ALEKS®

# *Math Literacy*

This course covers the topics outlined below, and can be used to support a non−STEM pathways course. You can customize the scope and sequence of this course to meet your curricular needs.

Curriculum Show All (457 topics + 788 additional topics)

- Arithmetic Readiness (109 topics)
  - ♦ Whole Numbers (26 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
    - ◊ Rewriting a repeated addition as a multiplication sentence
    - ◊ 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
    - ◊ Estimating a sum of whole numbers: Problem type 2
    - ◊ Writing expressions using exponents
    - ◊ Introduction to exponents
    - ◊ Introduction to parentheses
    - ◊ Introduction to order of operations
    - ◊ Order of operations with whole numbers
    - ◊ Order of operations with whole numbers and exponents: Basic
    - ◊ Even and odd numbers
    - ◊ Divisibility rules for 2, 5, and 10
    - ◊ Factors
    - ◊ Prime numbers
    - ◊ Greatest common factor of 2 numbers
    - ◊ Least common multiple of 2 numbers
    - ◊ Finding the next terms of an arithmetic sequence with whole numbers
    - ◊ Finding patterns in shapes
  - ♦ Integers (17 topics)
    - ◊ Plotting integers on a number line
    - ◊ Ordering integers
    - ◊ Writing a signed number for a real−world situation
    - ◊ 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
    - ◊ Absolute value of a number
    - ◊ Integer addition: Problem type 1
    - ◊ Integer addition: Problem type 2
    - ◊ Identifying relative change when combining two quantities
    - ◊ Integer subtraction: Problem type 1
    - ◊ Integer subtraction: Problem type 2

 

- ◊ Integer subtraction: Problem type 3
- ◊ Addition and subtraction with 3 integers
- ◊ Word problem with addition or subtraction of integers
- ◊ Integer multiplication and division
- ◊ Multiplication of 3 or 4 integers
- ◊ Word problem with multiplication or division of integers

♦ Introduction to Expressions and Equations (10 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
- ◊ Additive property of equality with whole numbers
- ◊ Multiplicative property of equality with whole numbers
- ◊ Using two steps to solve an equation with whole numbers
- ◊ Distinguishing between expressions and equations

♦ Introduction to Perimeter and Area (3 topics)

- ◊ Perimeter of a polygon
- ◊ Perimeter of a square or a rectangle
- ◊ Area of a square or a rectangle

♦ Fractions (18 topics)

- ◊ Understanding non−unit fractions
- ◊ Equivalent fractions
- ◊ Introduction to simplifying a fraction
- ◊ Simplifying a fraction
- ◊ Plotting fractions on a number line
- ◊ 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
- ◊ Word problem involving fractions and multiplication
- ◊ The reciprocal of a number
- ◊ 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 (28 topics)

- ◊ Decimal place value: Tenths and hundredths
- ◊ Introduction to ordering decimals
- ◊ Ordering decimals
- ◊ Rounding decimals
- ◊ Decimal addition with 2 numbers
- ◊ Decimal addition with 3 numbers
- ◊ Subtraction of aligned decimals
- ◊ Decimal subtraction: Basic
- ◊ Decimal subtraction: Advanced
- ◊ Estimating a decimal sum or difference
- ◊ 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
- ◊ Estimating a product of decimals
- ◊ Word problem with multiplication of a decimal and a whole number
- ◊ Word problem with decimal addition and multiplication
- ◊ Whole number division with decimal answers
- ◊ 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 (51 topics)

♦ Ratios and Unit Rates (9 topics)

- ◊ Writing ratios using different notations
- ◊ 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 expressing a constant rate
- ◊ Using a table of equivalent ratios to find a missing quantity in a ratio

♦ 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 (2 topics)

- ◊ Finding lengths using scale models
- ◊ Finding a scale factor: Same units

♦ 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
- ◊ 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
- ◊ Converting a fraction to a percentage in a real−world situation

 

- ♦ Applications Involving Percentages (15 topics)
  - ◊ Finding a percentage of a whole number
  - ◊ 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 (5 topics)
  - ◊ Hourly gross pay with overtime
  - ◊ Gross pay with commission and salary
  - ◊ Calculating income tax
  - ◊ Balancing a check register
  - ◊ 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 (27 topics)

- ♦ U.S. Customary Units of Length (7 topics)
  - ◊ 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
  - ◊ Finding the absolute error and percent error of a measurement
- ♦ Perimeter, Area, and Volume (6 topics)
  - ◊ Finding the missing length in a figure
  - ◊ Area of a piecewise rectangular figure
  - ◊ Circumference of a circle
  - ◊ Area of a circle
  - ◊ Volume of a rectangular prism
  - ◊ Volume of a rectangular prism made of unit cubes
- ♦ 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 (5 topics)
  - ◊ Converting between metric and U.S. Customary unit systems
  - ◊ Converting between compound units: Basic
  - ◊ Converting between compound units: Advanced
  - ◊ Conversions with currency
  - ◊ Word problem involving conversion between compound units using dimensional analysis
- ♦ Time and Temperature (2 topics)
  - ◊ Simplifying a ratio of whole numbers: Problem type 2
  - ◊ Converting between temperatures in Fahrenheit and Celsius

• Real Numbers (27 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 (12 topics)
  - ◊ Introduction to properties of addition
  - ◊ Introduction to properties of multiplication
  - ◊ Identifying like terms
  - ◊ 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 (61 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 (7 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
- ◊ 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
- ◊ Solving a decimal word problem using a linear equation with the variable on both sides
- ◊ Finding side lengths of rectangles given one dimension and an area or a perimeter
- ◊ Finding the dimensions of a rectangle given its perimeter and a relationship between sides

♦ Writing and Graphing Inequalities (4 topics)

- ◊ Translating a sentence by using an inequality symbol
- ◊ Translating a sentence into a one−step inequality
- ◊ Writing an inequality for a real−world situation
- ◊ Graphing a linear inequality on the number line

♦ Linear Inequalities (6 topics)

- ◊ Additive property of inequality with integers
- ◊ Additive property of inequality with signed decimals
- ◊ Multiplicative property of inequality with integers
- ◊ Solving a two−step linear inequality: Problem type 1
- ◊ Solving a two−step linear inequality: Problem type 2
- ◊ Solving a linear inequality with multiple occurrences of the variable: Problem type 1

♦ Applications of Linear Inequalities (3 topics)

- ◊ Solving a word problem using a two−step linear inequality
- ◊ 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

♦ 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 (4 topics)

- ◊ Reading a point in the coordinate plane
- ◊ Plotting a point in the coordinate plane
- ◊ Function tables with two−step rules
- ◊ Finding x− and y−intercepts given the graph of a line on a grid

• Probability and Statistics (61 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 an event: Experiment involving a single selection
- ◊ Determining a sample space and outcomes for an event: Experiment involving multiple selections
- ◊ 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 unions, intersections, and complements of events
- ◊ Computing conditional probability using a sample space
- ◊ Computing conditional probability using a two−way frequency table
- ◊ Computing conditional probability to make an inference using a two−way frequency table

♦ Interpreting and Displaying Data (15 topics)

- ◊ Choosing an appropriate method for gathering data: Problem type 2
- ◊ Representing data on a bar graph
- ◊ Interpreting a bar graph
- ◊ Interpreting a double bar graph
- ◊ Finding a percentage of a total amount in a circle graph

 

- ◊ Measuring an angle with the protractor
- ◊ Angle measure in a circle graph
- ◊ Calculating relative frequencies in a contingency table
- ◊ Making an inference using a two−way frequency table
- ◊ Constructing a frequency distribution for non−grouped data
- ◊ Constructing a frequency distribution for grouped data
- ◊ Constructing a frequency distribution and a histogram
- ◊ Interpreting a histogram
- ◊ Interpreting a line graph
- ◊ Interpreting a stem−and−leaf display

♦ Measures of Average (13 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
- ◊ 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 (4 topics)

- ◊ Range of a data set
- ◊ Comparing measures of center and variation
- ◊ Using back−to−back stem−and−leaf displays to compare data sets
- ◊ Population standard deviation

♦ Measures of Position (2 topics)

- ◊ Percentage of data below a specified value
- ◊ 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 (51 topics)

♦ Graphing and Intercepts (9 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

♦ Proportional Relationships (6 topics)

- ◊ Making a table and plotting points given a unit rate
- ◊ Writing an equation to represent a proportional relationship
- ◊ Identifying proportional relationships in equations
- ◊ Identifying proportional relationships in tables by calculating unit rates: Whole numbers
- ◊ Finding outputs and rate of increase given the graph of a line that models a real−world situation

 

- ◊ Comparing proportional relationships given in different forms
- ♦ Slope (4 topics)
  - ◊ Finding slope given the graph of a line in quadrant 1 that models a real−world situation
  - ◊ Finding slope given the graph of a line on a grid
  - ◊ Finding slope given two points on a line
  - ◊ Graphing a line given its slope and y−intercept
- ♦ Equations of Lines (9 topics)
  - ◊ Writing a function rule given a table of ordered pairs: One−step rules
  - ◊ Rewriting a linear equation in the form Ax + By = C
  - ◊ 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
  - ◊ Graphing a line given its equation in point−slope form
  - ◊ Writing the equation of a line given the y−intercept and another point
  - ◊ Writing the equation of a line through two given points
- ♦ Applications (11 topics)
  - ◊ 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: Advanced
  - ◊ Finding the intercepts and rate of change given a graph of a linear function
  - ◊ 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
  - ◊ Interpreting the parameters of a linear function that models a real−world situation
  - ◊ Application problem with a linear function: Finding a coordinate given two points
  - ◊ Identifying independent and dependent variables from equations or real−world situations
- ♦ Scatterplots and Lines of Best Fit (6 topics)
  - ◊ Sketching the line of best fit
  - ◊ Scatter plots and correlation
  - ◊ 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
  - ◊ Linear relationship and the correlation coefficient
- ♦ Direct and Inverse Variation (6 topics)
  - ◊ Introduction to solving a rational equation
  - ◊ Solving a rational equation that simplifies to linear: Denominator x
  - ◊ Word problem on direct variation
  - ◊ Interpreting direct variation from a graph
  - ◊ Word problem on inverse variation
  - ◊ Writing an equation that models variation

• Functions (7 topics)

- ♦ Function Evaluation and Applications (4 topics)
  - ◊ Table for a linear function
  - ◊ Evaluating functions: Linear and quadratic or cubic
  - ◊ 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
- ♦ Graphs of Functions (3 topics)

 

- ◊ Finding an output of a function from its graph
- ◊ Finding where a function is increasing, decreasing, or constant given the graph
- ◊ Choosing a graph to fit a narrative: Basic

• 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 (26 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
  - ◊ Introduction to the product rule with negative exponents
- ♦ Scientific Notation (7 topics)
  - ◊ Scientific notation with a positive exponent
  - ◊ Scientific notation with a negative exponent
  - ◊ Converting between scientific notation and standard form in a real−world situation
  - ◊ Multiplying numbers written in scientific notation: Basic
  - ◊ Multiplying numbers written in decimal form or scientific notation in a real−world situation
  - ◊ Dividing numbers written in scientific notation: Basic
  - ◊ Finding the scale factor between numbers given in scientific notation in a real−world situation
- ♦ Operations with Polynomials (5 topics)
  - ◊ Simplifying a sum or difference of two univariate polynomials
  - ◊ Multiplying a univariate polynomial by a monomial with a positive coefficient
  - ◊ 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 (3 topics)
  - ◊ Factoring a quadratic with leading coefficient 1
  - ◊ Factoring a quadratic with leading coefficient greater than 1: Problem type 1
  - ◊ Factoring a quadratic with leading coefficient greater than 1: Problem type 2
- ♦ Factoring Special Products (1 topics)
  - ◊ Factoring a perfect square trinomial with leading coefficient 1

 

- Nonlinear Functions (25 topics)
  - ♦ The Pythagorean Theorem and Distance Formula (4 topics)
    - ◊ Introduction to the Pythagorean Theorem
    - ◊ Pythagorean Theorem
    - ◊ Word problem involving the Pythagorean Theorem
    - ◊ Distance between two points in the plane: Decimal answers
  - ♦ Quadratic Equations (7 topics)
    - ◊ Solving an equation written in factored form
    - ◊ Finding the roots of a quadratic equation with leading coefficient 1
    - ◊ Finding the roots of a quadratic equation with leading coefficient greater than 1
    - ◊ Solving a word problem using a quadratic equation with rational roots
    - ◊ Applying the quadratic formula: Exact answers
    - ◊ Applying the quadratic formula: Decimal answers
    - ◊ Solving a word problem using a quadratic equation with irrational roots
  - ♦ Quadratic Functions (3 topics)
    - ◊ Finding the vertex, intercepts, and axis of symmetry from the graph of a parabola
    - ◊ Graphing a parabola of the form $y = ax^2$
    - ◊ Finding the x−intercept(s) and the vertex of a parabola
  - ♦ Exponential Functions (8 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
    - ◊ 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
    - ◊ Graphing an exponential function: $f(x) = b^x$
    - ◊ Finding the initial amount and asymptote given a graph of an exponential function
  - ♦ Logarithmic Functions (3 topics)
    - ◊ Converting between logarithmic and exponential equations
    - ◊ Evaluating logarithmic expressions
    - ◊ Solving an equation of the form $\log_b a = c$

- Other Topics Available(*) (788 additional topics)
  - ♦ Arithmetic Readiness (114 topics)
    - ◊ Numeral translation: Problem type 1
    - ◊ Numeral translation: Problem type 2
    - ◊ Expanded form with zeros
    - ◊ Ordering large numbers
    - ◊ Division involving zero
    - ◊ 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 difference of whole numbers: Problem type 2
    - ◊ Estimating a product or quotient of whole numbers
    - ◊ Power of 10: Positive exponent
    - ◊ Comparing numerical expressions with parentheses
    - ◊ Expanded forms of numbers less than 10,000 using powers of ten
    - ◊ Expanded forms of numbers greater than 10,000 using powers of ten
    - ◊ Divisibility rules for 3 and 9
    - ◊ Prime factorization
    - ◊ 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 a geometric sequence with whole numbers
◊ Plotting opposite integers on a number line
◊ Comparing integers using a number line
◊ 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
◊ Addition and subtraction with 4 or 5 integers
◊ Operations with absolute value: Problem type 1
◊ Operations with absolute value: Problem type 2
◊ Computing the distance between two integers on a number line
◊ Computing and understanding distances between integers on a number line
◊ Identifying solutions to a one−step linear equation: Problem type 1
◊ Identifying solutions to a one−step linear equation: Problem type 2
◊ Writing an equation and solving a multiplicative comparison word problem
◊ Perimeter of a rectangle on a grid
◊ Word problem on finding the perimeter of a rectangle
◊ Finding the area of a rectangle on a grid
◊ Solving a two−step word problem involving the area of a rectangle
◊ Understanding equivalent fractions
◊ Creating a model and completing a fraction to show equivalent fractions
◊ Fractional position on a number line
◊ Ordering fractions with the same denominator
◊ Ordering fractions with the same numerator
◊ Modeling multiplication of proper fractions
◊ Word problem involving multiplying a fraction and a whole number
◊ Multi−step word problem involving fractions and multiplication
◊ Determining if a quantity is increased or decreased when multiplied by a fraction
◊ 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
◊ Addition or subtraction of fractions with the same denominator
◊ 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 and subtraction with 3 or more numbers
- ◊ 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
- ◊ Word problem with multiplication of two decimals
- ◊ 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 (42 topics)

- ◊ 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
- ◊ Word problem on proportions: Problem type 2
- ◊ Word problem with powers of ten
- ◊ Using a scale drawing to find actual area
- ◊ Reproducing a scale drawing at a different scale

 

- ◊ Identifying congruent shapes on a grid
- ◊ Identifying similar or congruent shapes on a grid
- ◊ Finding a missing side length given two similar triangles
- ◊ Similar polygons
- ◊ Similar right triangles
- ◊ Indirect measurement
- ◊ Investigating the effects on the area for non−proportional and proportional figures
- ◊ Finding the percentage of a grid that is shaded
- ◊ 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
- ◊ Finding a percentage of a whole number without a calculator: Basic
- ◊ 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
- ◊ 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 (36 topics)

- ◊ Choosing U.S. Customary measurement units
- ◊ Measuring length to the nearest inch
- ◊ Measuring the length of an object to the nearest quarter or half inch
- ◊ Adding measurements in feet and inches
- ◊ Sides of polygons having the same perimeter
- ◊ Perimeter of a polygon involving mixed numbers and fractions
- ◊ Perimeter of a piecewise rectangular figure
- ◊ Area between two rectangles
- ◊ Area of a triangle
- ◊ 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 cube or a rectangular prism
- ◊ 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
- ◊ Adding time
- ◊ Elapsed time
- ◊ Reading the temperature from a thermometer

♦ Real Numbers (48 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
- ◊ 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 (78 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
- ◊ Writing an equation of the form Ax + B = C to solve a word problem
- ◊ 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 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 squares given an area and a perimeter
- ◊ Finding the perimeter or area of a rectangle given one of these values
- ◊ Converting a repeating decimal to a fraction
- ◊ Introduction to identifying solutions to an inequality
- ◊ 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
- ◊ Identifying solutions to a one−step linear inequality
- ◊ Additive property of inequality with whole numbers
- ◊ Additive property of inequality with signed fractions
- ◊ Multiplicative property of inequality with whole numbers
- ◊ 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 whole numbers
- ◊ Solving a two−step linear inequality with a fractional coefficient
- ◊ 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
- ◊ Solving a word problem using a one−step linear inequality
- ◊ Translating a sentence into a multi−step inequality
- ◊ Solving a word problem using a two−step linear inequality and describing the solution
- ◊ Writing sets of natural 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 the graph
- ◊ Finding distances between points that share a common coordinate given their coordinates

♦ Probability and Statistics (79 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
◊ Conditional probability: Basic
◊ 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
◊ Classifying samples
◊ Interpreting a tally table
◊ Interpreting a pictograph table
◊ Interpreting a pie chart
◊ Computations from pie charts
◊ Constructing a percent bar graph
◊ Representing data on a dot plot
◊ Constructing a relative frequency distribution for grouped data
◊ 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 frequency distribution
◊ Approximating the mean of a data set given a histogram
◊ Comparing means without calculation
◊ Finding the mode and range from a dot plot (line plot)
◊ Identifying the center, spread, and shape of a data set
◊ Comparing sample means
◊ Comparing standard deviations without calculation
◊ Sample standard deviation
◊ Computing mean absolute deviation from a list of numerical values

 

- ◊ Percentiles
- ◊ Five−number summary and interquartile range
- ◊ Constructing a box−and−whisker plot
- ◊ 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 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 (50 topics)

- ◊ Finding x− and y−intercepts of a line given the equation: Advanced
- ◊ Graphing a line given its x− and y−intercepts
- ◊ Graphing a line by first finding its x− and y−intercepts
- ◊ Identifying proportional relationships in tables by calculating unit rates: Fractions
- ◊ Identifying proportional relationships in graphs: Basic
- ◊ Identifying proportional relationships in graphs: Advanced
- ◊ Classifying slopes given graphs of lines
- ◊ Finding the slopes 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
- ◊ 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
- ◊ Writing the equation of a line in point−slope form given the slope and a point
- ◊ Writing the equations of vertical and horizontal lines through a given point
- ◊ Identifying parallel and perpendicular lines
- ◊ 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
- ◊ Finding outputs of a one−step function that models a real−world situation: Two variable equation
- ◊ Graphing ordered pairs and writing an equation from a table of values in context
- ◊ Writing an equation and drawing its graph to model a real−world situation: Basic
- ◊ Writing a function rule given a table of ordered pairs: Two−step rules
- ◊ Comparing properties of linear functions given in different forms
- ◊ Application problem with a linear function: Finding a coordinate given the slope and a point
- ◊ 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
- ◊ Constructing a scatter plot
- ◊ Computing residuals
- ◊ Interpreting residual plots
- ◊ Identifying correlation and causation
- ◊ Identifying direct variation equations
- ◊ Identifying direct variation from ordered pairs and writing equations
- ◊ Writing a direct variation equation
- ◊ 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 involving the completion of a task
- ◊ Word problem on combined variation

♦ Functions (32 topics)

- ◊ Identifying functions from relations
- ◊ Vertical line test
- ◊ Domain and range from ordered pairs
- ◊ Variable expressions as inputs of functions: Problem type 1
- ◊ Finding outputs of a one−step function that models a real−world situation: Function notation
- ◊ Domain and range of a linear function that models a real−world situation
- ◊ 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: Interval notation
- ◊ Finding local maxima and minima of a function given the graph
- ◊ 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 (85 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
- ◊ Rewriting an algebraic expression without a negative exponent
- ◊ Introduction to the product rule with negative exponents: Whole number base
- ◊ 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
- ◊ Introduction to scientific notation with positive exponents
- ◊ Introduction to scientific notation 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: Advanced
◊ Dividing numbers written in scientific notation: Advanced
◊ 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 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 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 (86 topics)

- ◊ Square root of a rational perfect square
- ◊ Square roots of perfect squares with signs
- ◊ Simplifying the square root of a whole number less than 100
- ◊ Simplifying the square root of a whole number greater than 100
- ◊ Introduction to square root addition or subtraction
- ◊ Square root addition or subtraction
- ◊ Introduction to square root multiplication
- ◊ 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 $n^{th}$ roots of perfect $n^{th}$ 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
- ◊ Midpoint of a line segment in the plane
- ◊ Finding the roots of a quadratic equation of the form $ax^2 + bx = 0$
- ◊ Solving a quadratic equation needing simplification
- ◊ 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
- ◊ Discriminant of a quadratic equation
- ◊ 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 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
- ◊ Finding the 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
- ◊ Solving an exponential equation by finding common bases: Linear exponents
- ◊ 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 $f(x) = -b^x$ or $f(x) = -b^{-x}$
- ◊ Writing an exponential function rule given a table of ordered pairs
- ◊ 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 natural logarithmic and exponential equations
- ◊ 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 (114 topics)

- ◊ Naming segments, rays, and lines
- ◊ Drawing an angle with the protractor
- ◊ Acute, obtuse, and right angles
- ◊ Naming angles, sides of angles, and vertices
- ◊ Finding supplementary and complementary angles
- ◊ Finding the complement or supplement of an angle given a figure
- ◊ Solving an equation involving complementary or supplementary angles
- ◊ Writing and solving an equation involving complementary or supplementary angles
- ◊ Identifying supplementary and vertical angles
- ◊ Finding angle measures given two intersecting lines
- ◊ Solving equations involving vertical angles
- ◊ Identifying corresponding and alternate angles
- ◊ Finding angle measures given two parallel lines cut by a transversal
- ◊ Solving equations involving angles and a pair of parallel lines
- ◊ Acute, obtuse, and right triangles
- ◊ Classifying scalene, isosceles, and equilateral triangles by side lengths
- ◊ Classifying scalene, isosceles, and equilateral triangles by side lengths or angles

 

◊ Finding an angle measure of a triangle given two 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
◊ Determining shared attributes of quadrilaterals
◊ Identifying parallelograms, rectangles, and squares
◊ 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 parallelogram
◊ 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
◊ Volume of a triangular prism
◊ Word problem involving the volume of a triangular prism
◊ Volume of a pyramid
◊ Volume of a cylinder
◊ 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 sine, cosine, or tangent ratio in a right triangle
◊ Using a calculator to approximate sine, cosine, and tangent values
◊ Using the Pythagorean Theorem to find several trigonometric ratios in 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.*

 