ALEKS®

Integrated Mathematics III

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

Curriculum (499 topics + 951 additional topics)

- Real Numbers (42 topics)

  - Factors and Multiples (3 topics)
    - Greatest common factor of 2 numbers
    - Least common multiple of 2 numbers
    - Least common multiple of 3 numbers

  - The Number Line and Absolute Value (3 topics)
    - Using a calculator to approximate a square root
    - Absolute value of a number
    - Finding all numbers with a given absolute value

  - Operations with Signed Numbers (13 topics)
    - Integer addition: Problem type 1
    - Integer addition: Problem type 2
    - Integer subtraction: Problem type 1
    - Integer subtraction: Problem type 2
    - Integer subtraction: Problem type 3
    - Computing the distance between two integers on a number line
    - Integer multiplication and division
    - Multiplication of 3 or 4 integers
    - Signed fraction addition or subtraction: Basic
    - Signed fraction subtraction involving double negation
    - Signed fraction multiplication: Basic
    - Complex fraction without variables: Problem type 1
    - Signed decimal addition and subtraction

  - Exponents and Order of Operations (3 topics)
    - Exponents and integers: Problem type 1
    - Exponents and signed fractions
    - Order of operations with integers

  - Evaluating Expressions (6 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 an algebraic expression: Whole number operations and exponents
    - Evaluating a linear expression: Integer multiplication with addition or subtraction
    - Evaluating a quadratic expression: Integers

  - Properties of Real Numbers (10 topics)
    - Combining like terms: Whole number coefficients
    - Combining like terms: Integer coefficients
    - Combining like terms: Fractional coefficients
    - Combining like terms: Decimal coefficients
    - Distributive property: Whole number coefficients
    - Distributive property: Integer coefficients
    - Distributive property: Fractional coefficients
    - Using distribution and combining like terms to simplify: Univariate
    - Using distribution with double negation and combining like terms to simplify: Multivariate
    - Combining like terms in a quadratic expression

  - Introduction to Perimeter, Area, and Volume (4 topics)
    - Writing algebraic expressions for the perimeter of a figure
    - Word problem involving the area of a rectangle: Problem type 2
    - Volume of a rectangular prism
    - Word problem involving the volume of a rectangular prism

- Linear Equations and Inequalities (63 topics)

  - Linear Equations (15 topics)
    - Additive property of equality with signed fractions
    - Multiplicative property of equality with signed fractions

- Additive property of equality with a negative coefficient
- 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
- Solving a linear equation with several occurrences of the variable: Variables on the same 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 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

- Writing Expressions and Equations (6 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
  - Writing an equation to represent a proportional relationship
  - Translating a sentence into a multi-step equation

- Applications Involving Linear Equations (8 topics)
  - Writing an equation of the form $Ax + B = C$ to solve a word problem
  - Solving a decimal word problem using a linear equation of the form $Ax + B = C$
  - Solving a word problem with two unknowns using a linear equation
  - Writing an equation to represent a real-world problem: Variable on both sides
  - Solving a word problem with three unknowns using a linear equation
  - Solving a one-step word problem using the formula $d = rt$
  - 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

- Solving for a Variable and Dimensional Analysis (5 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 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

- Proportions and Applications Involving Percents (12 topics)
  - Solving a proportion of the form x/a=b/c: Basic
  - Solving a proportion of the form x/a = b/c
  - Solving a proportion of the form (x+a)/b = c/d
  - Solving a proportion of the form a/(x+b) = c/x
  - Introduction to solving a rational equation
  - Solving a rational equation that simplifies to linear: Denominator x
  - Word problem on proportions: Problem type 1
  - 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
  - Introduction to compound interest

- Absolute Value Equations (1 topics)
  - Introduction to solving an absolute value equation

- Writing and Graphing Inequalities (3 topics)
  - 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 (8 topics)
  - Additive property of inequality with whole numbers
  - Additive property of inequality with integers
  - Multiplicative property of inequality with whole numbers
  - Multiplicative property of inequality with integers
  - Solving a two-step linear inequality with whole numbers
  - Solving a two-step linear inequality: Problem type 1
  - Solving a two-step linear inequality: Problem type 2
  - Solving a linear inequality with multiple occurrences of the variable: Problem type 1

- Applications Involving Linear Inequalities (2 topics)
  - Solving a word problem using a two-step linear inequality
  - Solving a decimal word problem using a two-step linear inequality

- Sets and Venn Diagrams (1 topics)
  - Interpreting a Venn diagram of 2 sets

- Compound Inequalities (2 topics)
  - Graphing a compound inequality on the number line
  - Set-builder and interval notation

- The Coordinate Plane and Equations of Lines (23 topics)

  - Ordered Pairs (1 topics)
    - Finding distances between points that share a common coordinate given the graph

  - Tables and Graphs of Lines (9 topics)
    - Table for a linear equation
    - 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 given the graph of a line on a grid
    - Finding x- and y-intercepts of a line given the equation: Basic

  - Slope (2 topics)
    - Finding slope given the graph of a line on a grid
    - Finding slope given two points on a line

  - Equations of Lines (5 topics)
    - Finding the slope and y-intercept of a line given its equation in the form y = mx + b
    - Finding the slope and y-intercept of a line given its equation in the form Ax + By = C
    - Writing an equation of a line given its slope and y-intercept
    - Writing an equation in slope-intercept form given the slope and a point
    - Writing the equation of a line given the y-intercept and another point

  - Applications Involving Linear Equations with Two Variables (6 topics)
    - Writing and evaluating a function that models a real-world situation: Basic
    - Writing an equation and drawing its graph to model a real-world situation: Advanced
    - Finding the intercepts and rate of change given a graph of a linear function
    - Combining functions to write a new function that models a real-world situation
    - Comparing properties of linear functions given in different forms
    - Interpreting the parameters of a linear function that models a real-world situation

- Functions and Systems (57 topics)

  - Introduction to Functions (8 topics)
    - Identifying functions from relations
    - Domain and range from ordered pairs
    - Table for a linear function
    - Evaluating functions: Linear and quadratic or cubic
    - Variable expressions as inputs of functions: Problem type 1
    - Evaluating a piecewise-defined function
    - 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 (23 topics)
    - 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
    - Interpreting the domain and range of a linear function in context
    - Domain and range from the graph of a continuous function
    - Finding intercepts of a nonlinear function given its graph
    - Finding where a function is increasing, decreasing, or constant given the graph
    - Finding where a function is increasing, decreasing, or constant given the graph: Interval notation
    - Finding local maxima and minima of a function given the graph
    - Finding values and intervals where the graph of a function is zero, positive, or negative
    - Graphing an absolute value equation of the form y = A|x|
    - Graphing an absolute value equation in the plane: Basic
    - Graphing a parabola of the form $y = ax^2$
    - Graphing a parabola of the form $y = (x-h)^2 + k$
    - Finding the domain and range from the graph of a parabola
    - Graphing a cubic function of the form $y = ax^3$
    - Graphing a piecewise-defined function: Problem type 1
    - Introduction to graphing a piecewise-defined function involving lines with non-zero slope
    - Graphing a piecewise-defined function: Problem type 2

- Graphing a piecewise-defined function: Problem type 3
- Finding the average rate of change of a function given its equation
- Finding the average rate of change of a function given its graph
- Word problem involving average rate of change

- **Transforming the Graphs of Functions (10 topics)**
  - Translating the graph of a parabola: One step
  - Translating the graph of a parabola: Two steps
  - Translating the graph of an absolute value function: One step
  - Translating the graph of an absolute value function: Two steps
  - How the leading coefficient affects the graph of an absolute value function
  - Writing an equation for a function after a vertical translation
  - Translating the graph of a function: One step
  - Translating the graph of a function: Two steps
  - Transforming the graph of a quadratic, cubic, square root, or absolute value function
  - Writing an equation for a function after a vertical and horizontal translation

- **Systems of Linear Equations (7 topics)**
  - Graphically solving a system of linear equations
  - Using a graphing calculator to solve a system of linear equations: Basic
  - Using a graphing calculator to solve a system of linear equations: Advanced
  - 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 Involving Systems of Linear Equations (2 topics)**
  - Solving a word problem involving a sum and another basic relationship using a system of linear equations
  - Solving a value mixture problem using a system of linear equations

- **Linear Inequalities with Two Variables (4 topics)**
  - 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

- **Systems of Linear Inequalities (3 topics)**
  - Graphing a system of two linear inequalities: Basic
  - Writing a multi-step inequality for a real-world situation
  - Solving a word problem using a system of linear inequalities: Problem type 1

- Exponents and Polynomials (58 topics)

  - **Product, Power, and Quotient Rules (12 topics)**
    - Introduction to the product rule of exponents
    - Product rule with positive exponents: Univariate
    - Product rule with positive exponents: Multivariate
    - Introduction to the power of a power rule of exponents
    - Introduction to the power of a product rule of exponents
    - Power rules with positive exponents: Multivariate products
    - Power rules with positive exponents: Multivariate quotients
    - Simplifying a ratio of multivariate monomials: Basic
    - Introduction to the quotient rule of exponents
    - Simplifying a ratio of univariate monomials
    - Quotient of expressions involving exponents
    - Simplifying a ratio of multivariate monomials: Advanced

  - **Negative Exponents (5 topics)**
    - Evaluating expressions with exponents of zero
    - 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
    - Rewriting an algebraic expression without a negative exponent

  - **Polynomial Addition, Subtraction, and Multiplication (15 topics)**
    - Degree and leading coefficient of a univariate polynomial
    - Simplifying a sum or difference of two univariate polynomials
    - Simplifying a sum or difference of multivariate polynomials
    - Multiplying a univariate polynomial by a monomial with a positive coefficient
    - Multiplying a univariate polynomial by a monomial with a negative coefficient
    - Multiplying binomials with leading coefficients of 1
    - Multiplying binomials with leading coefficients greater than 1
    - Multiplying binomials in two variables
    - Multiplying conjugate binomials: Univariate

- Multiplying conjugate binomials: Multivariate
- Squaring a binomial: Univariate
- 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

- **Factoring Using the GCF (3 topics)**
  - Factoring a linear binomial
  - Introduction to the GCF of two monomials
  - Factoring out a monomial from a polynomial: Univariate

- **Factoring by Grouping (1 topics)**
  - Factoring a univariate polynomial by grouping: Problem type 1

- **Factoring Quadratic Trinomials (5 topics)**
  - Factoring a quadratic with leading coefficient 1
  - Factoring out a constant before factoring a quadratic
  - 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 a quadratic with a negative leading coefficient

- **Factoring Special Products (3 topics)**
  - 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

- **Polynomial Division (6 topics)**
  - Dividing a polynomial by a monomial: Univariate
  - Polynomial long division: Problem type 1
  - Polynomial long division: Problem type 2
  - Polynomial long division: Problem type 3
  - Synthetic division
  - Closure properties of integers and polynomials

- **Solving Quadratic Equations by Factoring (8 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 quadratic equation needing simplification
  - Roots of a product of polynomials
  - Writing a quadratic equation given the roots and the leading coefficient
  - Finding the zeros of a quadratic function given its equation
  - Solving a word problem using a quadratic equation with rational roots

- Radicals (33 topics)

  - **Roots of Perfect Powers (3 topics)**
    - Square root of a rational perfect square
    - Square roots of perfect squares with signs
    - Cube root of an integer

  - **Radical Functions (7 topics)**
    - Table for a square root function
    - Evaluating a cube root function
    - Domain of a square root function: Basic
    - Domain of a square root function: Advanced
    - Graphing a square root function: Problem type 1
    - Graphing a square root function: Problem type 2
    - Graphing a cube root function

  - **Simplifying Expressions (2 topics)**
    - Simplifying the square root of a whole number less than 100
    - Simplifying a higher root of a whole number

  - **Multiplication (3 topics)**
    - Introduction to square root multiplication
    - Square root multiplication: Basic
    - Square root multiplication: Advanced

  - **Division and Rationalization (2 topics)**
    - Simplifying a quotient of square roots
    - Rationalizing a denominator: Quotient involving square roots

- Radical Equations (13 topics)
    - Introduction to solving a radical equation
    - Solving a radical equation that simplifies to a linear equation: One radical, basic
    - Solving a radical equation that simplifies to a linear equation: One radical, advanced
    - Solving a radical equation that simplifies to a linear equation: Two radicals
    - Solving a radical equation that simplifies to a quadratic equation: One radical, basic
    - Solving a radical equation that simplifies to a quadratic equation: One radical, advanced
    - Solving for a variable in terms of other variables in an equation involving radicals
    - Word problem involving radical equations: Basic
    - Word problem involving radical equations: Advanced
    - Solving an equation with a root index greater than 2: Problem type 1
    - Solving an equation with a root index greater than 2: Problem type 2
    - Solving an equation of the form $x^3 = a$ using integers
    - Finding the side length of a cube given its volume

- Complex Numbers (3 topics)
    - Using i to rewrite square roots of negative numbers
    - Adding or subtracting complex numbers
    - Multiplying complex numbers

- Rational Expressions (47 topics)

    - Simplifying Rational Expressions (9 topics)
        - Restriction on a variable in a denominator: Linear
        - Restriction on a variable in a denominator: Quadratic
        - Evaluating a rational function: Problem type 1
        - Evaluating a rational function: Problem type 2
        - Domain of a rational function: Excluded values
        - Simplifying a ratio of factored polynomials: Linear factors
        - Simplifying a ratio of polynomials using GCF factoring
        - Simplifying a ratio of polynomials by factoring a quadratic with leading coefficient 1
        - Simplifying a ratio of polynomials: Problem type 1

    - Multiplication and Division (6 topics)
        - Multiplying rational expressions involving multivariate monomials
        - Multiplying rational expressions involving linear expressions
        - Multiplying rational expressions involving quadratics with leading coefficients of 1
        - Dividing rational expressions involving multivariate monomials
        - Dividing rational expressions involving linear expressions
        - Dividing rational expressions involving quadratics with leading coefficients of 1

    - Addition and Subtraction (10 topics)
        - Finding the LCD of rational expressions with linear denominators: Relatively prime
        - Adding rational expressions with common denominators and monomial numerators
        - Adding rational expressions with common denominators and binomial numerators
        - Adding rational expressions with common denominators and GCF factoring
        - Adding rational expressions with common denominators and quadratic factoring
        - Adding rational expressions with different denominators and a single occurrence of a variable
        - Adding rational expressions with denominators ax and bx: Basic
        - Adding rational expressions with linear denominators without common factors: Basic
        - Adding rational expressions with linear denominators with common factors: Basic
        - Adding rational expressions involving different quadratic denominators

    - Complex Fractions (2 topics)
        - Complex fraction without variables: Problem type 2
        - Complex fraction involving univariate monomials

    - Rational Equations (10 topics)
        - Solving a rational equation that simplifies to linear: Denominator x+a
        - Solving a rational equation that simplifies to linear: Denominators a, x, or ax
        - Solving a rational equation that simplifies to linear: Denominators ax and bx
        - Solving a rational equation that simplifies to linear: Like binomial denominators
        - Solving a rational equation that simplifies to linear: Unlike binomial denominators
        - Solving a rational equation that simplifies to linear: Factorable quadratic denominator
        - Solving a rational equation that simplifies to quadratic: Denominator x
        - Solving a rational equation that simplifies to quadratic: Binomial denominators, constant numerators
        - Solving a rational equation that simplifies to quadratic: Binomial denominators and numerators
        - Solving a rational equation that simplifies to quadratic: Factorable quadratic denominator

    - Applications (5 topics)
        - Solving for a variable in terms of other variables in a rational equation: Problem type 1
        - Solving for a variable in terms of other variables in a rational equation: Problem type 2
        - Word problem involving multiple rates
        - Solving a work problem using a rational equation

- Solving a distance, rate, time problem using a rational equation

- Graphing Rational Functions (5 topics)
  - Finding the intercepts, asymptotes, domain, and range from the graph of a rational function
  - Finding the asymptotes of a rational function: Constant over linear
  - Graphing a rational function: Constant over linear
  - Graphing a rational function: Linear over linear
  - Transforming the graph of a rational function

- Quadratic, Exponential, and Logarithmic Functions (82 topics)

  - Quadratic Equations (7 topics)
    - 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
    - Applying the quadratic formula: Exact answers
    - Solving a quadratic equation with complex roots
    - Solving a word problem using a quadratic equation with irrational roots

  - Quadratic Functions (15 topics)
    - Finding the vertex, intercepts, and axis of symmetry from the graph of a parabola
    - 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
    - Writing a quadratic function given its zeros
    - Finding the x-intercept(s) and the vertex of a parabola
    - Rewriting a quadratic function to find its vertex and sketch its graph
    - Rewriting a quadratic function to find its maximum or minimum and axis of symmetry
    - Finding the maximum or minimum of a quadratic function
    - Word problem involving the maximum or minimum of a quadratic function
    - Graphing a quadratic function that models a real-world situation and identifying key features
    - Writing the equation of a quadratic function given a table of values
    - Writing the equation of a quadratic function given its x-intercepts and another point
    - Writing the equation of a quadratic function given its graph
    - Comparing properties of quadratic functions given in different forms

  - Function Operations (4 topics)
    - Sum, difference, and product of two functions
    - Quotient of two functions: Basic
    - Introduction to the composition of two functions
    - Composition of two functions: Basic

  - Inverse Functions (6 topics)
    - Inverse functions: Linear, discrete
    - Inverse functions: Quadratic, square root
    - Inverse functions: Cubic, cube root
    - Inverse functions: Rational
    - Finding, evaluating, and interpreting an inverse function for a given linear relationship
    - Even and odd functions: Problem type 1

  - Graphing Exponential Functions (9 topics)
    - Table for an exponential function
    - Graphing an exponential function: $f(x) = b^x$
    - 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 $f(x) = -b^{-x}$
    - Translating the graph of an exponential function
    - Finding domain and range from the graph of an exponential function
    - Choosing the graph for an exponential function and identifying key features
    - Graphing an exponential function and finding its domain and range

  - Applications of Exponential Functions (8 topics)
    - Using a calculator to evaluate exponential expressions
    - Evaluating an exponential function that models a real-world situation
    - Using a calculator to evaluate exponential expressions involving base e
    - Finding a final amount 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
    - Writing an exponential function rule given a table of ordered pairs
    - Finding the initial amount and asymptote given a graph of an exponential function

- Polynomial Functions (9 topics)
    - Identifying polynomial functions
    - Finding zeros of a polynomial function written in factored form
    - Finding zeros and their multiplicities given a polynomial function written in factored form
    - Finding a polynomial of a given degree with given zeros: Real zeros
    - Finding x- and y-intercepts given a polynomial function
    - Determining the end behavior of the graph of a polynomial function
    - Determining end behavior and intercepts to graph a polynomial function
    - Using a graphing calculator to find local extrema of a polynomial function
    - Using a graphing calculator to solve a word problem involving a local extremum of a polynomial function

- Remainder and Factor Theorems (2 topics)
    - Using the remainder theorem to evaluate a polynomial
    - The Factor Theorem

- Complex Zeros of Polynomial Functions (4 topics)
    - Multiplying expressions involving complex conjugates
    - Finding a polynomial of a given degree with given zeros: Complex zeros
    - Using the conjugate zeros theorem to find all zeros of a polynomial
    - Linear factors theorem and conjugate zeros theorem

- Logarithmic Functions (6 topics)
    - Using a calculator to evaluate natural and common logarithmic expressions
    - Converting between logarithmic and exponential equations
    - Converting between natural logarithmic and exponential equations
    - Evaluating logarithmic expressions
    - Translating the graph of a logarithmic function
    - Graphing a logarithmic function: Basic

- Properties of Logarithms (2 topics)
    - Basic properties of logarithms
    - Expanding a logarithmic expression: Problem type 1

- Logarithmic and Exponential Equations and Applications (10 topics)
    - Solving an exponential equation by using logarithms: Decimal answers, basic
    - Solving an exponential equation by using natural logarithms: Decimal answers
    - Solving an exponential equation by using logarithms: Decimal answers, advanced
    - Solving an exponential equation by using logarithms: Exact answers in logarithmic form
    - Using a graphing calculator to solve an exponential or logarithmic equation
    - Finding the time to reach a limit in a word problem on exponential growth or decay
    - Finding the time given an exponential function with base e that models a real-world situation
    - Finding the final amount in a word problem on 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

- Angles, Triangles, and Quadrilaterals (3 topics)

    - Angles of Triangles (1 topics)
        - Finding an angle measure of a triangle given two angles

    - The Pythagorean Theorem (2 topics)
        - Introduction to the Pythagorean Theorem
        - Pythagorean Theorem

- Area, Volume, and Circles (8 topics)

    - Areas of Parallelograms and Triangles (2 topics)
        - Area of a triangle
        - Word problem on population density

    - Circumferences and Areas of Circles (1 topics)
        - Circumference of a circle

    - Solids and Cross Sections (3 topics)
        - Identifying geometric shapes that model real-world objects
        - Identifying horizontal and vertical cross sections of solids
        - Identifying solids generated by rotations of two-dimensional regions

    - Volumes of Prisms and Cylinders (2 topics)
        - Computations involving density, mass, and volume
        - Word problem on density involving the volume of a rectangular solid

- Sequences, Probability, and Conic Sections (52 topics)

- Evaluating Sequences (2 topics)
  - Finding the first terms of an arithmetic sequence using an explicit rule
  - Finding the first terms of a geometric sequence using an explicit rule

- Arithmetic Sequences and Series (3 topics)
  - Finding the next terms of an arithmetic sequence with integers
  - 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

- Geometric Sequences and Series (5 topics)
  - Finding the next terms of a geometric sequence with signed numbers
  - 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
  - Sum of the first n terms of a geometric sequence

- Collecting and Displaying Data (6 topics)
  - Differentiating between parameters and statistics
  - Choosing an appropriate method for gathering data: Problem type 1
  - Choosing an appropriate method for gathering data: Problem type 2
  - Introduction to expectation
  - Constructing a two-way frequency table: Basic
  - Constructing a frequency distribution and a histogram

- Measures of Center and Spread (11 topics)
  - Mode of a data set
  - Range of a data set
  - Finding the value for a new score that will yield a given mean
  - Rejecting unreasonable claims based on average statistics
  - Mean and median of a data set
  - How changing a value affects the mean and median
  - Mean, median, and mode: Comparisons
  - Approximating the mean of a data set given a frequency distribution
  - Approximating the mean of a data set given a histogram
  - Percentage of data below a specified value
  - Population standard deviation

- Counting (3 topics)
  - Factorial expressions
  - Computing permutations and combinations
  - Binomial formula

- Probability of Simple Events (7 topics)
  - 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
  - Experimental and theoretical probability
  - Computing expected value in a game of chance
  - Computing expected value in a business application

- Probability of Compound Events (5 topics)
  - Determining a sample space and outcomes for an event: Experiment involving multiple selections
  - Outcomes and event probability
  - Determining outcomes for unions, intersections, and complements of events
  - Computing conditional probability using a sample space
  - Computing conditional probability to make an inference using a two-way frequency table

- Simulations (2 topics)
  - Generating random samples from a population with known characteristics
  - Using a random number table to make a fair decision

- The Normal Distribution (7 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
  - Shading a region and finding its standard normal probability
  - Computing standard normal probabilities
  - Finding a z-score for a given data value
  - Finding a probability given a normal distribution: Basic

- Nonlinear Systems (1 topics)
  - Using a graphing calculator to solve a nonlinear system of equations: Basic

- Trigonometry (31 topics)

  - Right Triangle Trigonometry (7 topics)
    - Sine, cosine, and tangent ratios: Numbers for side lengths
    - Using a calculator to approximate sine, cosine, and tangent values
    - 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 angles of elevation or depression in a word problem
    - Solving a right triangle

  - Angles and Their Measure (2 topics)
    - Converting between degree and radian measure: Problem type 1
    - Sketching an angle with absolute value less than 2π radians in standard position

  - The Unit Circle (3 topics)
    - Finding coordinates on the unit circle for special angles
    - Trigonometric functions and special angles: Problem type 1
    - Trigonometric functions and special angles: Problem type 2

  - Laws of Sines and Cosines (9 topics)
    - Solving a triangle with the law of sines: Problem type 1
    - Solving a triangle with the law of sines: Problem type 2
    - Solving a word problem using the law of sines
    - Proving the law of sines
    - Solving a triangle with the law of cosines
    - Proving the law of cosines
    - Solving a word problem using the law of cosines
    - Using trigonometry to find the area of a right triangle
    - Expressing the area of a triangle in terms of the sine of one of its angles

  - Graphs of Sine and Cosine Functions (8 topics)
    - Sketching the graph of $y = a \sin(x)$ or $y = a \cos(x)$
    - Sketching the graph of $y = \sin(bx)$ or $y = \cos(bx)$
    - Sketching the graph of $y = \sin(x) + d$ or $y = \cos(x) + d$
    - Sketching the graph of $y = \sin(x+c)$ or $y = \cos(x+c)$
    - Sketching the graph of $y = a \sin(x+c)$ or $y = a \cos(x+c)$
    - Sketching the graph of $y = a \sin(bx)$ or $y = a \cos(bx)$
    - Amplitude and period of a sine or cosine function
    - Word problem involving a sine or cosine function: Problem type 1

  - Graphs of Other Trigonometric Functions (2 topics)
    - Sketching the graph of a secant or cosecant function: Problem type 1
    - Sketching the graph of a tangent or cotangent function: Problem type 1

- Other Topics Available(*) (951 additional topics)

  - Real Numbers (28 topics)
    - Greatest common factor of 3 numbers
    - Plotting integers on a number line
    - Ordering integers
    - Square root of a perfect square
    - Addition and subtraction with 3 integers
    - Operations with absolute value: Problem type 1
    - Signed decimal multiplication
    - Exponents and integers: Problem type 2
    - Converting between temperatures in Fahrenheit and Celsius
    - Evaluating a linear expression: Signed fraction multiplication with addition or subtraction
    - Identifying numbers as integers or non-integers
    - Identifying numbers as rational or irrational
    - Properties of addition
    - Properties of real numbers
    - Finding the missing length in a figure
    - Area of a piecewise rectangular figure
    - Area between two rectangles
    - Word problem involving the area between two rectangles
    - U.S. Customary length conversion with whole number values
    - Word problem involving a U.S. Customary length conversion
    - U.S. Customary volume conversion with whole number values
    - U.S. Customary weight conversions with whole number values
    - U.S. Customary area unit conversion with whole number values
    - Word problem on area involving conversions of U.S. Customary units: Problem type 1
    - Metric distance conversion with whole number values

- Time unit conversion with whole number values
- Converting between metric and U.S. Customary unit systems
- Conversions with currency

- Linear Equations and Inequalities (72 topics)
  - Additive property of equality with integers
  - Multiplicative property of equality with integers
  - Using two steps to solve an equation with whole numbers
  - Solving a two-step equation with signed decimals
  - Identifying properties used to solve a linear equation
  - Solving a linear equation with several occurrences of the variable: Variables on both sides and two distributions
  - Clearing fractions in an equation
  - Solving equations with zero, one, or infinitely many solutions
  - 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
  - Solving a decimal word problem using a linear equation with the variable on both sides
  - 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
  - Word problem on optimizing an area or perimeter
  - Finding the perimeter or area of a rectangle given one of these values
  - Finding a side length given the perimeter and side lengths with variables
  - 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
  - U.S. Customary length conversions involving dimensional analysis
  - Converting between compound units: Basic
  - Word problem involving U.S. Customary length conversions using dimensional analysis
  - Converting between compound units: Advanced
  - Word problem involving conversion between compound units using dimensional analysis
  - Word problem on proportions: Problem type 2
  - Finding the total cost including tax or markup
  - Finding the absolute error and percent error of a measurement
  - Solving a percent mixture problem using a linear equation
  - Finding simple interest without a calculator
  - Finding the interest and future value of a simple interest loan or investment
  - Solving an absolute value equation: Problem type 1
  - Solving an absolute value equation: Problem type 2
  - Solving an absolute value equation: Problem type 3
  - Solving an absolute value equation: Problem type 4
  - Solving an absolute value equation of the form |ax+b| = |cx+d|
  - Translating a sentence by using an inequality symbol
  - Writing an inequality given a graph on the number line
  - Additive property of inequality with signed fractions
  - 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 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
  - Translating a sentence into a multi-step inequality
  - Solving a word problem using a two-step linear inequality and describing the solution
  - Solving a decimal word problem using a linear inequality with the variable on both sides
  - Writing sets of natural numbers using set-builder and roster forms
  - Writing sets of integers using set-builder and roster forms
  - 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
  - Interpreting a Venn diagram of 3 sets
  - 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
  - Union and intersection of finite sets
  - Introduction to shading a Venn diagram with 2 events
  - Shading a Venn diagram with 2 events: Unions, intersections, and complements
  - Translating a sentence into a compound inequality
  - Writing a compound inequality given a graph on the number line
  - Solving a compound linear inequality: Graph solution, basic
  - Solving a compound linear inequality: Graph solution, advanced
  - Solving and graphing the solution to a compound inequality that models a real-world situation
  - Union and intersection of intervals
  - Solving a compound linear inequality: Interval notation
  - Solving an absolute value inequality: Problem type 1
  - Writing an absolute value inequality given a graph on the number line
  - Solving an absolute value inequality: Problem type 2

- Solving an absolute value inequality: Problem type 3
- Solving an absolute value inequality: Problem type 4
- Solving an absolute value inequality: Problem type 5

- The Coordinate Plane and Equations of Lines (53 topics)
  - Reading a point in the coordinate plane
  - Plotting a point in the coordinate plane
  - 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
  - Finding the coordinates of a point on a graph given the equation
  - 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
  - Finding slope given the graph of a line in quadrant 1 that models a real-world situation
  - Classifying slopes given graphs of lines
  - Finding the slopes of horizontal and vertical lines
  - Finding the coordinate that yields a given slope
  - Graphing a line given its slope and y-intercept
  - Graphing a line through a given point with a given slope
  - Identifying linear equations: Basic
  - Identifying linear equations: Advanced
  - Identifying linear functions given ordered pairs
  - Rewriting a linear equation in the form Ax + By = C
  - Graphing a line by first finding its slope and y-intercept
  - Writing an equation and graphing a line given its slope and y-intercept
  - Finding the slope, y-intercept, and equation for a linear function given a table of values
  - Finding the slope and a point on a line given its equation in point-slope form
  - Graphing 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 in standard form given the slope and a point
  - Writing the equation of a line through two given points
  - Writing the equations of vertical and horizontal lines through a given point
  - Comparing linear functions to the parent function y = x
  - 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
  - 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
  - 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
  - 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
  - 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
  - Computing residuals
  - Interpreting residual plots
  - Classifying linear and nonlinear relationships from scatter plots
  - Linear relationship and the correlation coefficient
  - Identifying outliers and clustering in scatter plots
  - Identifying correlation and causation

- Functions and Systems (70 topics)
  - Vertical line test
  - 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
  - Domain and range from the graph of a discrete relation
  - Finding domain and range from a linear graph in context
  - Domain and range from the graph of a piecewise function
  - Choosing a graph to fit a narrative: Basic
  - Choosing a graph to fit a narrative: Advanced
  - Graphing an integer function and finding its range for a given domain
  - 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 in the plane: Advanced
  - Determining if a function is linear given its graph
  - 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 $f(x) = ax^2 + c$
- How the leading coefficient affects the shape of a parabola
- Graphing quadratic functions of the form $y=ax^2$ and $y=(bx)^2$ by transforming the parent graph $y=x^2$
- Transforming the graph of a function by reflecting over an axis
- Transforming the graph of a function by shrinking or stretching
- Transforming the graph of a function using more than one transformation
- Classifying systems of linear equations from graphs
- 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
- Solving a 2x2 system of linear equations that is inconsistent or consistent dependent
- Creating an inconsistent system of linear equations
- Introduction to solving a 3x3 system of linear equations
- Solving a 3x3 system of linear equations: Problem type 1
- Solving a 3x3 system of linear equations: Problem type 2
- Solving a 3x3 system of linear equations that is inconsistent or consistent dependent
- Scalar multiplication of a matrix
- Addition or subtraction of matrices
- Linear combination of matrices
- Squaring and multiplying 2x2 matrices
- Multiplication of matrices: Basic
- Multiplication of matrices: Advanced
- Word problem involving multiplication of matrices
- Completing Gauss-Jordan elimination with a 2x2 matrix
- Gauss-Jordan elimination with a 2x2 matrix
- Completing Gauss-Jordan elimination with a 3x3 matrix
- Writing solutions to 3x3 systems of linear equations from augmented matrices
- Solving a system of linear equations given its augmented matrix
- Finding the inverse of a 2x2 matrix
- Finding the inverse of a 3x3 matrix
- Finding the inverse of a matrix to solve a 2x2 system of linear equations
- Using the inverse of a matrix to solve a 3x3 system of linear equations
- Finding the determinant of a 2x2 matrix
- Finding the determinant of a 3x3 matrix
- Using Cramer's rule to solve a 2x2 system of linear equations
- Using Cramer's rule to solve a 3x3 system of linear equations
- Interpreting the graphs of two functions
- 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
- 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
- Solving a word problem using a 3x3 system of linear equations: Problem type 2
- 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: Advanced
- Graphing a system of three linear inequalities
- Writing a linear inequality in two variables given a table of values
- Solving a word problem using a system of linear inequalities: Problem type 2
- Writing a system of linear inequalities that models a real-world situation and determining possible solutions
- Linear programming
- Solving a word problem using linear programming

- Exponents and Polynomials (40 topics)
  - Understanding the product rule of exponents
  - Ordering numbers with positive exponents
  - Understanding the power rules of exponents
  - Power and product rules with positive exponents
  - Power and quotient rules with positive exponents
  - Ordering numbers with negative exponents
  - Introduction to the product rule with negative exponents
  - Product rule with negative exponents
  - Quotient rule with negative exponents: Problem type 1
  - 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
  - Degree of a multivariate polynomial

- Simplifying a sum or difference of three univariate polynomials
- Multiplying a multivariate polynomial by a monomial
- Greatest common factor of three univariate monomials
- Greatest common factor of two multivariate monomials
- 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 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 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 perfect square trinomial with leading coefficient greater than 1
- Factoring a perfect square trinomial in two variables
- 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
- Dividing a polynomial by a monomial: Multivariate
- Finding the roots of a quadratic equation of the form $ax^2 + bx = 0$
- Writing and solving a quadratic equation for a real-world problem involving area or volume

- Radicals (67 topics)
    - Square roots of integers raised to even exponents
    - Introduction to simplifying a radical expression with an even exponent
    - Square root of a perfect square monomial
    - Using absolute value to simplify square roots of perfect square monomials
    - Finding n^{th} roots of perfect n^{th} powers with signs
    - Finding the nth root of a perfect n^{th} power fraction
    - Finding the nth root of a perfect n^{th} power monomial
    - Using absolute value to simplify higher radical expressions
    - Domains of higher root functions
    - Graphing a square root function: Problem type 3
    - Converting between radical form and exponent form
    - Using the properties of integer exponents to define rational exponents
    - 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
    - Rational exponents: Product rule
    - Rational exponents: Quotient rule
    - Rational exponents: Products and quotients with negative exponents
    - Rational exponents: Power of a power rule
    - Rational exponents: Powers of powers with negative exponents
    - 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
    - Simplifying a radical expression with two variables
    - Introduction to simplifying a higher radical expression
    - Simplifying a higher radical expression: Univariate
    - Simplifying a higher radical expression: Multivariate
    - Introduction to square root addition or subtraction
    - Square root addition or subtraction
    - Square root addition or subtraction with three terms
    - Introduction to simplifying a sum or difference of radical expressions: Univariate
    - Simplifying a sum or difference of radical expressions: Univariate
    - Simplifying a sum or difference of radical expressions: Multivariate
    - Simplifying a sum or difference of higher roots
    - Simplifying a sum or difference of higher radical expressions
    - Introduction to simplifying a product of radical expressions: Univariate
    - Simplifying a product of radical expressions: Univariate
    - Simplifying a product of radical expressions: Multivariate
    - Introduction to simplifying a product of higher roots
    - Simplifying a product of higher radical expressions
    - Introduction to simplifying a product involving square roots using the distributive property
    - Simplifying a product involving square roots using the distributive property: Basic
    - Simplifying a product involving square roots using the distributive property: Advanced
    - Special products of radical expressions: Conjugates and squaring
    - Classifying sums and products as rational or irrational

- Simplifying a quotient involving a sum or difference with a square root
- Rationalizing a denominator: Square root of a fraction
- Rationalizing a denominator: Quotient involving a monomial
- Rationalizing a denominator using conjugates: Integer numerator
- Rationalizing a denominator using conjugates: Square root in numerator
- Rationalizing a denominator using conjugates: Variable in denominator
- Rationalizing a denominator: Quotient involving a higher radical
- Rationalizing a denominator: Quotient involving higher radicals and monomials
- Simplifying products or quotients of higher radicals with different indices: Univariate
- Simplifying products or quotients of higher radicals with different indices: Multivariate
- Solving a radical equation with a quadratic expression under the radical
- Solving a radical equation with two radicals that simplifies to sqrt(x) = a
- Solving a radical equation that simplifies to a quadratic equation: Two radicals
- Solving an equation using the odd-root property: Problem type 1
- Solving an equation using the odd-root property: Problem type 2
- Solving an equation with exponent 1/a: Problem type 1
- Solving an equation with exponent 1/a: Problem type 2
- Simplifying a product and quotient involving square roots of negative numbers
- Dividing complex numbers
- Simplifying a power of i

- Rational Expressions (63 topics)
  - Evaluating functions: Absolute value, rational, radical
  - Variable expressions as inputs of functions: Problem type 2
  - Simplifying a ratio of factored polynomials: Factors with exponents
  - Simplifying a ratio of linear polynomials: 1, -1, and no simplification
  - Simplifying a ratio of polynomials: Problem type 2
  - Simplifying a ratio of polynomials: Problem type 3
  - Simplifying a ratio of multivariate polynomials
  - Multiplying rational expressions involving quadratics with leading coefficients greater than 1
  - Multiplying rational expressions involving multivariate quadratics
  - Dividing rational expressions involving quadratics with leading coefficients greater than 1
  - Dividing rational expressions involving multivariate quadratics
  - Multiplication and division of 3 rational expressions
  - Simplifying a product of radical expressions: Multivariate, fractional expressions
  - Introduction to the LCM of two monomials
  - Least common multiple of two monomials
  - Finding the LCD of rational expressions with linear denominators: Common factors
  - Finding the LCD of rational expressions with quadratic denominators
  - Writing equivalent rational expressions with monomial denominators
  - Writing equivalent rational expressions with polynomial denominators
  - Writing equivalent rational expressions involving opposite factors
  - Adding rational expressions with denominators ax and bx: Advanced
  - Adding rational expressions with denominators ax^n and bx^m
  - Adding rational expressions with multivariate monomial denominators: Basic
  - Adding rational expressions with multivariate monomial denominators: Advanced
  - Adding rational expressions with linear denominators without common factors: Advanced
  - Adding rational expressions with linear denominators with common factors: Advanced
  - Adding rational expressions with denominators ax-b and b-ax
  - Adding 3 rational expressions with different quadratic denominators
  - Complex fraction involving multivariate monomials
  - Complex fraction: GCF factoring
  - Complex fraction: Quadratic factoring
  - Complex fraction made of sums involving rational expressions: Problem type 1
  - Complex fraction made of sums involving rational expressions: Problem type 2
  - Complex fraction made of sums involving rational expressions: Problem type 3
  - Complex fraction made of sums involving rational expressions: Problem type 4
  - Complex fraction made of sums involving rational expressions: Problem type 6
  - Complex fraction made of sums involving rational expressions: Multivariate
  - Solving a rational equation that simplifies to quadratic: Proportional form, basic
  - Solving a rational equation that simplifies to quadratic: Proportional form, advanced
  - Solving for a variable in terms of other variables in a rational equation: Problem type 3
  - Identifying direct variation equations
  - Identifying direct variation from ordered pairs and writing equations
  - Writing a direct variation equation
  - Word problem on direct variation
  - Interpreting direct variation from a graph
  - Writing an inverse variation equation
  - Identifying direct and inverse variation equations
  - Identifying direct and inverse variation from ordered pairs and writing equations
  - Word problem on inverse variation
  - Word problem on inverse variation involving the completion of a task
  - Writing an equation that models variation
  - Word problem on combined variation

- Finding the asymptotes of a rational function: Linear over linear
- Finding horizontal and vertical asymptotes of a rational function: Quadratic numerator or denominator
- Finding the asymptotes of a rational function: Quadratic over linear
- Graphing a rational function: Quadratic over linear
- Graphing rational functions with holes
- Matching graphs with rational functions: Two vertical asymptotes
- Graphing a rational function with more than one vertical asymptote
- Solving a quadratic inequality written in factored form
- Solving a quadratic inequality
- Solving a rational inequality: Problem type 1
- Solving a rational inequality: Problem type 2

- Quadratic, Exponential, and Logarithmic Functions (70 topics)
  - Solving a quadratic equation using the square root property: Decimal answers, basic
  - Solving a quadratic equation using the square root property: Decimal answers, advanced
  - Solving a quadratic equation by completing the square: Decimal answers
  - Solving a quadratic equation by completing the square: Exact answers
  - Applying the quadratic formula: Decimal answers
  - Discriminant of a quadratic equation
  - Discriminant of a quadratic equation with a parameter
  - Solving an equation that can be written in quadratic form: Problem type 1
  - Graphing a parabola of the form $y = ax^2 + bx + c$: Rational coefficients
  - Using a graphing calculator to find the zeros of a quadratic function
  - Using a graphing calculator to find the x-intercept(s) and vertex of a quadratic function
  - Writing the equation of a quadratic function given a real-world description
  - Rewriting a quadratic function in standard form
  - Word problem involving optimizing area by using a quadratic function
  - Range of a quadratic function
  - Solving a quadratic equation by graphing
  - Classifying the graph of a function
  - Choosing a quadratic model and using it to make a prediction
  - Composition of a function with itself
  - Expressing a function as a composition of two functions
  - Composition of two functions: Domain and range
  - Composition of two functions: Advanced
  - Word problem involving composition of two functions
  - Rewriting a multivariate function as a univariate function given a relationship between its variables
  - Determining whether an equation defines a function: Basic
  - Horizontal line test
  - Determining whether two functions are inverses of each other
  - Graphing the inverse of a function given its graph
  - Even and odd functions: Problem type 2
  - Graphing an exponential function: $f(x) = a(b)^x$
  - Comparing linear, quadratic, and exponential functions given in different forms
  - Transforming the graph of a natural exponential function and finding its domain and range
  - Graphing an exponential function and its asymptote: $f(x) = a(e)^{x-b} + c$
  - Evaluating an exponential function with base e that models a real-world situation
  - Choosing an exponential model and using it to make a prediction
  - Finding the final amount in a word problem on compound interest
  - Finding the future value and interest for an investment earning compound interest
  - Finding the present value of an investment earning compound interest
  - Comparing linear, polynomial, and exponential functions
  - Matching graphs with polynomial functions
  - Inferring properties of a polynomial function from its graph
  - Remainder theorem: Advanced
  - Finding all possible rational zeros using the rational zeros theorem: Problem type 1
  - Finding all possible rational zeros using the rational zeros theorem: Problem type 2
  - Descartes' Rule of Signs
  - Using the rational zeros theorem to find all zeros of a polynomial: Rational zeros
  - Using the rational zeros theorem to find all zeros of a polynomial: Irrational zeros
  - Using a graphing calculator to find zeros of a polynomial function
  - Using a graphing calculator to solve a word problem involving a polynomial of degree 3
  - Using the rational zeros theorem to find all zeros of a polynomial: Complex zeros
  - Solving an equation of the form $\log_b a = c$
  - Graphing a logarithmic function and finding its domain and range
  - Graphing a logarithmic function: Advanced
  - Using properties of logarithms to evaluate expressions
  - 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
  - Change of base for logarithms: Problem type 2
  - 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 finding common bases: Linear exponents
- Finding the time in a word problem on compound interest
- Finding the initial amount in a word problem on continuous compound interest
- Finding half-life or doubling time
- Writing and evaluating a function modeling continuous exponential growth or decay given doubling time or half-life
- Writing and evaluating a function modeling continuous exponential growth or decay given two outputs

- **Angles, Triangles, and Quadrilaterals (80 topics)**
  - Midpoint of a number line segment: Integers
  - Segment addition and midpoints
  - Distance between two points in the plane: Exact answers
  - Distance between two points in the plane: Decimal answers
  - Identifying congruent segments in the plane
  - Midpoint of a line segment in the plane
  - 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
  - Angle addition with relationships between angles
  - Angle addition and angle bisectors
  - Identifying linear pairs and vertical angles
  - Finding angle measures given two intersecting lines
  - Solving equations involving vertical angles and linear pairs
  - Constructing congruent line segments
  - Constructing an angle bisector
  - Constructing the perpendicular bisector of a line segment
  - Introduction to proofs: Justifying statements
  - Proofs involving segment congruence
  - Proofs involving angle congruence
  - 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
  - Solving equations involving angles and two pairs of parallel lines
  - Establishing facts about the angles created when parallel lines are cut by a transversal
  - Constructing a pair of perpendicular lines
  - Introduction to proofs involving parallel lines
  - Proofs involving parallel lines
  - 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
  - Establishing facts about the interior angles of a triangle
  - Establishing facts about the interior and exterior angles of a triangle
  - Identifying and naming congruent parts of congruent triangles
  - Identifying transformations
  - Determining if figures are related by rigid motions
  - Completing proofs involving congruent triangles using SSS or SAS
  - Introduction to proving triangles congruent using SSS or SAS
  - Identifying and naming congruent triangles
  - Completing proofs involving congruent triangles using ASA or AAS
  - Introduction to proving triangles congruent using ASA or AAS
  - Proofs involving congruent triangles and segment or angle bisectors
  - Separating overlapping triangles and identifying common features
  - Proofs involving congruent triangles that overlap: Basic
  - Proofs involving congruent triangles with parallel or perpendicular segments
  - Determining when to apply the HL congruence property
  - Introduction to proving triangles congruent using the HL property
  - Introduction to proofs involving congruent triangles and CPCTC
  - Proofs involving congruent triangles, parallel or perpendicular segments, and CPCTC
  - Proofs involving congruent triangles that overlap: Advanced
  - Finding side lengths and angle measures of isosceles and equilateral triangles
  - Finding an angle measure for a triangle sharing a side with another triangle
  - Finding angle measures of an isosceles triangle given angles with variables
  - Proofs of theorems involving isosceles triangles
  - Word problem involving the Pythagorean Theorem
  - 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
  - Identifying side lengths that give right triangles

- Using the Pythagorean Theorem and a quadratic equation to find side lengths of a right triangle
- Classifying segments inside triangles
- Using the circumcenter of a triangle to find segment lengths
- Using the incenter of a triangle to find segment lengths and angle measures
- Using the centroid of a triangle to find segment lengths
- Introduction to the triangle midsegment theorem
- Proving the triangle midsegment theorem in the coordinate plane
- Proof involving points on the perpendicular bisector of a line segment
- Identifying parallelograms, rectangles, and squares
- Properties of quadrilaterals
- Classifying parallelograms
- Finding measures involving diagonals of parallelograms
- Conditions for parallelograms
- Finding measures involving diagonals of rectangles
- Finding angle measures involving diagonals of a rhombus
- Conditions for quadrilaterals
- Completing proofs of theorems involving sides of a parallelogram
- Completing proofs of theorems involving angles of a parallelogram

- Similarity and Transformations (59 topics)
    - Identifying similar or congruent shapes on a grid
    - Finding a missing side length given two similar 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
    - Similar polygons
    - Similar right triangles
    - Indirect measurement
    - Triangles and parallel lines
    - Identifying and naming similar triangles
    - Proofs involving similar triangles
    - Completing proofs involving the triangle proportionality theorem
    - 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
    - Identifying similar right triangles that overlap
    - Right triangles and geometric mean
    - Proving the Pythagorean Theorem using similar triangles
    - Special right triangles: Decimal answers
    - Special right triangles: Exact answers
    - 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
    - Using a translated point to find coordinates of other translated points
    - 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
    - Reflecting a polygon over a vertical or horizontal line
    - Finding the coordinates of three points reflected over an axis
    - Finding the coordinates of a point reflected across an axis and translated
    - 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
    - Drawing lines of symmetry
    - Finding an angle of rotation
    - Identifying rotational symmetry and angles of rotation
    - Rotational and point symmetries
    - Writing a rule to describe a translation
    - Writing a rule to describe a reflection
    - 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
    - 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
- Exploring similarity of circles
- Exploring the effect of dilation on lines

- Area, Volume, and Circles (109 topics)
  - Area of a parallelogram
  - Finding the perimeter or area of a rectangle in the coordinate plane
  - Finding the perimeter of a triangle, trapezoid, or parallelogram in the coordinate plane
  - Finding the area of a triangle or parallelogram in the coordinate plane
  - Finding the area of a right triangle using the Pythagorean Theorem
  - Computing an area using the Pythagorean Theorem
  - Informal proof of the Pythagorean Theorem
  - Area involving rectangles and triangles
  - Area of a trapezoid
  - Area of a rhombus
  - Finding the area of a rhombus using the Pythagorean Theorem
  - Finding the area of a trapezoid, rhombus, or kite in the coordinate plane
  - Area of a regular polygon
  - Finding the area of a regular polygon using special right triangles
  - Side lengths, perimeters, and areas of similar polygons
  - Investigating the effects on the area for non-proportional and proportional figures
  - Introduction to a circle: Diameter, radius, and chord
  - Finding the radius or the diameter of a circle given its circumference
  - Informal argument for the formula of the circumference of a circle
  - Circumference ratios
  - Perimeter involving rectangles and circles
  - Area of a circle
  - Circumference and area of a circle
  - Circumference and area of a circle: Exact answers in terms of pi
  - Distinguishing between the area and circumference of a circle
  - Informal argument for the formula of the area 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
  - Area involving multiple inscribed figures
  - Circles inscribed in and circumscribed about regular polygons
  - Area of a sector of a circle: Exact answer in terms of pi
  - Informal argument for the formula of the area of a sector
  - Classifying solids
  - Vertices, edges, and faces of a solid
  - Nets of solids
  - Counting the cubes in a solid made of cubes
  - Side views of a solid made of cubes
  - 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
  - Word problem involving U.S. Customary conversions, surface area, and cost
  - 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
  - Surface area of a cylinder: Exact answers in terms of pi
  - 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
  - Lateral surface area and surface area of a cone: Exact answers in terms of pi
  - Volume of a rectangular prism made of unit cubes
  - Volume of a rectangular prism with fractional edge lengths
  - Writing equivalent expressions for the volume of a rectangular prism
  - Volume of an oblique rectangular prism
  - Distinguishing between surface area and volume
  - Word problem involving the rate of filling or emptying a rectangular prism
  - Word problem on volume involving conversions of U.S. Customary units
  - 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

- Informal argument for the formula of the volume of a cylinder
- Volume of an oblique 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
- Using cross sections to identify solids with the same volume
- 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
- Volume of a cone: Exact answers in terms of pi
- Informal argument for the formula of the volume of a cone
- Relating the volumes of a cylinder and a cone
- Word problem involving the volume of a cone
- Surface area of a sphere
- Volume of a sphere
- Word problem involving the volume of a sphere
- 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
- Identifying chords, secants, and tangents of a circle
- Tangents of a circle: Problem type 1
- Tangents of a circle: Problem type 2
- Drawing a circle with a given radius or diameter
- Constructing a tangent of a circle
- Naming and finding measures of central angles, inscribed angles, and arcs of a circle
- Applying properties of radii, diameters, and chords
- Arc length
- Arc length and area of a sector of a circle
- Computing ratios of arc lengths to radii and describing the result
- Central angles and inscribed angles of a circle
- Central angles and angles involving chords and tangents of a circle
- Inscribed angles in relation to a diameter or a polygon inscribed in a circle
- Inscribed angles and angles involving chords and tangents of a circle
- Establishing facts about a quadrilateral inscribed in a circle
- Inscribing an equilateral triangle or a regular hexagon in a circle
- Inscribing a square in a circle
- Inscribing a circle in a triangle
- Circumscribing a circle about a triangle
- Angles of intersecting secants and tangents
- Lengths of chords, secants, and tangents

- Sequences, Probability, and Conic Sections (134 topics)
  - Finding the first terms of a sequence using an explicit rule with multiple occurrences of n
  - Finding the next terms of an arithmetic sequence with whole numbers
  - Finding the first terms of a sequence using a recursive rule
  - Identifying arithmetic sequences and finding the common difference
  - Finding a specified term of an arithmetic sequence given two terms of the sequence
  - Writing an explicit rule for an arithmetic sequence
  - Writing a recursive rule for an arithmetic sequence
  - Finding patterns in shapes
  - Sum of the first n terms of an arithmetic sequence
  - Finding the next terms of a geometric sequence with whole numbers
  - Identifying arithmetic and geometric sequences
  - Finding a specified term of a geometric sequence given two terms of the sequence
  - Arithmetic and geometric sequences: Identifying and writing an explicit rule
  - Writing recursive rules for arithmetic and geometric sequences
  - Sum of an infinite geometric series
  - Identifying linear, quadratic, and exponential functions given ordered pairs
  - Identifying statistical questions
  - Classification of variables
  - Classifying samples
  - Identifying and reducing statistical bias
  - Making predictions using experimental data for compound events
  - 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
  - Making a reasonable inference based on proportion statistics
  - Constructing a line plot
  - Understanding how adjusting the vertical scale can make a graph misleading
  - Understanding how two dimensional graphs can be misleading

- Interpreting a histogram
- Interpreting a stem-and-leaf plot
- Finding a percentage of a total amount in a circle graph
- Angle measure in a circle graph
- How changing a value affects the range and IQR
- Mean of a data set
- Computations involving the mean, sample size, and sum of a data set
- Weighted mean
- Finding outliers in a data set
- Choosing the best measure to describe data
- Identifying the center, spread, and shape of a data set
- Interpreting percentile ranks
- Percentiles
- Using back-to-back stem-and-leaf plots to compare data sets
- Five-number summary and interquartile range
- Interpreting a box-and-whisker plot
- Interpreting a box-and-whisker plot: Problem type 2
- Constructing a box-and-whisker plot
- Using box-and-whisker plots to compare data sets
- Interpreting a tree diagram
- Introduction to the counting principle
- Counting principle
- Counting principle with repetition allowed
- Counting arrangements of objects that are not all distinct
- Introduction to permutations and combinations
- Permutations and combinations: Problem type 1
- Permutations and combinations: Problem type 2
- Permutations and combinations: Problem type 3
- Probabilities of an event and its complement
- Finding the odds in favor and against
- Area as probability
- Experimental and theoretical probability for compound events
- Probabilities involving two rolls of a die
- Probabilities of a permutation and a combination
- Identifying independent events given descriptions of experiments
- Probability of independent events
- Probability of dependent events
- Probability of independent events: Decimal answers
- Probability of dependent events: Decimal answers
- Probabilities of draws with replacement
- Probabilities of draws without replacement
- Using a Venn diagram to understand the addition rule for probability
- Outcomes and event probability: Addition rule
- Probability of the union of two events
- Word problem involving the probability of a union
- Computing probability involving the addition rule using a two-way frequency table
- Probability of intersection or union: Word problems
- Using a Venn diagram to understand the multiplication rule for probability
- Outcomes and event probability: Conditional probability
- Identifying independent events given values of probabilities
- Computing conditional probability using a two-way frequency table
- Conditional probability: Basic
- Using the binomial formula to solve a word problem: Problem type 1
- Using the binomial formula to solve a word problem: Problem type 2
- Identifying outcomes in a random number table used to simulate a compound event
- Using a random number table to simulate a compound event
- Finding a probability given a normal distribution: Advanced
- Finding a z-score and interpreting it in terms of the population mean and standard deviation
- Comparing the relative sizes of data values based on their z-scores
- Graphing a parabola of the form $y^2 = ax$ or $x^2 = ay$
- Graphing a parabola of the form $x = a(y-k)^2 + h$ or $y = a(x-h)^2 + k$
- Graphing a parabola of the form $ay^2 + by + cx + d = 0$ or $ax^2 + bx + cy + d = 0$
- Deriving the equation of a parabola given its focus and directrix
- Writing an equation of a parabola given the vertex and the focus
- Writing an equation of a parabola given the focus and the directrix
- Finding the vertex, focus, directrix, and axis of symmetry of a parabola
- Finding the focus of a parabola of the form $ay^2 + by + cx + d = 0$ or $ax^2 + bx + cy + d = 0$
- Writing an equation of a parabola given its graph
- Word problem involving a parabola
- Identifying the center and radius to graph a circle given its equation in standard form
- Identifying the center and radius to graph a circle given its equation in general form: Basic
- Identifying the center and radius to graph a circle given its equation in general form: Advanced
- Writing the equation of a circle centered at the origin given its radius or a point on the circle

- Writing an equation of a circle and identifying points that lie on the circle
- Writing an equation of a circle given its center and radius or diameter
- Deriving the equation of a circle using the Pythagorean Theorem
- Writing an equation of a circle given its center and a point on the circle
- Writing an equation of a circle given the endpoints of a diameter
- Graphing an ellipse given its equation in standard form
- Graphing an ellipse centered at the origin: $Ax^2 + By^2 = C$
- Graphing an ellipse given its equation in general form
- Finding the center, vertices, and foci of an ellipse
- Finding the foci of an ellipse given its equation in general form
- Writing an equation of an ellipse given the center, an endpoint of an axis, and the length of the other axis
- Writing an equation of an ellipse given the foci and the major axis length
- Word problem involving an ellipse
- Graphing a hyperbola given its equation in standard form
- Graphing a hyperbola centered at the origin: $Ax^2 + By^2 = C$
- Graphing a hyperbola given its equation in general form
- Finding the center, vertices, foci, and asymptotes of a hyperbola
- Finding the foci of a hyperbola given its equation in general form
- Writing an equation of a hyperbola given the foci and the vertices
- Writing an equation of a hyperbola given the foci and the asymptotes: Basic
- Writing an equation of a hyperbola given the foci and the asymptotes: Advanced
- Classifying conics given their equations
- Graphing a quadratic inequality: Problem type 1
- Graphing a quadratic inequality: Problem type 2
- Graphically solving a system of linear and quadratic equations
- Solving a system of linear and quadratic equations
- Using a graphing calculator to solve a nonlinear system of equations: Advanced
- Solving a system of nonlinear equations: Problem type 1
- Solving a word problem involving geometry using a system of nonlinear equations
- Graphing a system of nonlinear inequalities: Problem type 1
- Graphing a system of nonlinear inequalities: Problem type 2

- Trigonometry (106 topics)
  - Sine, cosine, and tangent ratios: Variables for side lengths
  - Using the Pythagorean Theorem to find several trigonometric ratios in a right triangle
  - 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 similar right triangles to find trigonometric ratios
  - Using trigonometry to find a length in a word problem with two right triangles
  - Converting degrees-minutes-seconds to decimal degrees
  - Converting decimal degrees to degrees-minutes-seconds
  - Converting between degree and radian measure: Problem type 2
  - Coterminal angles
  - Arc length and central angle measure
  - Area of a sector of a circle
  - Finding values of trigonometric functions from a point on the unit circle
  - Trigonometric functions and special angles: Problem type 3
  - Evaluating a sinusoidal function that models a real-world situation
  - Reference angles: Problem type 1
  - Reference angles: Problem type 2
  - Determining the location of a terminal point given the signs of trigonometric values
  - Finding values of trigonometric functions given information about an angle: Problem type 1
  - Finding values of trigonometric functions given information about an angle: Problem type 2
  - Finding values of trigonometric functions given information about an angle: Problem type 3
  - Values of inverse trigonometric functions
  - Using trigonometry to find the area of a triangle
  - Sketching the graph of $y = a \sin(bx+c)$ or $y = a \cos(bx+c)$
  - Sketching the graph of $y = a \sin(bx) + d$ or $y = a \cos(bx) + d$
  - Amplitude, period, and phase shift of a sine or cosine function
  - Writing the equation of a sine or cosine function given its graph: Problem type 1
  - Writing the equation of a sine or cosine function given its graph: Problem type 2
  - Word problem involving a sine or cosine function: Problem type 2
  - Matching graphs and equations for secant, cosecant, tangent, and cotangent functions
  - Sketching the graph of a secant or cosecant function: Problem type 2
  - Sketching the graph of a tangent or cotangent function: Problem type 2
  - Simplifying trigonometric expressions
  - Using cofunction identities
  - Verifying a trigonometric identity
  - Proving trigonometric identities: Problem type 1
  - Proving trigonometric identities: Problem type 2
  - Proving trigonometric identities: Problem type 3
  - Proving trigonometric identities using odd and even identities
  - Sum and difference identities: Problem type 1

- Sum and difference identities: Problem type 2
- Sum and difference identities: Problem type 3
- Proving trigonometric identities using sum and difference identities: Problem type 1
- Proving trigonometric identities using sum and difference properties: Problem type 2
- Double-angle identities: Problem type 1
- Double-angle identities: Problem type 2
- Half-angle identities: Problem type 1
- Half-angle identities: Problem type 2
- Proving trigonometric identities using double-angle properties
- Finding solutions in an interval for a basic trigonometric equation involving sine or cosine
- Finding solutions in an interval for a basic trigonometric equation involving tangent, cotangent, secant, or cosecant
- Using a calculator to approximate inverse trigonometric values
- Finding solutions in an interval for a basic trigonometric equation using a calculator
- Solving a basic trigonometric equation involving sine or cosine
- Solving a basic trigonometric equation involving tangent, cotangent, secant, or cosecant
- Finding solutions in an interval for a trigonometric equation in factored form
- Finding solutions in an interval for a trigonometric equation involving a squared function: Problem type 1
- Finding solutions in an interval for a trigonometric equation with a squared function: Problem type 2
- Finding solutions in an interval for a trigonometric equation using Pythagorean identities: Problem type 1
- Finding solutions in an interval for a trigonometric equation involving sine and/or cosine using double-angle identities
- Solving a trigonometric equation modeling a real-world situation
- Using a graphing calculator to solve a trigonometric equation
- Solving a trigonometric equation involving a squared function: Problem type 1
- Solving a trigonometric equation involving a squared function: Problem type 2
- Solving a trigonometric equation involving more than one function
- Solving a trigonometric equation involving an angle multiplied by a constant
- Finding solutions in an interval for a trigonometric equation involving sine and cosine using sum and difference identities
- Solving a trigonometric equation using sum and difference identities
- Solving a trigonometric equation using double-angle identities
- Writing a vector in component form given its initial and terminal points
- Magnitude of a vector given in component form
- Vector addition and scalar multiplication: Component form
- Linear combination of vectors: Component form
- Multiplication of a vector by a scalar: Geometric approach
- Vector addition: Geometric approach
- Vector subtraction: Geometric approach
- Finding the magnitude and direction of a vector given its graph
- Finding the components of a vector given its graph
- Finding magnitudes of forces related to a sum of three vectors
- Finding magnitudes of forces related to an object suspended by cables
- Dot product of vectors given in component form
- Finding the angle between two vectors given in component form
- Using the dot product to find perpendicular vectors
- Plotting points in polar coordinates
- Multiple representations of polar coordinates
- Converting rectangular coordinates to polar coordinates: Special angles
- Converting rectangular coordinates to polar coordinates: Decimal answers
- Converting polar coordinates to rectangular coordinates
- Plotting complex numbers
- Writing a complex number in standard form given its trigonometric form
- Writing a complex number in trigonometric form: Special angles
- Writing a complex number in trigonometric form: Decimal answers
- Multiplying and dividing complex numbers in trigonometric form
- De Moivre's Theorem: Answers in trigonometric form
- De Moivre's Theorem: Answers in standard form
- Finding the nth roots of a number: Problem type 1
- Finding the nth roots of a number: Problem type 2
- Completing a table and choosing a graph given a pair of parametric equations
- Writing the equation of a line and sketching its graph given its parametric equations
- Writing the equation of a parabola and sketching its graph given its parametric equations
- Writing the equation of a circle or ellipse and sketching its graph given its parametric equations
- Graphing a pair of parametric equations with a restricted domain: Line or parabola
- Graphing a pair of parametric equations with a restricted domain: Circle
- Graphing a pair of parametric equations with a restricted domain: Ellipse
- Completing pairs of parametric equations

*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.