solving a value mixture problem using a linear equation
  - ◇ Solving a word problem involving rates and time conversion
  - ◇ Solving a distance, rate, time problem using a linear equation
  - ◇ Computing a percent mixture
  - ◇ Solving a percent mixture problem using a linear equation
  - ◇ Writing algebraic expressions for the perimeter of a figure
  - ◇ Finding a side length given the perimeter and side lengths with variables
  - ◇ Finding side lengths of rectangles given one dimension and an area or a perimeter
  - ◇ Finding side lengths of squares given an area and a perimeter
  - ◇ Finding the dimensions of a rectangle given its perimeter and a relationship between sides
  - ◇ Finding the perimeter or area of a rectangle given one of these values
  - ◇ Converting a repeating decimal to a fraction
  - ◇ Writing an inequality given a graph on the number line



- ◇ Translating a sentence into a compound inequality
- ◇ Graphing a compound inequality on the number line
- ◇ Writing a compound inequality given a graph on the number line
- ◇ Set-builder and interval notation
- ◇ Additive property of inequality with signed fractions
- ◇ Additive property of inequality with signed decimals
- ◇ Multiplicative property of inequality with signed fractions
- ◇ Identifying solutions to a two-step linear inequality in one variable
- ◇ Solving a two-step linear inequality with a fractional coefficient
- ◇ Solving a linear inequality with multiple occurrences of the variable: Problem type 1
- ◇ Solving a linear inequality with multiple occurrences of the variable: Problem type 2
- ◇ Solving a linear inequality with multiple occurrences of the variable: Problem type 3
- ◇ Solving inequalities with no solution or all real numbers as solutions
- ◇ Solving a compound linear inequality: Graph solution, basic
- ◇ Solving a compound linear inequality: Interval notation
- ◇ Solving an absolute value inequality: Problem type 1
- ◇ Translating a sentence into a multi-step inequality
- ◇ Solving a word problem using a two-step linear inequality and describing the solution
- ◇ Solving a decimal word problem using a two-step linear inequality
- ◇ Solving a decimal word problem using a linear inequality with the variable on both sides
- ◇ Writing sets of numbers using set-builder and roster forms
- ◇ Writing sets for a real-world situation using descriptive and roster forms
- ◇ Writing sets of integers using set-builder and roster forms
- ◇ Unions, intersections, and complements involving 2 sets
- ◇ Unions and intersections involving the empty set or universal set
- ◇ Constructing a Venn diagram with 3 sets
- ◇ Constructing a Venn diagram with 3 sets to solve a word problem
- ◇ Introduction to shading a Venn diagram with 2 sets
- ◇ Shading a Venn diagram with 2 sets: Unions, intersections, and complements
- ◇ Venn diagram with 2 sets: Unions, intersections, and complements
- ◇ Venn diagram with 2 sets: Unions, intersections, and complements for a real-world situation
- ◇ Naming the quadrant or axis of a point given its graph
- ◇ Naming the quadrant or axis of a point given its coordinates
- ◇ Naming the quadrant or axis of a point given the signs of its coordinates
- ◇ Finding distances between points that share a common coordinate given their coordinates
- ◆ Probability and Statistics (74 topics)
  - ◇ Counting principle with repetition allowed
  - ◇ Counting principle involving a specified arrangement
  - ◇ Counting arrangements of objects that are not all distinct
  - ◇ Permutations and combinations: Problem type 1
  - ◇ Permutations and combinations: Problem type 2
  - ◇ Permutations and combinations: Problem type 3
  - ◇ Counting using combinations and addition
  - ◇ Counting using combinations and a complement
  - ◇ Counting five-card hands from a standard deck
  - ◇ Probability of selecting one card from a standard deck
  - ◇ Experimental and theoretical probability for compound events
  - ◇ Probabilities of a permutation and a combination
  - ◇ Area as probability
  - ◇ Converting between probability and odds
  - ◇ Finding odds in favor and against drawing a card from a standard deck
  - ◇ Making predictions using experimental data for compound events
  - ◇ Computing expected value in a business application

- ◇ Making reasonable inferences based on proportion statistics
- ◇ Identifying independent events given descriptions of experiments
- ◇ Probabilities involving two rolls of a die: Decimal answers
- ◇ Probability of independent events involving a standard deck of cards
- ◇ Probability of dependent events involving a standard deck of cards
- ◇ Probability of dependent events involving a survey
- ◇ Probabilities of draws with replacement
- ◇ Probabilities of draws without replacement
- ◇ Using a Venn diagram to understand the multiplication rule for probability
- ◇ Outcomes and event probability: Conditional probability
- ◇ Identifying independent events given values of probabilities
- ◇ Computing conditional probability to make an inference using a two–way frequency table
- ◇ Outcomes and event probability: Addition rule
- ◇ Using a Venn diagram to understand the addition rule for probability
- ◇ Word problem involving the probability of a union
- ◇ Probability of intersection or union: Word problems
- ◇ Computing probability involving the addition rule using a two–way frequency table
- ◇ Computing conditional probability using a large two–way frequency table
- ◇ Probability of the union of two events
- ◇ Choosing an appropriate method for gathering data: Problem type 1
- ◇ Interpreting a tally table
- ◇ Computations from pie charts
- ◇ Constructing a percent bar graph
- ◇ Calculating relative frequencies in a contingency table
- ◇ Making an inference using a two–way frequency table
- ◇ Constructing a line plot
- ◇ Constructing a frequency distribution and a frequency polygon
- ◇ Finding if a question can be answered by the data
- ◇ Using a model to find the mean
- ◇ Understanding the mean graphically: Two bars
- ◇ Understanding the mean graphically: Four or more bars
- ◇ Finding the mean of a symmetric distribution
- ◇ Summation of indexed data
- ◇ Approximating the mean of a data set given a histogram
- ◇ Comparing means without calculation
- ◇ Finding the mode and range from a line plot
- ◇ Comparing sample means
- ◇ Comparing standard deviations without calculation
- ◇ Sample standard deviation
- ◇ Computing mean absolute deviation from a list of numerical values
- ◇ Five–number summary and interquartile range
- ◇ Box–and–whisker plots
- ◇ Using box–and–whisker plots to compare data sets
- ◇ Using the graph of a distribution to find probabilities: Advanced
- ◇ Shading a region and finding its standard normal probability
- ◇ Normal versus standard normal density curves
- ◇ Computing standard normal probabilities
- ◇ Finding a probability given a normal distribution: Basic
- ◇ Finding a probability given a normal distribution: Advanced
- ◇ Identifying outcomes in a random number table used to simulate a simple event
- ◇ Using a random number table to simulate a simple event
- ◇ Generating a random number table with technology to simulate a simple event
- ◇ Identifying outcomes in a random number table used to simulate a compound event

- ◇ Using a random number table to simulate a compound event
- ◇ Generating a random number table with technology to simulate a compound event
- ◇ Generating random samples from a population with known characteristics
- ◇ Using a random number table to make a fair decision
- ◆ Lines (63 topics)
  - ◇ Finding x- and y-intercepts of a line given the equation: Advanced
  - ◇ Making a table and plotting points given a unit rate
  - ◇ Identifying proportional relationships in equations
  - ◇ Identifying proportional relationships in tables by calculating unit rates: Whole numbers
  - ◇ Identifying proportional relationships in tables by calculating unit rates: Fractions
  - ◇ Identifying proportional relationships in graphs: Basic
  - ◇ Identifying proportional relationships in graphs: Advanced
  - ◇ Comparing proportional relationships given in different forms
  - ◇ Finding the slope of horizontal and vertical lines
  - ◇ Finding the coordinate that yields a given slope
  - ◇ Using right triangles to find the slope of a line
  - ◇ Graphing a line through a given point with a given slope
  - ◇ Identifying linear equations: Basic
  - ◇ Identifying linear equations: Advanced
  - ◇ Identifying linear functions given ordered pairs
  - ◇ Rewriting a linear equation in the form  $Ax + By = C$
  - ◇ Graphing a line by first finding its slope and y-intercept
  - ◇ Writing an equation and graphing a line given its slope and y-intercept
  - ◇ Finding the slope, y-intercept, and equation for a linear function given a table of values
  - ◇ Graphing a line given its equation in point-slope form
  - ◇ Writing an equation in point-slope form given the slope and a point
  - ◇ Writing the equations of vertical and horizontal lines through a given point
  - ◇ Finding slopes of lines parallel and perpendicular to a line given in slope-intercept form
  - ◇ Finding slopes of lines parallel and perpendicular to a line given in the form  $Ax + By = C$
  - ◇ Identifying parallel and perpendicular lines from equations
  - ◇ Writing equations of lines parallel and perpendicular to a given line through a point
  - ◇ Identifying parallel and perpendicular lines from coordinates
  - ◇ Graphing ordered pairs and writing an equation from a table of values in context
  - ◇ Writing a function rule given a table of ordered pairs: Two-step rules
  - ◇ Finding the initial amount and rate of change given a table for a linear function
  - ◇ Combining functions to write a new function that models a real-world situation
  - ◇ Comparing properties of linear functions given in different forms
  - ◇ Application problem with a linear function: Finding a coordinate given the slope and a point
  - ◇ Application problem with a linear function: Finding a coordinate given two points
  - ◇ Identifying independent and dependent variables from equations or real-world situations
  - ◇ Solving a linear equation by graphing
  - ◇ Translating the graph of an absolute value function: One step
  - ◇ Translating the graph of an absolute value function: Two steps
  - ◇ Graphing an absolute value equation of the form  $y = A|x|$
  - ◇ Graphing an absolute value equation in the plane: Basic
  - ◇ Graphing an absolute value equation in the plane: Advanced
  - ◇ How the leading coefficient affects the graph of an absolute value function
  - ◇ Predictions from the line of best fit
  - ◇ Approximating the equation of a line of best fit and making predictions
  - ◇ Classifying linear and nonlinear relationships from scatter plots
  - ◇ Computing residuals
  - ◇ Interpreting residual plots
  - ◇ Linear relationship and the correlation coefficient

- ◇ Identifying correlation and causation
- ◇ Introduction to solving a rational equation
- ◇ Solving a rational equation that simplifies to linear: Denominator  $x$
- ◇ Identifying direct variation equations
- ◇ Identifying direct variation from ordered pairs and writing equations
- ◇ Writing a direct variation equation
- ◇ Word problem on direct variation
- ◇ Interpreting direct variation from a graph
- ◇ Writing an inverse variation equation
- ◇ Identifying direct and inverse variation equations
- ◇ Identifying direct and inverse variation from ordered pairs and writing equations
- ◇ Word problem on inverse variation
- ◇ Word problem on inverse proportions
- ◇ Writing an equation that models variation
- ◇ Word problem on combined variation
- ◆ Functions (34 topics)
  - ◇ Identifying functions from relations
  - ◇ Vertical line test
  - ◇ Domain and range from ordered pairs
  - ◇ Variable expressions as inputs of functions: Problem type 1
  - ◇ Domain and range of a linear function that models a real-world situation
  - ◇ Finding an output of a function from its graph
  - ◇ Finding inputs and outputs of a function from its graph
  - ◇ Domain and range from the graph of a discrete relation
  - ◇ Finding domain and range from a linear graph in context
  - ◇ Finding intercepts of a nonlinear function given its graph
  - ◇ Finding where a function is increasing, decreasing, or constant given the graph
  - ◇ Finding where a function is increasing, decreasing, or constant given the graph: Interval notation
  - ◇ Finding local maxima and minima of a function given the graph
  - ◇ Choosing a graph to fit a narrative: Basic
  - ◇ Choosing a graph to fit a narrative: Advanced
  - ◇ Graphing an integer function and finding its range for a given domain
  - ◇ Domain and range from the graph of a continuous function
  - ◇ Graphing a function of the form  $f(x) = ax + b$ : Integer slope
  - ◇ Graphing a function of the form  $f(x) = ax + b$ : Fractional slope
  - ◇ Graphing a function of the form  $f(x) = ax^2$
  - ◇ Graphing a function of the form  $f(x) = ax^2 + c$
  - ◇ Finding the first terms of an arithmetic sequence using an explicit rule
  - ◇ Finding the next terms of an arithmetic sequence with integers
  - ◇ Identifying arithmetic sequences and finding the common difference
  - ◇ Finding a specified term of an arithmetic sequence given the first terms
  - ◇ Finding a specified term of an arithmetic sequence given the common difference and first term
  - ◇ Writing an explicit rule for an arithmetic sequence
  - ◇ Finding the first terms of a geometric sequence using an explicit rule
  - ◇ Finding the next terms of a geometric sequence with signed numbers
  - ◇ Identifying arithmetic and geometric sequences
  - ◇ Identifying geometric sequences and finding the common ratio
  - ◇ Finding a specified term of a geometric sequence given the first terms
  - ◇ Finding a specified term of a geometric sequence given the common ratio and first term
  - ◇ Arithmetic and geometric sequences: Identifying and writing an explicit rule
- ◆ Systems (24 topics)
  - ◇ Classifying systems of linear equations from graphs
  - ◇ Graphically solving a system of linear equations

- ◇ Writing a system of linear equations given its graph
- ◇ Solving a system of linear equations with fractional coefficients
- ◇ Solving a system of linear equations with decimal coefficients
- ◇ Solving systems of linear equations with 0, 1, or infinitely many solutions
- ◇ Identifying the operations used to create equivalent systems of equations
- ◇ Introduction to solving a 3x3 system of linear equations
- ◇ Solving a 3x3 system of linear equations: Problem type 1
- ◇ Solving a value mixture problem using a system of linear equations
- ◇ Solving a percent mixture problem using a system of linear equations
- ◇ Solving a distance, rate, time problem using a system of linear equations
- ◇ Solving a tax rate or interest rate problem using a system of linear equations
- ◇ Solving a word problem using a 3x3 system of linear equations: Problem type 1
- ◇ Identifying solutions to a linear inequality in two variables
- ◇ Graphing a linear inequality in the plane: Vertical or horizontal line
- ◇ Graphing a linear inequality in the plane: Slope–intercept form
- ◇ Graphing a linear inequality in the plane: Standard form
- ◇ Graphing a system of two linear inequalities: Basic
- ◇ Graphing a system of two linear inequalities: Advanced
- ◇ Graphing a system of three linear inequalities
- ◇ Writing a multi–step inequality for a real–world situation
- ◇ Writing a linear inequality in two variables given a table of values
- ◇ Solving a word problem using a system of linear inequalities: Problem type 1
- ◆ Exponents and Polynomials (89 topics)
  - ◇ Introduction to the product rule with positive exponents: Whole number base
  - ◇ Product rule with positive exponents: Multivariate
  - ◇ Ordering numbers with positive exponents
  - ◇ Introduction to the power of a power rule with positive exponents: Whole number base
  - ◇ Understanding the power rules of exponents
  - ◇ Power rules with positive exponents: Multivariate products
  - ◇ Power rules with positive exponents: Multivariate quotients
  - ◇ Power and product rules with positive exponents
  - ◇ Simplifying a ratio of multivariate monomials: Basic
  - ◇ Introduction to the quotient rule with positive exponents: Whole number base
  - ◇ Simplifying a ratio of univariate monomials
  - ◇ Quotient of expressions involving exponents
  - ◇ Simplifying a ratio of multivariate monomials: Advanced
  - ◇ Power and quotient rules with positive exponents
  - ◇ Power of 10: Negative exponent
  - ◇ Evaluating an expression with a negative exponent: Negative integer base
  - ◇ Ordering numbers with negative exponents
  - ◇ Introduction to the product rule with negative exponents: Whole number base
  - ◇ Introduction to the product rule with negative exponents
  - ◇ Introduction to the quotient rule with negative exponents: Whole number base
  - ◇ Quotient rule with negative exponents: Problem type 1
  - ◇ Introduction to the power of a power rule with negative exponents: Whole number base
  - ◇ Product rule with negative exponents
  - ◇ Quotient rule with negative exponents: Problem type 2
  - ◇ Power of a power rule with negative exponents
  - ◇ Power rules with negative exponents
  - ◇ Power and quotient rules with negative exponents: Problem type 1
  - ◇ Power and quotient rules with negative exponents: Problem type 2
  - ◇ Power, product, and quotient rules with negative exponents
  - ◇ Estimating numbers using scientific notation

- ◇ Choosing metric units and converting to the base unit in scientific notation
- ◇ Expressing calculator notation as scientific notation
- ◇ Multiplying numbers written in scientific notation: Basic
- ◇ Multiplying numbers written in scientific notation: Advanced
- ◇ Multiplying numbers written in decimal form or scientific notation in a real–world situation
- ◇ Dividing numbers written in scientific notation: Basic
- ◇ Dividing numbers written in scientific notation: Advanced
- ◇ Finding the scale factor between numbers given in scientific notation in a real–world situation
- ◇ Adding or subtracting numbers written in scientific notation: Same exponents, basic
- ◇ Adding or subtracting numbers written in scientific notation: Same exponents, advanced
- ◇ Adding or subtracting numbers written in scientific notation: Different exponents
- ◇ Estimating the sum or difference of two numbers written in scientific notation
- ◇ Degree and leading coefficient of a univariate polynomial
- ◇ Degree of a multivariate polynomial
- ◇ Simplifying a sum or difference of three univariate polynomials
- ◇ Simplifying a sum or difference of multivariate polynomials
- ◇ Multiplying a univariate polynomial by a monomial with a positive coefficient
- ◇ Multiplying a univariate polynomial by a monomial with a negative coefficient
- ◇ Multiplying a multivariate polynomial by a monomial
- ◇ Multiplying binomials in two variables
- ◇ Multiplying conjugate binomials: Univariate
- ◇ Multiplying conjugate binomials: Multivariate
- ◇ Squaring a binomial: Multivariate
- ◇ Multiplying binomials with negative coefficients
- ◇ Multiplication involving binomials and trinomials in one variable
- ◇ Multiplication involving binomials and trinomials in two variables
- ◇ Dividing a polynomial by a monomial: Univariate
- ◇ Dividing a polynomial by a monomial: Multivariate
- ◇ Polynomial long division: Problem type 1
- ◇ Polynomial long division: Problem type 2
- ◇ Polynomial long division: Problem type 3
- ◇ Closure properties of integers and polynomials
- ◇ Introduction to the GCF of two monomials
- ◇ Greatest common factor of three univariate monomials
- ◇ Greatest common factor of two multivariate monomials
- ◇ Factoring out a monomial from a polynomial: Univariate
- ◇ Factoring out a monomial from a polynomial: Multivariate
- ◇ Factoring out a binomial from a polynomial: GCF factoring, basic
- ◇ Factoring a univariate polynomial by grouping: Problem type 1
- ◇ Factoring a univariate polynomial by grouping: Problem type 2
- ◇ Factoring a multivariate polynomial by grouping: Problem type 1
- ◇ Factoring a multivariate polynomial by grouping: Problem type 2
- ◇ Factoring a quadratic in two variables with leading coefficient 1
- ◇ Factoring out a constant before factoring a quadratic
- ◇ Factoring a quadratic with leading coefficient greater than 1: Problem type 2
- ◇ Factoring a quadratic with leading coefficient greater than 1: Problem type 3
- ◇ Factoring a quadratic by the ac–method
- ◇ Factoring a quadratic in two variables with leading coefficient greater than 1
- ◇ Factoring a quadratic with a negative leading coefficient
- ◇ Factoring a perfect square trinomial with leading coefficient greater than 1
- ◇ Factoring a perfect square trinomial in two variables
- ◇ Factoring a difference of squares in one variable: Basic
- ◇ Factoring a difference of squares in one variable: Advanced

- ◇ Factoring a difference of squares in two variables
- ◇ Factoring a polynomial involving a GCF and a difference of squares: Univariate
- ◇ Factoring a polynomial involving a GCF and a difference of squares: Multivariate
- ◇ Factoring a product of a quadratic trinomial and a monomial
- ◇ Factoring with repeated use of the difference of squares formula
- ◇ Factoring a sum or difference of two cubes
- ◆ Nonlinear Functions (97 topics)
  - ◇ Simplifying the square root of a whole number less than 100
  - ◇ Simplifying the square root of a whole number greater than 100
  - ◇ Square root addition or subtraction
  - ◇ Square root multiplication: Basic
  - ◇ Rationalizing a denominator: Quotient involving square roots
  - ◇ Rationalizing a denominator: Square root of a fraction
  - ◇ Cube root of an integer
  - ◇ Finding  $n^{\text{th}}$  roots of perfect  $n^{\text{th}}$  powers with signs
  - ◇ Introduction to solving a radical equation
  - ◇ Solving a radical equation that simplifies to a linear equation: One radical, basic
  - ◇ Word problem involving radical equations: Basic
  - ◇ Converting between radical form and exponent form
  - ◇ Rational exponents: Unit fraction exponents and whole number bases
  - ◇ Rational exponents: Unit fraction exponents and bases involving signs
  - ◇ Rational exponents: Non–unit fraction exponent with a whole number base
  - ◇ Rational exponents: Negative exponents and fractional bases
  - ◇ Using the Pythagorean Theorem repeatedly
  - ◇ Using the Pythagorean Theorem to find distance on a grid
  - ◇ Distance between two points in the plane: Exact answers
  - ◇ Distance between two points in the plane: Decimal answers
  - ◇ Midpoint of a line segment in the plane
  - ◇ Finding the roots of a quadratic equation of the form  $ax^2 + bx = 0$
  - ◇ Finding the roots of a quadratic equation with leading coefficient greater than 1
  - ◇ Solving a quadratic equation needing simplification
  - ◇ Solving a word problem using a quadratic equation with rational roots
  - ◇ Using the Pythagorean Theorem and a quadratic equation to find side lengths of a right triangle
  - ◇ Solving an equation of the form  $x^2 = a$  using the square root property
  - ◇ Solving a quadratic equation using the square root property: Exact answers, basic
  - ◇ Solving a quadratic equation using the square root property: Exact answers, advanced
  - ◇ Completing the square
  - ◇ Solving a quadratic equation by completing the square: Exact answers
  - ◇ Applying the quadratic formula: Decimal answers
  - ◇ Discriminant of a quadratic equation
  - ◇ Finding the vertex, intercepts, and axis of symmetry from the graph of a parabola
  - ◇ Graphing a parabola of the form  $y = ax^2$
  - ◇ Graphing a parabola of the form  $y = ax^2 + c$
  - ◇ Translating the graph of a parabola: One step
  - ◇ Graphing a parabola of the form  $y = (x-h)^2 + k$
  - ◇ Graphing a parabola of the form  $y = a(x-h)^2 + k$
  - ◇ Graphing a parabola of the form  $y = x^2 + bx + c$
  - ◇ Graphing a parabola of the form  $y = ax^2 + bx + c$ : Integer coefficients
  - ◇ Graphing a parabola of the form  $y = ax^2 + bx + c$ : Rational coefficients
  - ◇ Finding the  $x$ -intercept(s) and the vertex of a parabola
  - ◇ Finding the maximum or minimum of a quadratic function
  - ◇ Word problem involving the maximum or minimum of a quadratic function
  - ◇ Rewriting a quadratic function to find its vertex and sketch its graph

- ◇ Domain and range from the graph of a parabola
- ◇ Range of a quadratic function
- ◇ Solving a quadratic equation by graphing
- ◇ Comparing properties of quadratic functions given in different forms
- ◇ Classifying the graph of a function
- ◇ How the leading coefficient affects the shape of a parabola
- ◇ Choosing a quadratic model and using it to make a prediction
- ◇ Using a calculator to evaluate exponential expressions involving base  $e$
- ◇ Evaluating an exponential function with base  $e$  that models a real-world situation
- ◇ Finding the time to reach a limit in a word problem on exponential growth or decay
- ◇ Finding the initial amount and rate of change given an exponential function
- ◇ Writing an equation that models exponential growth or decay
- ◇ Solving an exponential equation by finding common bases: Linear exponents
- ◇ Graphing an exponential function:  $f(x) = a^x$
- ◇ Graphing an exponential function:  $f(x) = a(b)^x$
- ◇ Graphing an exponential function and its asymptote:  $f(x) = b^x$
- ◇ Graphing an exponential function and its asymptote:  $f(x) = a(b)^x$
- ◇ Graphing an exponential function and its asymptote:  $f(x) = b^{-x}$  or  $f(x) = -b^{ax}$
- ◇ Writing an exponential function rule given a table of ordered pairs
- ◇ Finding the initial amount and asymptote given a graph of an exponential function
- ◇ Finding domain and range from the graph of an exponential function
- ◇ Comparing linear, polynomial, and exponential functions
- ◇ Identifying linear, quadratic, and exponential functions given ordered pairs
- ◇ Choosing an exponential model and using it to make a prediction
- ◇ Using a calculator to evaluate natural and common logarithmic expressions
- ◇ Converting between logarithmic and exponential equations
- ◇ Converting between natural logarithmic and exponential equations
- ◇ Evaluating logarithmic expressions
- ◇ Solving an equation of the form  $\log_b a = c$
- ◇ Graphing a logarithmic function: Basic
- ◇ Basic properties of logarithms
- ◇ Using properties of logarithms to evaluate expressions
- ◇ Expanding a logarithmic expression: Problem type 1
- ◇ Expanding a logarithmic expression: Problem type 2
- ◇ Expanding a logarithmic expression: Problem type 3
- ◇ Writing an expression as a single logarithm
- ◇ Change of base for logarithms: Problem type 1
- ◇ Solving a multi-step equation involving a single logarithm: Problem type 1
- ◇ Solving a multi-step equation involving a single logarithm: Problem type 2
- ◇ Solving a multi-step equation involving natural logarithms
- ◇ Solving an equation involving logarithms on both sides: Problem type 1
- ◇ Solving an equation involving logarithms on both sides: Problem type 2
- ◇ Solving an exponential equation by using logarithms: Decimal answers, basic
- ◇ Solving an exponential equation by using natural logarithms: Decimal answers
- ◇ Finding the time required for an investment earning compound interest
- ◇ Finding the time given an exponential function with base  $e$  that models a real-world situation
- ◇ Finding the final amount of a loan or investment earning continuous compound interest
- ◇ Finding the initial amount of an investment earning continuous compound interest
- ◇ Finding the final amount in a word problem on continuous exponential growth or decay
- ◇ Finding the rate or time in a word problem on continuous exponential growth or decay
- ◇ Finding half-life or doubling time
- ◆ Geometry (101 topics)
  - ◇ Naming segments, rays, and lines



- ◇ Drawing an angle with the protractor
- ◇ Naming angles, sides of angles, and vertices
- ◇ Solving an equation involving complementary or supplementary angles
- ◇ Writing and solving an equation involving complementary or supplementary angles
- ◇ Solving equations involving vertical angles
- ◇ Finding angle measures given two parallel lines cut by a transversal
- ◇ Solving equations involving angles and a pair of parallel lines
- ◇ Classifying scalene, isosceles, and equilateral triangles by side lengths or angles
- ◇ Finding an angle measure for a triangle with an extended side
- ◇ Finding an angle measure given extended triangles
- ◇ Finding an angle measure given a triangle and parallel lines
- ◇ Finding angle measures of a triangle given angles with variables
- ◇ Writing an equation to find angle measures of a triangle given angles with variables
- ◇ Finding side lengths and angle measures of isosceles and equilateral triangles
- ◇ Finding angle measures of an isosceles triangle given angles with variables
- ◇ Identifying and naming congruent parts of congruent triangles
- ◇ Identifying and naming congruent triangles
- ◇ Naming polygons
- ◇ Shared attributes among categories of quadrilaterals
- ◇ Properties of quadrilaterals
- ◇ Classifying parallelograms
- ◇ Area of a rectangle involving fractions
- ◇ Area of a rectangle involving mixed numbers and fractions
- ◇ Distinguishing between the area and perimeter of a rectangle
- ◇ Areas of rectangles with the same perimeter
- ◇ Word problem on optimizing an area or perimeter
- ◇ Word problem involving the area between two rectangles
- ◇ Solving a word problem involving area using a one-step linear inequality: Area and lengths
- ◇ Area of a trapezoid
- ◇ Finding counterexamples to conjectures
- ◇ Introduction to a circle: Diameter, radius, and chord
- ◇ Finding the radius or the diameter of a circle given its circumference
- ◇ Circumference ratios
- ◇ Perimeter involving rectangles and circles
- ◇ Distinguishing between the area and circumference of a circle
- ◇ Area involving rectangles and circles
- ◇ Area between two concentric circles
- ◇ Word problem involving the area between two concentric circles
- ◇ Area involving inscribed figures
- ◇ Classifying solids
- ◇ Vertices, edges, and faces of a solid
- ◇ Counting the cubes in a solid made of cubes
- ◇ Word problem involving the rate of filling or emptying a rectangular prism
- ◇ Volume of a piecewise rectangular prism
- ◇ Word problem involving the volume of a piecewise rectangular prism
- ◇ Word problem involving the volume of a triangular prism
- ◇ Volume of a pyramid
- ◇ Word problem involving the volume of a cylinder
- ◇ Word problem involving the rate of filling or emptying a cylinder
- ◇ Word problem on density involving the volume of a cylindrical solid
- ◇ Volume of a cone
- ◇ Word problem involving the volume of a cone
- ◇ Volume of a sphere

- ◇ Word problem involving the volume of a sphere
- ◇ Ratio of volumes
- ◇ Nets of solids
- ◇ Side views of a solid made of cubes
- ◇ Distinguishing between surface area and volume
- ◇ Surface area of a piecewise rectangular prism made of unit cubes
- ◇ Surface area of a triangular prism
- ◇ Surface area of a cylinder
- ◇ Word problem involving the surface area of a cylinder
- ◇ Surface area of a sphere
- ◇ Word problem involving the surface area of rectangular prisms and cylinders
- ◇ Word problem involving the surface area of rectangular prisms and pyramids
- ◇ Computing ratios of side lengths, surface areas, and volumes for similar solids
- ◇ Identifying transformations
- ◇ Translating a point and giving its coordinates: Two steps
- ◇ Translating a polygon
- ◇ Determining if figures are related by a translation
- ◇ Reflecting a point across an axis and giving its coordinates
- ◇ Reflecting a polygon across the x-axis or y-axis
- ◇ Reflecting a polygon over a vertical or horizontal line
- ◇ Determining if figures are related by a reflection
- ◇ Drawing lines of symmetry
- ◇ Rotating a point and giving its coordinates
- ◇ Rotating a figure about the origin
- ◇ Determining if figures are related by a rotation
- ◇ Determining if figures are congruent and related by a transformation
- ◇ Finding an angle of rotation
- ◇ Identifying rotational symmetry and angles of rotation
- ◇ Dilating a segment and giving the coordinates of its endpoints
- ◇ Dilating a figure
- ◇ Determining if figures are related by a dilation
- ◇ Special right triangles: Exact answers
- ◇ Sine, cosine, and tangent ratios: Numbers for side lengths
- ◇ Sine, cosine, and tangent ratios: Variables for side lengths
- ◇ Using the Pythagorean Theorem to find a trigonometric ratio
- ◇ Using a calculator to approximate sine, cosine, and tangent values
- ◇ Finding trigonometric ratios given a right triangle
- ◇ Understanding trigonometric ratios through similar right triangles
- ◇ Relationship between the sines and cosines of complementary angles
- ◇ Using a trigonometric ratio to find a side length in a right triangle
- ◇ Using trigonometry to find a length in a word problem with one right triangle
- ◇ Using a trigonometric ratio to find an angle measure in a right triangle
- ◇ Using trigonometry to find the area of a right triangle
- ◇ Using trigonometry to find angles of elevation or depression in a word problem
- ◇ Solving a right triangle
- ◇ Using trigonometry to find a length in a word problem with two right triangles
- ◇ Simplifying trigonometric expressions

**\*Other Topics Available** *By default, these topics are NOT included in the course, but can be added using the content editor in the Teacher Module.*