ALEKS®

Pre-Algebra

This course covers the topics shown below, **new topics** have been highlighted.
Students navigate learning paths based on their level of readiness.
Institutional users may customize the scope and sequence to meet curricular needs.

Curriculum (647 topics + 667 additional topics)

- Whole Numbers and Integers (79 topics)
  - Addition and Subtraction with Whole Numbers (8 topics)
    - Adding 2-digit numbers with regrouping a hundred
    - Adding 3 or 4 numbers with two-digits with regrouping
    - Adding 3-digit numbers with regrouping
    - Subtraction of 2-digit numbers with regrouping
    - Subtraction with multiple regrouping steps involving 3-digit numbers
    - Subtraction and regrouping with zeros
    - Describing an increasing or decreasing pattern from a table of values
    - Perimeter of a square or a rectangle
  - Multiplication and Division with Whole Numbers (18 topics)
    - Multiplying 2-digit and 1-digit numbers with regrouping: Problem type 2
    - Multiplying multi-digit and 1-digit numbers with regrouping
    - Area of a rectangle with two-digit by one-digit side lengths
    - Introduction to multiplication of large numbers
    - Multiplication of large numbers
    - Multiples: Problem type 1
    - Multiples: Problem type 2
    - Division of whole numbers given in fractional form
    - Division involving zero
    - Division with regrouping: 1-digit divisor, 2-digit dividend
    - Quotient with remainder: 1-digit divisor, 2-digit dividend
    - Whole number division: 2-digit by 2-digit, no remainder
    - Word problem with multiplication or division of whole numbers
    - 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
    - Division with regrouping: 1-digit divisor, 3-digit or 4-digit dividend
    - Whole number division: 3-digit by 2-digit, no remainder
    - Division with no remainder and a two-digit divisor: Problem type 2
  - Ordering and Estimation (2 topics)
    - Introduction to inequalities
    - Estimating a product
  - Exponents and Order of Operations (5 topics)
    - 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
  - Prime Numbers, Factors, and Multiples (2 topics)
    - Factors
    - Greatest common factor of 2 numbers
  - Plotting and Comparing Integers (5 topics)
    - Plotting integers on a number line
    - Plotting opposite integers on a number line
    - Ordering integers
    - Writing a signed number for a real-world situation
    - Absolute value of a number
  - Addition and Subtraction with Integers (17 topics)
    - Using integer chips to add integers
    - Using a number line to add integers
    - Integer addition: Problem type 1
    - Integer addition: Problem type 2
    - Identifying a sum as a point located a given distance from another point
    - Identifying relative change when combining two quantities
    - Using integer chips to subtract integers

    - Using a number line to subtract integers
    - Understanding that subtracting an integer is the same as adding its additive inverse
    - 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
    - Operations with absolute value: Problem type 1
    - Computing the distance between two integers on a number line
    - Computing and understanding distances between integers on a number line

  - Multiplication and Division with Integers (5 topics)
    - Integer multiplication and division
    - Multiplication of 3 or 4 integers
    - Word problem with multiplication or division of integers
    - Exponents and integers: Problem type 1
    - Order of operations with integers

  - Evaluating and Writing Expressions (8 topics)
    - 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
    - Evaluating a quadratic expression: Integers
    - 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

  - One-Step Equations (9 topics)
    - 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
    - Additive property of equality with integers
    - Introduction to solving an equation with multiplication or division
    - Writing an equation and solving a multiplicative comparison word problem
    - Multiplicative property of equality with whole numbers
    - Multiplicative property of equality with integers
    - Translating a sentence into a one-step equation

- Fractions (40 topics)

  - Equivalent Fractions (6 topics)
    - Introduction to non-unit fractions
    - Conversions involving division in fractional form and whole numbers
    - Equivalent fractions
    - Introduction to simplifying a fraction
    - Simplifying a fraction
    - Identifying equivalent signed fractions

  - Plotting and Ordering Fractions (3 topics)
    - Plotting fractions using a number line
    - Comparing fractions with the same denominator
    - Comparing fractions by finding a common denominator

  - Mixed Numbers and Improper Fractions (4 topics)
    - Writing an improper fraction as a mixed number
    - Writing a mixed number as an improper fraction
    - Plotting mixed numbers on a number line
    - Plotting rational numbers on a number line

  - Addition and Subtraction with Fractions (8 topics)
    - Addition or subtraction of fractions with the same denominator and simplification
    - Word problem involving addition or subtraction of fractions with the same denominator
    - Finding the LCD of two fractions
    - Writing fractions with a common denominator to add or subtract
    - Addition or subtraction of fractions with different denominators
    - Signed fraction addition or subtraction: Basic
    - Signed fraction subtraction involving double negation
    - Word problem involving addition or subtraction of fractions with different denominators

  - Multiplication and Division with Fractions (15 topics)
    - Product of a unit fraction and a whole number
    - Product of a fraction and a whole number: Problem type 1
    - Product of a fraction and a whole number: Problem type 2

    - Word problem involving multiplying a fraction and a whole number
    - Introduction to fraction multiplication
    - Fraction multiplication
    - Signed fraction multiplication: Basic
    - Word problem involving fractions and multiplication
    - The reciprocal of a number
    - Division involving a whole number and a unit fraction
    - Using a model to solve a word problem involving division by a unit fraction
    - Division involving a whole number and a fraction
    - Fraction division
    - Signed fraction division
    - Word problem involving fractions and division

  - Multiplication and Division with Mixed Numbers (2 topics)
    - Multiplying a mixed number and a whole number: Problem type 1
    - Division with a mixed number and a whole number

  - Exponents and Order of Operations (1 topics)
    - Exponents and fractions

  - Expressions and One-Step Equations (5 topics)
    - Multiplicative property of equality with signed fractions

- Decimals (47 topics)

  - Place Value and Ordering (2 topics)
    - Decimal place value: Tenths and hundredths
    - Introduction to ordering decimals

  - Converting Decimals to Fractions (4 topics)
    - Converting a decimal to a proper fraction without simplifying: Basic
    - Converting a decimal to a proper fraction in simplest form: Basic
    - 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

  - Addition and Subtraction (7 topics)
    - Decimal addition with 2 numbers
    - Decimal subtraction: Basic
    - Decimal subtraction: Advanced
    - Rounding decimals
    - Signed decimal addition and subtraction
    - Word problem with addition or subtraction of 2 decimals
    - Word problem with subtraction of a whole number and a decimal: Regrouping with zeros

  - Multiplication (9 topics)
    - Multiplication of a decimal by a power of ten
    - 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 0.1
    - Signed decimal multiplication
    - Word problem with multiplication of a decimal and a whole number
    - Word problem with multiple decimal operations: Problem type 1

  - Division (4 topics)
    - Division of a decimal by a power of ten
    - Division of a decimal by a whole number
    - Word problem with division of a decimal and a whole number
    - Word problem with multiple decimal operations: Problem type 2

  - Converting Fractions to Decimals (7 topics)
    - 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 mixed number with a denominator of 2, 4, or 5 to a decimal
    - Converting a fraction to a terminating decimal: Basic
    - Converting a fraction to a terminating decimal: Advanced
    - Converting a fraction to a repeating decimal: Basic
    - Converting a mixed number to a terminating decimal: Basic

  - Venn Diagrams and Sets of Rational Numbers (5 topics)
    - Identifying numbers as integers or non-integers
    - Identifying rational decimal numbers
    - Interpreting a Venn diagram of 2 sets

    - Constructing a Venn diagram to classify rational numbers
    - Constructing a Venn diagram to describe relationships between sets of rational numbers

  - Exponents and Order of Operations (4 topics)
    - 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

  - Expressions and One-Step Equations (5 topics)
    - Evaluating a linear expression: Signed decimal addition and subtraction
    - Evaluating a linear expression: Signed decimal multiplication with addition or subtraction
    - Additive property of equality with decimals
    - Multiplicative property of equality with decimals
    - Writing and solving a one-step equation with decimals that models a real-world situation

- Ratios, Proportions, and Measurement (41 topics)

  - Ratios and Unit Rates (15 topics)
    - Using a tape diagram to model ratios
    - Using a tape diagram to solve a problem involving ratios
    - Using tables to compare ratios
    - Finding missing values in a table of equivalent ratios
    - Using a table of equivalent ratios to find a missing quantity in a ratio
    - Finding a unit price
    - Computing unit prices to find the better buy
    - Word problem on unit rates associated with ratios of whole numbers: Decimal answers
    - Word problem on unit rates associated with ratios of fractions
    - Word problem on unit rates associated with ratios of mixed numbers
    - Using a tape diagram to solve a problem on unit rates: Problem type 1
    - Solving a word problem on proportions using a unit rate
    - Using a tape diagram to solve a problem on unit rates: Problem type 2
    - Writing and using unit rates in context
    - Solving a one-step word problem using the formula d = rt

  - Proportions (4 topics)
    - Solving a proportion of the form x/a=b/c: Basic
    - Solving a proportion of the form x/a = b/c
    - Writing a proportion to solve a problem involving rates
    - Word problem on proportions: Problem type 1

  - Similar Figures (7 topics)
    - Identifying congruent shapes on a grid
    - Identifying similar or congruent shapes on a grid
    - Finding a missing side length given two similar triangles
    - Relationships about ratios within and between similar triangles
    - Similar polygons
    - Similar right triangles
    - Indirect measurement

  - Scale Factors and Scale Drawings (4 topics)
    - Finding lengths using scale models
    - Finding a scale factor: Same units
    - Using a scale drawing to find actual area
    - Reproducing a scale drawing at a different scale

  - U.S. Customary Units of Measurement (5 topics)
    - Using a double number line to convert U.S. Customary units with whole numbers
    - Using a double number line to convert U.S. Customary units with decimals
    - U.S. Customary length conversion with whole number values
    - U.S. Customary volume conversion with whole number values
    - U.S. Customary weight conversions with whole number values

  - Metric Units of Measurement (1 topics)
    - Finding a rate given a pictorial representation of a real-world situation

  - Time and Temperature (1 topics)
    - Time unit conversion with whole number values

  - Converting Between Systems and Dimensional Analysis (4 topics)
    - Writing and solving a proportion to convert between metric and U.S. Customary units
    - Converting between metric and U.S. Customary unit systems
    - U.S. Customary length conversions involving dimensional analysis
    - Converting between compound units: Basic

- Percents (38 topics)
  - Understanding Percents (2 topics)
    - Converting a fraction with a denominator of 100 to a percentage
    - Converting a percentage to a fraction with a denominator of 100
  - Percents, Decimals, and Fractions (11 topics)
    - 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
    - Finding benchmark fractions and percentages for a figure
    - Converting a fraction to a percentage: Denominator of 20, 25, or 50
    - Converting a fraction to a percentage in a real-world situation
    - Using a double number line to find a percentage
    - Writing a ratio as a percentage without a calculator
    - Finding the rate of a tax or commission
    - Making a reasonable inference based on proportion statistics
  - Percent of a Number (10 topics)
    - Finding a percentage of a whole number
    - Finding a percentage of a whole number without a calculator: Basic
    - Finding a percentage of a whole number without a calculator: Advanced
    - Using a double number line to find the part or the whole in a percentage problem
    - Finding a percentage of a total amount: Real-world situations
    - Writing a proportion to solve a multi-step problem involving percentages
    - Finding a percentage of a total amount without a calculator: Sales tax, commission, discount
    - Estimating a tip without a calculator
    - Finding a percentage of a total amount in a circle graph
    - Making part-to-part and equivalence comparisons given a circle graph
  - Percent Equations (2 topics)
    - Applying the percent equation: Problem type 1
    - Finding the total amount given the percentage of a partial amount
  - Percent Increase and Decrease (6 topics)
    - 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 sale price without a calculator given the original price and percent discount
    - Finding the total cost including tax or markup
    - Finding the percentage increase or decrease: Basic
    - Finding the percentage increase or decrease: Advanced
  - Interest (3 topics)
    - Finding simple interest without a calculator
    - Finding the interest and future value of a simple interest loan or investment
    - Introduction to compound interest
  - Personal Financial Literacy (4 topics)
    - Calculating income tax
    - Examining a savings plan for college
    - Using the ALEKS periodic deposit calculator to compute savings which include periodic deposits
    - Calculating and comparing simple interest and compound interest
- Equations and Inequalities (60 topics)
  - The Distributive Property (5 topics)
    - Multiplying a constant and a linear monomial
    - Distributive property: Whole number coefficients
    - Distributive property: Integer coefficients
    - Distributive property: Fractional coefficients
    - Factoring a linear binomial
  - Simplifying Algebraic Expressions (7 topics)
    - Introduction to properties of addition
    - Combining like terms: Whole number coefficients
    - Using a number line to add opposite fractions and describing the result
    - Introduction to properties of multiplication
    - Combining like terms: Integer coefficients
    - Using distribution and combining like terms to simplify: Univariate
    - Identifying properties used to simplify an algebraic expression
  - Multi-Step Equations (10 topics)
    - Identifying solutions to a linear equation in one variable: Two-step equations

    - Using two steps to solve an equation with whole numbers
    - Additive property of equality with a negative coefficient
    - Solving a two-step equation with integers
    - Plotting the solution for a two-step equation on a number line
    - Introduction to solving an equation with parentheses
    - Solving a two-step equation with signed decimals
    - 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

  - Equations with Variables on Both Sides (5 topics)
    - 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 equations with zero, one, or infinitely many solutions

  - Solving Formulas for a Variable (2 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

  - Applications of Equations (11 topics)
    - Choosing stories that can be represented by given one-step equations
    - 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
    - Choosing stories that can be represented by given two-step equations
    - Solving a decimal word problem using a linear equation of the form $Ax + B = C$
    - Writing an equation of the form $A(x + B) = C$ to solve a word problem
    - Solving a word problem with two unknowns using a linear equation
    - Writing an equation to represent a real-world problem: Variable on both sides
    - 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

  - 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

  - One-Step Inequalities (5 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

  - Multi-Step Inequalities (4 topics)
    - 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: Problem type 1
    - Solving a two-step linear inequality: Problem type 2

  - Applications of Inequalities (6 topics)
    - Writing, solving, and graphing the solution to a one-step inequality that models a real-world situation
    - 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
    - Solving a word problem using a two-step linear inequality
    - Solving a decimal word problem using a two-step linear inequality

- Graphs, Functions, and Sequences (86 topics)

  - Ordered Pairs (3 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

  - Tables and Graphs of Lines (13 topics)
    - Function tables with two-step rules
    - Table for a linear equation
    - Writing a function rule given a table of ordered pairs: Two-step rules
    - Identifying solutions to a linear equation in two variables

- Graphing a line in quadrant 1
- 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 given the graph of a line on a grid
- Finding x- and y-intercepts of a line given the equation: Basic
- Identifying parallel and perpendicular lines

- Proportional Relationships (12 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
  - Identifying proportional relationships in tables by calculating unit rates: Fractions
  - Determining whether a relationship is proportional given a real-world situation
  - Identifying proportional relationships in graphs: Basic
  - Identifying proportional relationships in graphs: Advanced
  - Graphing a relationship given a real-world situation to determine if the relationship is proportional
  - Writing an equation and describing a proportional relationship given a graph or table
  - 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 (6 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
  - Finding the slopes of horizontal and vertical lines
  - Using right triangles to find the slope of a line
  - Graphing a line given its slope and y-intercept

- Direct and Inverse Variation (4 topics)
  - 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

- Equations of Lines (11 topics)
  - Identifying linear equations: Basic
  - Identifying linear functions given ordered pairs
  - 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
  - Finding the slope and y-intercept given a table for a linear function
  - Writing an equation in slope-intercept form given the slope and a point
  - Finding the slope and a point on a line given its equation in point-slope form
  - Writing the equation of a line in point-slope form given the slope and a point
  - Writing the equation of a line given the y-intercept and another point
  - Writing the equation of a line through two given points

- Applications (12 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
  - 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 a linear equation that models a real-world situation given a graph or a table of values
  - 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
  - Finding the initial amount and rate of change given two points for a linear function
  - Comparing properties of linear functions given in different forms
  - Interpreting the parameters of a linear function that models a real-world situation

- Introduction to Functions (4 topics)
  - Identifying functions from relations
  - Vertical line test
  - Domain and range from ordered pairs
  - Table for a linear function

- Graphs of Functions (8 topics)
  - Domain and range from the graph of a discrete relation
  - Finding domain and range from a linear graph in context

    - Interpreting the domain and range of a linear function in context
    - Finding where a function is increasing, decreasing, or constant given the graph
    - Choosing a graph to fit a narrative: Basic
    - Choosing a graph to fit a narrative: Advanced
    - Drawing a graph to fit a narrative
    - Determining if a function is linear given its graph

  - Systems of Equations (13 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
    - Graphing a system of linear equations and estimating a solution
    - Graphically solving a system of linear equations
    - Introduction to using substitution to solve a linear equation
    - 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 systems of linear equations with 0, 1, or infinitely many solutions
    - 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 y = mx + b

- Exponents, Polynomials, and Radicals (63 topics)

  - Product, Power, and Quotient Rules (10 topics)
    - Introduction to the product rule with positive exponents: Whole number base
    - 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 with positive exponents: Whole number base
    - Understanding the power rules of exponents
    - 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 with positive exponents: Whole number base
    - Introduction to the quotient rule of exponents

  - Negative Exponents (9 topics)
    - Power of 10: Negative exponent
    - Evaluating an expression with a negative exponent: Whole number base
    - Evaluating an expression with a negative exponent: Positive fraction base
    - Evaluating an expression with a negative exponent: Negative integer base
    - 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

  - Scientific Notation (16 topics)
    - Introduction to scientific notation with positive exponents
    - Scientific notation with a positive exponent
    - Introduction to scientific notation with negative exponents
    - Scientific notation with a negative exponent
    - Converting between scientific notation and standard form in a real-world situation
    - 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: Different exponents

  - Square Roots and Irrational Numbers (16 topics)
    - Square root of a perfect square
    - Finding all square roots of a number
    - Square root of a rational perfect square
    - Square roots of perfect squares with signs
    - Using a calculator to approximate a square root
    - Estimating a square root
    - 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
    - Approximating the location of irrational numbers on a number line to compare them
    - Ordering real numbers
    - Converting a repeating decimal to a fraction
    - Identifying true statements about rational and irrational numbers
    - Identifying numbers as rational or irrational
    - Constructing a Venn diagram to classify real numbers
    - Constructing a Venn diagram to describe relationships between sets of real numbers

  - Higher Roots and Nonlinear Equations (5 topics)
    - Solving an equation of the form $x^2 = a$ using the square root property
    - Finding side lengths of squares given an area and a perimeter
    - Cube root of an integer
    - Order of operations with exponents and radicals
    - Solving an equation of the form $x^3 = a$ using integers

  - Applying the Pythagorean Theorem (7 topics)
    - Introduction to the Pythagorean Theorem
    - Pythagorean Theorem
    - Word problem involving the Pythagorean Theorem
    - Word problem involving the Pythagorean Theorem in three dimensions
    - Using the Pythagorean Theorem repeatedly
    - Using the Pythagorean Theorem to find distance on a grid
    - Using the Pythagorean Theorem to find the distance between two points in the plane in context

- Lines, Angles, and Polygons (39 topics)

  - Classifying and Measuring Angles (3 topics)
    - Acute, obtuse, and right angles
    - Measuring an angle with the protractor
    - Drawing an angle with the protractor

  - Angle Relationships (7 topics)
    - Introduction to angle addition
    - Finding an angle measure in a figure with a right or straight angle
    - 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

  - Parallel Lines (4 topics)
    - 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
    - Establishing facts about the angles created when parallel lines are cut by a transversal

  - Classifying Triangles (3 topics)
    - 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

  - Angles of Triangles (7 topics)
    - 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
    - Writing an equation to find angle measures of a triangle given angles with variables
    - Establishing facts about the interior angles of a triangle
    - Establishing facts about the interior and exterior angles of a triangle

  - Triangle Constructions and Triangle Inequalities (7 topics)
    - Creating triangles from given side lengths: Problem type 1
    - Creating triangles from given side lengths: Problem type 2
    - Using triangle inequality to determine if side lengths form a triangle
    - Determining if a triangle is possible based on given angle measures
    - Determining if given measurements define a unique triangle, more than one triangle, or no triangle
    - Drawing triangles with given conditions: Angle measures
    - Relationship between angle measures and side lengths in a triangle

  - Polygons and Quadrilaterals (8 topics)
    - Shared attributes among categories of quadrilaterals
    - Identifying parallelograms, rectangles, and squares
    - Properties of quadrilaterals

    - Classifying parallelograms
    - Sum of the angle measures of a quadrilateral
    - Finding the sum of the interior angle measures of a convex polygon given the number of sides
    - Finding the number of sides of a convex polygon given the sum of the measures of the interior angles
    - Finding a missing interior angle measure in a convex polygon

- Transformations (35 topics)

  - Congruence and Similarity (4 topics)
    - Identifying transformations
    - Identifying and naming congruent parts of congruent triangles
    - Finding angle measures of a triangle given two angles of a similar triangle
    - Finding angle measures and side ratios to determine if two triangles are similar

  - Translations (6 topics)
    - Translating a point and giving its coordinates: One step
    - Translating a point and giving its coordinates: Two steps
    - Properties of translated figures
    - Determining if figures are related by a translation
    - Translating a polygon
    - Writing a rule to describe a translation

  - Reflections (10 topics)
    - Reflecting a point across an axis
    - Reflecting a point across both coordinate axes
    - Reflecting a point across an axis and giving its coordinates
    - Finding the coordinates of a point reflected across an axis
    - Finding the coordinates of a point reflected across both axes
    - Reflecting a polygon across the x-axis or y-axis
    - Properties of reflected figures
    - Determining if figures are related by a reflection
    - Finding the coordinates of a point reflected across an axis and translated
    - Writing a rule to describe a reflection

  - Rotations (7 topics)
    - Rotating a point and giving its coordinates
    - Properties of rotated figures
    - Determining if figures are related by a rotation
    - Rotating a figure about the origin
    - Writing a rule to describe a rotation
    - Determining if figures are congruent and related by a transformation
    - Determining if figures are congruent and related by a sequence of transformations

  - Dilations (8 topics)
    - Dilating a segment and giving the coordinates of its endpoints
    - The effect of dilation on side length
    - Determining if figures are related by a dilation
    - Finding a scale factor given a dilation in the coordinate plane
    - The effect of dilation on area
    - Dilating a figure
    - Writing a rule to describe a dilation
    - Determining if figures are similar and related by a sequence of transformations

- Perimeter, Area, and Volume (64 topics)

  - Perimeter (1 topics)
    - Finding the missing length in a figure

  - Area of Rectangles (2 topics)
    - Word problem involving the area of a rectangle: Problem type 2
    - Finding side lengths of rectangles given one dimension and an area or a perimeter

  - Area of Parallelograms, Triangles, and Trapezoids (6 topics)
    - Area of a parallelogram
    - Finding the area of a right triangle on a grid
    - Area of a triangle
    - Finding the area of a right triangle using the Pythagorean Theorem
    - Finding the area of a trapezoid on a grid by using triangles and rectangles
    - Area of a trapezoid

  - Area of Composite Figures (5 topics)
    - Finding the area of a composite figure on a grid
    - Area of a piecewise rectangular figure
    - Word problem on finding the area of a piecewise rectangular figure

    - Area between two rectangles
    - Area involving rectangles and triangles

  - The Converse and a Proof of the Pythagorean Theorem (3 topics)
    - Identifying side lengths that give right triangles
    - Demonstrating the converse of the Pythagorean Theorem
    - Informal proof of the Pythagorean Theorem

  - Circumference and Area of Circles (11 topics)
    - Introduction to a circle: Diameter, radius, and chord
    - Circumference of a circle
    - Finding the radius or the diameter of a circle given its circumference
    - Informal argument for the formula of the circumference of a circle
    - Area of a circle
    - Circumference and area of a circle
    - Informal argument for the formula of the area of a circle
    - Area involving rectangles and circles
    - Area between two concentric circles
    - Area involving inscribed figures
    - Area of a sector of a circle: Exact answer in terms of pi

  - Three-Dimensional Figures (5 topics)
    - Classifying solids
    - Nets of solids
    - Counting the cubes in a solid made of cubes
    - Side views of a solid made of cubes
    - Identifying horizontal and vertical cross sections of solids

  - Volume of Prisms and Cylinders (9 topics)
    - Volume of a rectangular prism
    - Writing equivalent expressions for the volume of a rectangular prism
    - Word problem involving the volume of 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 cylinder
    - Word problem involving the volume of a cylinder

  - Volume of Pyramids, Cones, and Spheres (8 topics)
    - Volume of a pyramid
    - Relating the volumes of a rectangular prism and a rectangular pyramid
    - Relating the volumes of a triangular prism and a triangular pyramid
    - Volume of a cone
    - Relating the volumes of a cylinder and a cone
    - Word problem involving the volume of a cone
    - Volume of a sphere
    - Word problem involving the volume of a sphere

  - Surface Area (14 topics)
    - Surface area of a cube or a rectangular prism
    - Using a net to find the surface area of a rectangular prism
    - Using a net to find the lateral surface area and total surface area of a rectangular prism
    - Word problem involving the surface area of a rectangular prism
    - Surface area of a triangular prism
    - Using a net to find the surface area of a triangular prism
    - Using a net to find the lateral surface area and total surface area of a triangular prism
    - Surface area of a cylinder
    - Word problem involving the surface area of a cylinder
    - Word problem involving the surface area of rectangular prisms and cylinders
    - Using a net to find the lateral surface area and total surface area of a pyramid
    - Word problem involving the surface area of rectangular prisms and pyramids
    - Lateral surface area and surface area of a cone
    - Surface area of a sphere

- Data Analysis and Probability (55 topics)

  - Collecting Data (4 topics)
    - Choosing an appropriate method for gathering data: Problem type 1
    - Choosing an appropriate method for gathering data: Problem type 2
    - Introduction to expectation
    - Making predictions using experimental data for compound events

  - Frequency Tables (6 topics)

    - Constructing a two-way frequency table: Basic
    - Constructing a two-way frequency table: Advanced
    - Computing a percentage from a table of values
    - Making an inference using a two-way frequency table
    - Calculating relative frequencies in a contingency table
    - Calculating relative frequencies in a contingency table: Advanced

  - Graphs of Data (5 topics)
    - Constructing a line plot
    - Making part-to-whole, part-to-part, and equivalence comparisons given a line plot
    - Making part-to-whole, part-to-part, and equivalence comparisons given a bar graph
    - Angle measure in a circle graph
    - Constructing a percent bar graph

  - Scatter Plots and Lines of Best Fit (7 topics)
    - Constructing a scatter plot
    - 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
    - Identifying outliers and clustering in scatter plots

  - Mean, Median, and Mode (3 topics)
    - Finding the mean of a symmetric distribution
    - Finding sample size and comparing samples for estimating the mean
    - Mean and median of a data set

  - Measures of Variation (7 topics)
    - Range of a data set
    - Interpreting a box-and-whisker plot
    - Interpreting a box-and-whisker plot: Problem type 2
    - Using box-and-whisker plots to compare data sets
    - Comparing sample means
    - Computing mean absolute deviation from a list of numerical values
    - Assessing the degree of overlap of two distributions

  - Counting (1 topics)
    - Interpreting a tree diagram

  - Probability of Simple Events (8 topics)
    - Classifying likelihood
    - Determining a sample space and outcomes for an event: Experiment involving a single selection
    - 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
    - Experimental and theoretical probability

  - Probability of Compound Events (7 topics)
    - Determining a sample space and outcomes for an event: Experiment involving multiple selections
    - Outcomes and event probability
    - Experimental and theoretical probability for compound events
    - Probabilities involving two rolls of a die
    - Identifying independent events given descriptions of experiments
    - Probability of independent events
    - Probability of dependent events

  - Simulations (7 topics)
    - 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

- Other Topics Available(*) (667 additional topics)

  - Whole Numbers and Integers (79 topics)
    - Whole number place value: Problem type 1
    - Whole number place value: Problem type 2

- Comparing place values of digits in a whole number: Problem type 1
- Numeral translation: Problem type 1
- Numeral translation: Problem type 2
- Expanded form: 2 and 3-digit numbers
- Expanded form: 4 and 5-digit numbers
- Expanded form with zeros
- Adding 3 numbers with two, three, and four-digits
- Subtraction involving 3-digit numbers without regrouping
- Subtraction with multiple regrouping steps involving 4-digit numbers
- Word problem with addition or subtraction of whole numbers
- Perimeter of a polygon
- Perimeter of a rectangle on a grid
- Multiplication as repeated addition
- Understanding multiplication of a one-digit number with a larger number
- Area of a rectangle on a grid
- Area of a rectangle with one-digit side lengths
- Introduction to multiplication using an area model
- Multiplying a multi-digit and a 1-digit number using an area model
- Writing a division sentence for equal groups
- Writing a division sentence for equal groups and a remainder
- Quotient with remainder: 1-digit divisor, 3-digit or 4-digit dividend
- Division involving quotients with intermediate zeros: Problem type 1
- Division involving quotients with intermediate zeros: Problem type 2
- Division with remainder involving quotients with intermediate zeros: Problem type 1
- Division with remainder involving quotients with intermediate zeros: Problem type 2
- Division with remainder and a two-digit divisor: Problem type 1
- Division with remainder and a two-digit divisor: Problem type 2
- Word problem with division of whole numbers and rounding: Problem type 1
- Word problem with division of whole numbers and rounding: Problem type 2
- Comparing a numerical expression with a number
- Ordering large numbers
- Rounding to tens or hundreds
- Rounding to hundreds or thousands
- Rounding to thousands, ten thousands, or hundred thousands
- Estimating a sum of whole numbers: Problem type 1
- Estimating a sum of whole numbers: Problem type 2
- Estimating a difference of whole numbers: Problem type 1
- Estimating a difference of whole numbers: Problem type 2
- Estimating a quotient
- Writing expressions using exponents
- Power of 10: Positive exponent
- Comparing numerical expressions with parentheses
- Order of operations with whole numbers and grouping symbols
- Order of operations with whole numbers and exponents: Advanced
- Even and odd numbers
- Divisibility rules for 2, 5, and 10
- Divisibility rules for 3 and 9
- Prime numbers
- Prime factorization
- Prime factorization: Exponent notation
- Greatest common factor of 3 numbers
- Least common multiple of 2 numbers
- Least common multiple of 3 numbers
- Word problem involving the least common multiple of 2 numbers
- Word problem with common multiples
- Comparing integers using a number line
- Using a number line to compare signed numbers in context
- 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
- Interpreting absolute values in context as distances from zero
- Finding all numbers with a given absolute value
- Addition and subtraction with 4 or 5 integers
- Operations with absolute value: Problem type 2
- Finding the distance between two rational numbers on a number line in context
- Finding a point on a number line given the length of a segment and another point
- Establishing rules for multiplying integers: Product of a positive and negative number
- Establishing rules for multiplying integers: Product of two negative numbers NEW
- Exponents and integers: Problem type 2
- Order of operations with integers and exponents
- Evaluating an algebraic expression: Whole number addition or subtraction
- Evaluating an algebraic expression: Whole number multiplication or division
- Evaluating an algebraic expression: Whole number operations and exponents

- Plotting the solution for a one-step equation on a number line
- Distinguishing between expressions and equations
- Distinguishing between expressions and equations given verbal descriptions NEW

- Fractions (52 topics)
  - Understanding equivalent fractions: Problem type 1
  - Understanding equivalent fractions: Problem type 2
  - Modeling and writing equivalent fractions
  - Introduction to finding equivalent fractions: Multiplying
  - Introduction to finding equivalent fractions: Dividing
  - Position of fractions on a number line
  - Comparing fractions with the same numerator
  - Writing a mixed number and an improper fraction for a shaded region
  - Position of mixed numbers on a number line
  - Addition or subtraction of fractions with the same denominator
  - Decomposing a fraction into a sum of fractions with the same denominator
  - Introduction to adding fractions with variables and common denominators
  - Writing unit fractions with a common denominator to add or subtract
  - Addition and subtraction of 3 fractions with different denominators
  - Signed fraction addition or subtraction: Advanced
  - Addition and subtraction of 3 fractions involving signs
  - Fractional part of a circle
  - Addition or subtraction of mixed numbers with the same denominator
  - Addition of mixed numbers with the same denominator and renaming: Problem type 1
  - Addition of mixed numbers with the same denominator and renaming: Problem type 2
  - Subtraction of mixed numbers with the same denominator and renaming: Problem type 1
  - Subtraction of mixed numbers with the same denominator and renaming: Problem type 2
  - 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
  - Multiplication of 3 fractions
  - Modeling multiplication of proper fractions
  - Signed fraction multiplication: Advanced
  - Multi-step word problem involving fractions and multiplication
  - Determining if a quantity is increased or decreased when multiplied by a fraction
  - Finding the product to determine whether a quantity is increased or decreased when multiplied by a fraction NEW
  - Understanding the relationship between dividing by a fraction and multiplying by its reciprocal NEW
  - Fact families for multiplication and division of fractions
  - Modeling division of a whole number by a fraction
  - Multiplying mixed numbers: Problem type 1
  - Multiplying mixed numbers: Problem type 2
  - Multiplying a mixed number and a whole number: Problem type 2
  - Mixed number division
  - Word problem involving multiplication or division with mixed numbers
  - Evaluating expressions with exponents of zero
  - Exponents and signed fractions
  - Order of operations with fractions: Problem type 1
  - Order of operations with fractions: Problem type 2
  - Order of operations with fractions: Problem type 3
  - Complex fraction without variables: Problem type 1
  - Evaluating a linear expression: Signed fraction multiplication with addition or subtraction
  - Additive property of equality with fractions and mixed numbers
  - Additive property of equality with signed fractions
  - Multiplicative property of equality with whole numbers: Fractional answers
  - Multiplicative property of equality with fractions

- Decimals (43 topics)
  - 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
  - Ordering 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 in simplest form: Advanced
  - Addition of decimals: Vertically aligned
  - Decimal addition with 3 numbers

- Subtraction of aligned decimals
- Decimal addition and subtraction with 3 or more numbers
- Estimating a decimal sum or difference
- Signed decimal addition and subtraction with 3 numbers
- Computing distances between decimals on a number line
- Word problem with addition of 3 or 4 decimals and whole numbers
- 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
- Division of a decimal by a power of 0.1
- Whole number division with decimal answers
- Division of a decimal by a 1-digit decimal: Problem type 1
- Division of a decimal by a 2-digit decimal
- Decimal division with rounding
- Average of two numbers
- Signed decimal division
- Word problem with division of two decimals
- Converting a fraction with a denominator of 100 or 1000 to a decimal
- Converting a fraction to a repeating decimal: Advanced
- Using a calculator to convert a fraction to a rounded decimal
- Converting a mixed number to a terminating decimal: Advanced
- Converting a fraction or mixed number to a rounded decimal
- Ordering fractions and decimals
- Interpreting a Venn diagram of 3 sets
- Order of operations with decimals: Problem type 3
- Addition or subtraction with a decimal and a mixed number
- Multiplication with a decimal and a fraction

- Ratios, Proportions, and Measurement (54 topics)
  - Writing ratios using different notations
  - Writing ratios for real-world situations
  - Writing a ratio and finding a quantity in an equivalent ratio in context
  - Identifying statements that describe a ratio
  - Simplifying a ratio of whole numbers: Problem type 1
  - Simplifying a ratio of decimals
  - Finding missing values in a table of equivalent ratios: Given a part-to-part ratio
  - Finding missing values in a table of equivalent ratios: Given a part-to-whole ratio NEW
  - Word problem on proportions: Problem type 2
  - Word problem with powers of ten
  - Investigating the effects on the area for non-proportional and proportional figures
  - Choosing a measuring tool
  - Choosing U.S. Customary measurement units
  - Measuring length to the nearest inch
  - Measuring length to the nearest quarter or half inch
  - Writing and solving a proportion to convert U.S. Customary units of length NEW
  - Conversions involving measurements in feet and inches
  - Adding 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 unit conversion with whole number values: Two-step conversion
  - U.S. Customary unit conversion with mixed number values: One-step conversion
  - U.S. Customary unit conversion with mixed number values: Two-step conversion
  - U.S. Customary area unit conversion with whole number values
  - Word problem on area involving conversions of U.S. Customary units: Problem type 1
  - Unit conversions involving acres and hectares
  - Choosing metric measurement units
  - Measuring length to the nearest centimeter
  - Measuring length to the nearest millimeter
  - Metric distance conversion with whole number values
  - Writing and solving a proportion to convert metric units of length NEW
  - Metric distance conversion with decimal values
  - Metric mass or volume conversion with whole numbers
  - Metric conversion with decimal values: Two-step problem
  - Metric area unit conversion with decimal values
  - Word problem involving adding or subtracting time within the hour
  - Introduction to adding time
  - Adding time
  - Word problem on elapsed time within the hour
  - Word problem on elapsed time less than one hour
  - Word problem on elapsed time more than one hour
  - Word problem on elapsed times crossing a.m. and p.m.
  - Reading a positive temperature from a thermometer
  - Reading the temperature from a thermometer

- Converting between temperatures in Fahrenheit and Celsius
- Simplifying a ratio of whole numbers: Problem type 2
- Solving a word problem involving rates and time conversion
- Converting between metric and U.S. Customary unit systems using dimensional analysis: U.S. Customary to metric
- Converting between metric and U.S. Customary unit systems using dimensional analysis: Metric to U.S. Customary NEW
- Word problem involving U.S. Customary length conversions using dimensional analysis
- Word problem involving a conversion between U.S. Customary units of weight and metric units of mass
- Converting between compound units: Advanced
- Conversions with currency
- Word problem involving conversion between compound units using dimensional analysis

- Percents (42 topics)
  - Finding the percentage of a grid that is shaded
  - Representing benchmark percentages on a grid
  - 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
  - Comparing fractions, decimals, and percentages using a number line
  - Using a calculator to convert a fraction to a rounded percentage
  - Writing a ratio as a percentage
  - Applying the percent equation: Problem type 2
  - Interpreting a circle graph or pie chart
  - Computations from a circle graph
  - Finding the multiplier to give a final amount after a percentage increase or decrease
  - Combined effect of more than one markup or discount
  - Finding the original amount given the result of a percentage increase or decrease
  - Finding the original price given the sale price and percent discount
  - Finding the absolute error and percent error of a measurement
  - Finding the principal, rate, or time of a simple interest loan or investment
  - Computing the interest and repayment amount for a simple interest loan whose term is given in months or days
  - Finding the principal, rate, or time for a simple interest loan whose term is given in months or days
  - Comparing discounts
  - Calculations involving paying for college
  - Comparing total costs for attending different colleges
  - Distinguishing between fixed and variable expenses
  - Computing percentages for categories of a budget
  - Computations involving cost of living and hourly wage
  - Using a family budget estimator to determine the minimum monthly budget and average hourly wage needed for a family
  - Comparing annual salaries of different occupations
  - Hourly gross pay with overtime
  - Gross pay with commission and salary
  - Calculations involving purchases with debit and credit cards
  - Deciding when it is applicable to pay with cash or credit and examining the advantages and disadvantages of different payment methods NEW
  - Comparing costs of checking accounts
  - Balancing a check register
  - Reading a credit report
  - Determining the value of credit reports to borrowers and lenders NEW
  - Understanding the impact of a credit score
  - Computing a person's net worth
  - Word problem on financial responsibility
  - 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

- Equations and Inequalities (58 topics)
  - Introduction to the distributive property
  - Understanding the distributive property
  - Introduction to factoring with numbers
  - Factoring a sum or difference of whole numbers
  - Identifying like terms
  - Properties of addition
  - Properties of real numbers
  - Combining like terms: Decimal coefficients
  - Combining like terms: Fractional coefficients
  - Using algebra tiles to determine if two expressions are equivalent
  - Identifying parts in an algebraic expression
  - Identifying equivalent algebraic expressions
  - Using distribution with double negation and combining like terms to simplify: Multivariate
  - Combining like terms in a quadratic expression
  - Adding rational expressions with different denominators and a single occurrence of a variable

- Solving an equation to find the value of an expression
- Solving a multi-step equation given in fractional form
- Clearing fractions in an equation
- Solving a two-step equation with signed fractions
- Solving a proportion of the form (x+a)/b = c/d
- Introduction to solving a rational equation
- Solving a rational equation that simplifies to linear: Denominator x
- Introduction to solving an absolute value equation
- Solving an absolute value equation: Problem type 1
- Solving a linear equation with several occurrences of the variable: Variables on both sides and two distributions
- Solving a linear equation with several occurrences of the variable: Fractional forms with monomial numerators
- Solving a linear equation with several occurrences of the variable: Variables on both sides and fractional coefficients
- Solving a proportion of the form a/(x+b) = c/x
- Solving for a variable in terms of other variables using addition or subtraction: Advanced
- 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
- 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
- Solving a fraction word problem using a linear equation of the form Ax = B
- 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 percent mixture problem using a linear equation
- Solving a distance, rate, time problem using a linear equation
- 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
- Additive property of inequality with signed fractions
- Additive property of inequality with signed decimals
- Multiplicative property of inequality with signed fractions
- 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 a decimal word problem using a linear inequality with the variable on both sides
- Constructing a Venn diagram with 2 sets
- Interpreting Venn diagram cardinalities with 2 sets for a real-world situation
- Constructing a Venn diagram with 2 sets to solve a word problem
- Constructing a Venn diagram with 3 sets
- Interpreting Venn diagram cardinalities with 3 sets for a real-world situation
- Constructing a Venn diagram with 3 sets to solve a word problem

- Graphs, Functions, and Sequences (102 topics)
  - Reading a point in quadrant 1
  - Plotting a point in quadrant 1
  - Plotting a point in quadrant 1: Mixed number coordinates
  - Plotting a point in the coordinate plane: Mixed number coordinates
  - 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
  - Plotting points that share a coordinate and using absolute value to find the distance between them
  - Midpoint of a line segment in the plane
  - Writing a function rule given a table of ordered pairs: One-step rules
  - Finding the coordinates of a point on a graph given the equation
  - Finding a solution to a linear equation in two variables
  - Comparing two rules with forms of y=ax and y=x+a
  - 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
  - Interpreting a line graph
  - Classifying slopes given graphs of lines
  - Finding the coordinate that yields a given slope
  - Graphing a line through a given point with a given slope
  - Identifying direct variation equations
  - 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 variation involving the completion of a task
  - 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
- Deriving the equation of a line through the origin NEW
- Deriving the equation of a line not going through the origin NEW
- Graphing a line given its equation in point-slope form
- Writing the equation of a line in standard form given the slope and a point
- Writing the equations of vertical and horizontal lines through a given point
- Writing the equation and finding the slope of a line parallel or perpendicular to a vertical or horizontal line
- 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 inputs and outputs of a two-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
- 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 quantities from tables and graphs
- Identifying independent and dependent variables from equations or real-world situations
- Solving a linear equation by graphing NEW
- Identifying functions given a verbal description NEW
- 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
- 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
- Finding and interpreting an output of a linear function given a graph that models a real-world situation
- Graphing an integer function and finding its range for a given domain
- 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 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
- Graphing a parabola of the form $y = ax^2$
- Graphing a parabola of the form $y = ax^2 + c$
- Graphing a function of the form $f(x) = ax^2$
- Graphing a function of the form $f(x) = ax^2 + c$
- Graphing a cubic function of the form $y = ax^3$
- Finding the first terms of an arithmetic sequence using an explicit rule
- Finding the next terms of an arithmetic sequence with whole numbers
- 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 whole numbers
- 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
- Finding patterns in shapes
- Writing a system of linear equations given its graph
- Solving a system of linear equations using elimination with multiplication and addition
- Solving a word problem involving a system of linear equations by graphing and estimating a solution
- 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
- Writing and solving a system of two linear equations given a verbal description NEW
- Solving a value mixture problem using a system of linear equations
- Addition or subtraction of matrices
- 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
- Writing an inequality given its graph in the plane: Horizontal or vertical boundary line
- Writing an inequality given its graph in the plane: Slanted boundary line
- Graphing a system of two linear inequalities: Basic
- Graphing a system of two linear inequalities: Advanced
- Writing a linear inequality in two variables given a table of values

- Exponents, Polynomials, and Radicals (66 topics)
  - Product rule with positive exponents: Multivariate
  - Ordering numbers with positive exponents
  - Power rules with positive exponents: Multivariate products
  - Power rules with positive exponents: Multivariate quotients
  - Simplifying a ratio of multivariate monomials: Basic
  - Simplifying a ratio of univariate monomials
  - Quotient of expressions involving exponents
  - Simplifying a ratio of multivariate monomials: Advanced
  - Ordering numbers with negative exponents
  - Rewriting an algebraic expression without a negative exponent
  - Power of a power rule with negative exponents
  - Adding or subtracting numbers written in scientific notation: Same exponents, advanced
  - 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 two univariate polynomials
  - Simplifying a sum or difference of three univariate 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 with leading coefficients of 1
  - Multiplying binomials with leading coefficients greater than 1
  - Multiplying binomials in two variables
  - Multiplying conjugate binomials: Univariate
  - Squaring a binomial: Univariate
  - Multiplication involving binomials and trinomials in one variable
  - Multiplication involving binomials and trinomials in two variables
  - Introduction to the LCM of two monomials
  - Least common multiple of two monomials
  - 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 a quadratic with leading coefficient 1
  - Factoring a perfect square trinomial with leading coefficient 1
  - Factoring a difference of squares in one variable: Basic
  - Factoring a difference of squares in one variable: Advanced
  - Dividing a polynomial by a monomial: Univariate
  - Dividing a polynomial by a monomial: Multivariate
  - Finding the roots of a quadratic equation with leading coefficient 1
  - Determining the kind of decimal expansion for real numbers
  - Identifying the digits that repeat in the decimal expansion of a rational number: Problem type 1
  - Identifying the digits that repeat in the decimal expansion of a rational number: Problem type 2 NEW
  - Introduction to simplifying a radical expression with an even exponent
  - Square root of a perfect square monomial
  - Simplifying the square root of a whole number less than 100
  - Simplifying the square root of a whole number greater than 100
  - Simplifying a radical expression with an even exponent
  - Introduction to simplifying a radical expression with an odd exponent
  - Simplifying a radical expression with an odd exponent
  - Introduction to square root addition or subtraction
  - Square root addition or subtraction
  - Introduction to square root multiplication
  - Square root multiplication: Basic
  - Square root multiplication: Advanced
  - Simplifying a quotient of square roots
  - Rationalizing a denominator: Quotient involving square roots
  - Classifying sums and products as rational or irrational NEW
  - 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
  - Solving an equation using the odd-root property: Problem type 1
  - Rational exponents: Unit fraction exponents and whole number bases
  - Rational exponents: Non-unit fraction exponent with a whole number base
  - Distance between two points in the plane: Exact answers
  - Distance between two points in the plane: Decimal answers

- Lines, Angles, and Polygons (37 topics)
  - Naming segments, rays, and lines
  - Naming angles, sides of angles, and vertices
  - Writing and solving an equation involving adjacent angles NEW
  - Finding supplementary and complementary angles
  - Writing and solving an equation involving vertical angles

- Constructing congruent line segments
- Constructing an angle bisector
- Constructing congruent angles
- Constructing the perpendicular bisector of a line segment
- Constructing a pair of perpendicular lines
- Constructing a pair of parallel lines
- Identifying congruent segments in the plane
- Identifying scalene, isosceles, and equilateral triangles given coordinates of their vertices
- Finding 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
- Finding an angle measure for a triangle sharing a side with another triangle
- Drawing triangles with given conditions: Side lengths and angle measures
- Drawing a circle with a given radius or diameter
- Drawing triangles with given side lengths using a compass
- Relationship between angle measures and side lengths in two triangles
- Sine, cosine, and tangent ratios: Numbers for side lengths
- Sine, cosine, and tangent ratios: Variables for side lengths
- Using a calculator to approximate sine, cosine, and tangent values
- Using the Pythagorean Theorem to find a sine, cosine, or tangent ratio 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
- Solving 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 angles of elevation or depression in a word problem
- Special right triangles: Decimal answers
- Naming polygons
- Drawing and identifying a polygon in the coordinate plane
- Finding the coordinates of a point to make a parallelogram
- Informally deriving the formula for the sum of interior angles of polygons by decomposing them into triangles

- Transformations (12 topics)
  - Identifying and naming congruent triangles
  - Exploring the triangle congruence theorems
  - Using a translated point to find coordinates of other translated points
  - Reflecting a polygon over a vertical or horizontal line
  - Finding the coordinates of three points reflected over an axis
  - Drawing lines of symmetry
  - Finding an angle of rotation
  - Identifying rotational symmetry and angles of rotation
  - Identifying figures that have rotational symmetry or reflectional symmetry NEW
  - Performing a composition of dilations NEW
  - Performing a composition consisting of a rigid transformation and a dilation NEW
  - Identifying transformations and determining if they preserve congruent figures

- Perimeter, Area, and Volume (66 topics)
  - Perimeter of a piecewise rectangular figure
  - Writing algebraic expressions for the perimeter of a figure
  - Finding a side length given the perimeter and side lengths with variables
  - Sides of polygons having the same perimeter
  - Perimeter of a polygon involving mixed numbers and fractions
  - Area of a rectangle with fractional side lengths
  - Area of a rectangle involving mixed number and fractional side lengths
  - Distinguishing between the area and perimeter of a rectangle
  - Areas of rectangles with the same perimeter
  - Word problem on area involving conversions of U.S. Customary units: Problem type 2
  - Word problem on area involving conversions between systems
  - Estimates and exact answers
  - Writing algebraic expressions for the area of a figure
  - Word problem on optimizing an area or 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
  - Finding the perimeter or area of a rectangle in the coordinate plane
  - Finding the area of a right triangle or its corresponding rectangle
  - Solving a word problem involving area using a one-step linear inequality: Area and lengths
  - Finding the area of a triangle or parallelogram in the coordinate plane
  - Decomposing a trapezoid or parallelogram to find its area given a situation in context NEW
  - Introduction to area of a piecewise rectangular figure
  - Word problem involving the area between two rectangles
  - Finding an area in terms of variables
  - Finding the area of a trapezoid, rhombus, or kite in the coordinate plane
  - Informal proof of the converse of the Pythagorean Theorem NEW

- Identifying chords, secants, and tangents of a circle
- Naming and finding measures of central angles, inscribed angles, and arcs of a circle
- Circumference ratios
- Perimeter involving rectangles and circles
- Circumference and area of a circle: Exact answers in terms of pi
- Distinguishing between the area and circumference of a circle
- Word problem involving the area between two concentric circles
- Area involving multiple inscribed figures
- Vertices, edges, and faces of a solid
- Identifying geometric shapes that model real-world objects
- Identifying solids generated by rotations of two-dimensional regions NEW
- Volume of a rectangular prism made of unit cubes
- Volume of a solid made of cubes with unit fraction edge lengths
- Volume of a rectangular prism with fractional edge lengths
- Finding the side length of a cube given its volume
- Solving problems involving the volume of a rectangular prism in context
- Word problem involving the rate of filling or emptying a rectangular prism
- Computations involving density, mass, and volume NEW
- Word problem on density involving the volume of a rectangular solid NEW
- Word problem on volume involving conversions of U.S. Customary units
- Describing the formula for the volume of a cylinder
- Word problem involving the rate of filling or emptying a cylinder
- Ratio of volumes
- Converting between U.S. Customary units of volume: Problem type 1
- Converting between metric units of volume and capacity
- Volume of a cone: Exact answers in terms of pi
- Surface area of a rectangular prism made of unit cubes
- Distinguishing between surface area and volume
- Deriving the formula for the surface area of a rectangular prism NEW
- Word problem involving U.S. Customary conversions, surface area, and cost
- Surface area of a piecewise rectangular prism made of unit cubes
- Deriving the formula for the surface area of a right triangular prism NEW
- Surface area of a cylinder: Exact answers in terms of pi
- Deriving the formula for the surface area of a cylinder NEW
- Lateral surface area and surface area of a cone: Exact answers in terms of pi
- Side lengths, perimeters, and areas of similar polygons
- Identifying similar solids
- Computing ratios of side lengths, surface areas, and volumes for similar solids
- Computing side length, surface area, and volume for similar solids
- Word problem involving volumes of similar solids

- Data Analysis and Probability (56 topics)
  - Identifying statistical questions
  - Classifying samples
  - Interpreting a tally table
  - Constructing a frequency distribution for grouped data
  - Constructing a frequency distribution for non-grouped data
  - Constructing a relative frequency distribution for grouped data
  - Finding if a question can be answered by the data
  - Constructing a line plot with fractional values: Fourths
  - Constructing a bar graph for non-numerical data
  - Interpreting a bar graph
  - Interpreting a double bar graph
  - Constructing a frequency distribution and a histogram
  - Interpreting a histogram
  - Introduction to interpreting a pictograph
  - Interpreting a pictograph table
  - Interpreting a stem-and-leaf plot
  - Constructing a stem-and-leaf plot NEW
  - Using technology to fit a linear regression model to data and to make a prediction NEW
  - Linear relationship and the correlation coefficient
  - Using technology to calculate the correlation coefficients for two sets of bivariate data to compare the linear relationships NEW
  - Identifying correlation and causation NEW
  - Mean of a data set
  - Using a model to find the mean
  - Understanding the mean graphically: Two bars
  - Understanding the mean graphically: Four or more bars
  - 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
  - How changing a value affects the mean and median

- Mode of a data set
- Interpreting a percent bar graph to summarize categorical data using the mode NEW
- Choosing the best measure to describe data
- Finding the mode and range from a line plot
- How changing a value affects the range and IQR
- Identifying peaks, symmetry, gaps, and clusters in a line plot
- Identifying the center, spread, and shape of a data set
- Comparing measures of center and variation
- Using back-to-back stem-and-leaf plots to compare data sets
- Five-number summary and interquartile range
- Constructing a box-and-whisker plot
- Computing mean absolute deviation from a bar graph
- Finding outliers in a data set
- Introduction to the counting principle
- Counting principle
- Counting principle with repetition allowed
- Factorial expressions
- Computing permutations and combinations
- Word problem involving permutations
- Word problem involving combinations
- Introduction to permutations and combinations
- Finding the odds in favor and against
- Converting between probability and odds
- Area as probability
- Probabilities of a permutation and a combination
- Using a random number table to make a fair decision

***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.