ALEKS®

Algebra 1B

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 (382 topics + 826 additional topics)

- Arithmetic Readiness (20 topics)
  - Factors, Multiples, and Equivalent Fractions (2 topics)
    - Simplifying a fraction
    - Division involving zero
  - Addition and Subtraction with Fractions (1 topics)
    - Addition or subtraction of fractions with different denominators
  - Multiplication and Division with Fractions (1 topics)
    - Fraction multiplication
  - Rounding, Ordering, and the Number Line (2 topics)
    - Rounding decimals
    - Using a common denominator to order fractions
  - Addition and Subtraction with Decimals (3 topics)
    - Decimal subtraction: Basic
    - Word problem with addition or subtraction of 2 decimals
    - Word problem with subtraction of a whole number and a decimal: Regrouping with zeros
  - Multiplication and Division with Decimals (3 topics)
    - Multiplying a decimal by a whole number
    - Word problem with multiple decimal operations: Problem type 1
    - Division of a decimal by a whole number
  - Ratios and Unit Rates (3 topics)
    - Finding missing values in a table of equivalent ratios
    - Using a table of equivalent ratios to find a missing quantity in a ratio
    - Solving a word problem on proportions using a unit rate
  - Percents, Decimals, and Fractions (3 topics)
    - Converting between percentages and decimals
    - Converting a fraction to a percentage: Denominator of 4, 5, or 10
    - Converting a fraction to a percentage: Denominator of 20, 25, or 50
  - Introduction to Percent Applications (2 topics)
    - Finding a percentage of a whole number
    - Finding a percentage of a whole number without a calculator: Basic
- Real Numbers (43 topics)
  - Plotting and Ordering (4 topics)
    - Writing a signed number for a real-world situation
    - Square root of a perfect square
    - Using a calculator to approximate a square root
    - Absolute value of a number
  - Operations with Signed Numbers (11 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
    - Addition and subtraction with 3 integers
    - Integer multiplication and division
    - Multiplication of 3 or 4 integers
    - Signed fraction addition or subtraction: Basic
    - Signed fraction multiplication: Basic
    - Signed decimal addition and subtraction
  - Exponents and Order of Operations (6 topics)
    - Order of operations with whole numbers

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    - Order of operations with whole numbers and exponents: Basic
    - Exponents and fractions
    - Exponents and integers: Problem type 1
    - Exponents and signed fractions
    - Order of operations with integers

  - Evaluating Expressions (5 topics)
    - Evaluating an algebraic expression: Whole numbers with two operations
    - Evaluating a formula
    - Evaluating an algebraic expression: Whole numbers with one operation and an exponent
    - Evaluating a linear expression: Integer multiplication with addition or subtraction
    - Evaluating a quadratic expression: Integers

  - Properties of Operations (7 topics)
    - Combining like terms: Whole number coefficients
    - Combining like terms: Integer coefficients
    - Distributive property: Whole number coefficients
    - Distributive property: Integer coefficients
    - Factoring a linear binomial
    - Using distribution and combining like terms to simplify: Univariate
    - Combining like terms in a quadratic expression

  - One-Step Linear Equations (7 topics)
    - Additive property of equality with decimals
    - Additive property of equality with integers
    - Additive property of equality with signed fractions
    - Multiplicative property of equality with fractions
    - Multiplicative property of equality with decimals
    - Multiplicative property of equality with integers
    - Multiplicative property of equality with signed fractions

  - Geometry (3 topics)
    - Writing algebraic expressions for the perimeter of a figure
    - Writing algebraic expressions for the area of a figure
    - Volume of a rectangular prism

- Linear Equations (42 topics)

  - Multi-Step Linear Equations (13 topics)
    - Identifying solutions to a linear equation in one variable: Two-step equations
    - Additive property of equality with a negative coefficient
    - Solving a two-step equation with integers
    - Introduction to solving an equation with parentheses
    - Solving a multi-step equation given in fractional form
    - Solving a two-step equation with signed decimals
    - Introduction to solving an equation with variables on the same side
    - Solving a linear equation with several occurrences of the variable: Variables on the same side
    - 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 two-step equation with signed fractions
    - Solving equations with zero, one, or infinitely many solutions

  - Writing Expressions and Equations (5 topics)
    - Writing a one-step expression for a real-world situation
    - 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 of Linear Equations (6 topics)
    - Writing and solving a one-step equation with decimals that models a real-world situation
    - 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 one-step word problem using the formula $d = rt$

  - Applications Involving Geometry (2 topics)
    - 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

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    - 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 (5 topics)
    - Solving a proportion of the form x/a=b/c: Basic
    - Solving a proportion of the form x/a = b/c
    - Writing a proportion to solve a problem involving rates
    - Writing and solving a proportion to convert between metric and U.S. Customary units
    - Word problem on proportions: Problem type 1

  - More on Percents (6 topics)
    - Applying the percent equation: Problem type 1
    - Writing a proportion to solve a multi-step problem involving percentages
    - 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

- Linear Inequalities (21 topics)

  - Writing and Graphing Inequalities (3 topics)
    - Translating a sentence by using an inequality symbol
    - Graphing a linear inequality on the number line
    - Writing an inequality given a graph on the number line

  - One-Step Linear Inequalities (3 topics)
    - Additive property of inequality with integers
    - Multiplicative property of inequality with integers
    - Multiplicative property of inequality with signed fractions

  - Multi-Step Linear Inequalities (8 topics)
    - Identifying solutions to a two-step linear inequality in one variable
    - Solving a two-step linear inequality with whole numbers
    - Solving a two-step linear inequality: Problem type 1
    - Solving a two-step linear inequality: Problem type 2
    - Solving a two-step linear inequality with a fractional coefficient
    - Solving a linear inequality with multiple occurrences of the variable: Problem type 1
    - Solving a linear inequality with multiple occurrences of the variable: Problem type 2
    - Solving inequalities with no solution or all real numbers as solutions

  - Applications (3 topics)
    - Writing, solving, and graphing the solution to a one-step inequality that models a real-world situation
    - Solving a word problem using a two-step linear inequality
    - Solving a decimal word problem using a two-step linear inequality

  - Compound Inequalities (4 topics)
    - Translating a sentence into a compound inequality
    - Graphing a compound inequality on the number line
    - Solving a compound linear inequality: Graph solution, basic
    - Solving and graphing the solution to a compound inequality that models a real-world situation

- Functions and Lines (81 topics)

  - Ordered Pairs (3 topics)
    - Reading a point in the coordinate plane
    - Plotting a point in the coordinate plane
    - Finding distances between points that share a common coordinate given the graph

  - Tables and Graphs of Lines (13 topics)
    - Table for a linear equation
    - Writing a function rule given a table of ordered pairs: One-step rules
    - Identifying solutions to a linear equation in two variables
    - Finding the coordinates of a point on a graph given the 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
    - Graphing a line by first finding its x- and y-intercepts

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- Slope (4 topics)
  - Classifying slopes given graphs of lines
  - Finding slope given the graph of a line on a grid
  - Finding slope given two points on a line
  - Finding the slopes of horizontal and vertical lines

- Direct Variation (5 topics)
  - 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

- Equations of Lines (14 topics)
  - Identifying linear functions given ordered pairs
  - Rewriting a linear equation in the form $Ax + By = C$
  - Finding the slope and y-intercept of a line given its equation in the form $y = mx + b$
  - Finding the slope and y-intercept of a line given its equation in the form $Ax + By = C$
  - Graphing a line by first finding its slope and y-intercept
  - Writing an equation of a line given its slope and y-intercept
  - Finding the slope, y-intercept, and equation for a linear function given a table of values
  - Writing an equation in slope-intercept form given the slope and a point
  - Finding the slope and a point on a line given its equation in point-slope form
  - Writing the equation of a line in point-slope form given the slope and a point
  - Writing the equation of a line in standard form given the slope and a point
  - Writing the equation of a line given the y-intercept and another point
  - Writing the equation of a line through two given points
  - Writing the equation and finding the slope of a line parallel or perpendicular to a vertical or horizontal line

- Applications of Linear Equations with Two Variables (11 topics)
  - Finding outputs of a one-step function that models a real-world situation: Two variable equation
  - Finding outputs of a two-step function with decimals that models a real-world situation: Two variable equation
  - Writing an equation and drawing its graph to model a real-world situation: Advanced
  - Finding the intercepts and rate of change given a graph of a linear function
  - Finding the initial amount and rate of change given a table for a linear function
  - Finding the initial amount and rate of change given two points for a linear function
  - Comparing properties of linear functions given in different forms
  - Interpreting the parameters of a linear function that models a real-world situation
  - 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
  - Solving a linear equation by graphing

- Introduction to Functions (8 topics)
  - Identifying functions from relations
  - Vertical line test
  - Domain and range from ordered pairs
  - Table for a linear function
  - Evaluating functions: Linear and quadratic or cubic
  - Finding outputs of a two-step function with decimals that models a real-world situation: Function notation
  - Finding inputs and outputs of a two-step function that models a real-world situation: Function notation
  - Domain and range of a linear function that models a real-world situation

- Arithmetic Sequences (9 topics)
  - Finding the first terms of an arithmetic sequence using an explicit rule
  - Finding the next terms of an arithmetic sequence with whole numbers
  - Finding the next terms of an arithmetic sequence with integers
  - 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 the first terms
  - Finding a specified term of an arithmetic sequence given the common difference and first term
  - Writing an explicit rule for an arithmetic sequence
  - Writing a recursive rule for an arithmetic sequence

- Graphs of Functions (9 topics)
  - Finding an output 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
  - Determining if a function is linear given its graph
  - Graphing a parabola of the form $y = ax^2$
  - Graphing a parabola of the form $y = (x-h)^2 + k$
  - 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

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- Transformations (5 topics)
  - Translating the graph of a parabola: One step
  - Translating the graph of a parabola: Two steps
  - 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 $y=x^2$
  - Writing an equation for a function after a vertical translation

- Linear Systems (29 topics)

  - Systems of Linear Equations (12 topics)
    - Identifying solutions to a system of linear equations
    - Classifying systems of linear equations from graphs
    - Graphing a system of linear equations and estimating a solution
    - Graphically solving a system of linear equations
    - Using a graphing calculator to solve a system of linear equations: Basic
    - Writing a system of linear equations given its graph
    - 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
    - Solving systems of linear equations with 0, 1, or infinitely many solutions
    - Identifying the operations used to create equivalent systems of equations

  - Applications (6 topics)
    - Interpreting the graphs of two functions
    - Solving a word problem involving a sum and another basic relationship using a system of linear equations
    - 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 value mixture problem using a system of linear equations
    - Solving a distance, rate, time problem using a system of linear equations

  - Linear Inequalities with Two Variables (6 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
    - 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

  - Systems of Linear Inequalities (5 topics)
    - Graphing a system of two linear inequalities: Basic
    - Graphing a system of two linear inequalities: Advanced
    - Writing a linear inequality in two variables given a table of values
    - Writing a multi-step inequality for a real-world situation
    - Writing a system of linear inequalities that models a real-world situation and determining possible solutions

- Exponents and Exponential Functions (65 topics)

  - Product, Power, and Quotient Rules (13 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
    - Power and quotient rules with positive exponents

  - Negative Exponents (11 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
    - Introduction to the 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

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    - Power and quotient rules with negative exponents: Problem type 1

  - Introduction to Radicals (8 topics)
    - Square root of a rational perfect square
    - Square roots of perfect squares with signs
    - Cube root of an integer
    - Simplifying the square root of a whole number less than 100
    - Simplifying the square root of a whole number greater than 100
    - Introduction to square root addition or subtraction
    - Introduction to square root multiplication
    - Classifying sums and products as rational or irrational

  - Rational Exponents (7 topics)
    - 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: Non-unit fraction exponent with a whole number base
    - Rational exponents: Product rule
    - Rational exponents: Quotient rule
    - Rational exponents: Power of a power rule

  - Graphs of Exponential Functions (7 topics)
    - Table for an exponential function
    - Graphing an exponential function: $f(x) = b^x$
    - Graphing an exponential function: $f(x) = a(b)^x$
    - Translating the graph of an exponential function
    - Finding domain and range from the graph of an exponential function
    - Finding the domain and range from the graph of an exponential function: Symbolic notation
    - Choosing the graph for an exponential function and identifying key features

  - Applications (10 topics)
    - Using a calculator to evaluate exponential expressions
    - Evaluating an exponential function that models a real-world situation
    - Finding a final amount in a word problem on exponential growth or decay
    - Finding the 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
    - Choosing an exponential model and using it to make a prediction
    - Finding the final amount in a word problem on compound interest
    - Comparing linear, polynomial, and exponential functions

  - Geometric Sequences (9 topics)
    - Finding the first terms of a geometric sequence using an explicit rule
    - Finding the next terms of a geometric sequence with whole numbers
    - Finding the next terms of a geometric sequence with signed numbers
    - Identifying geometric sequences and finding the common ratio
    - Finding a specified term of a geometric sequence given the first terms
    - Finding a specified term of a geometric sequence given the common ratio and first term
    - Arithmetic and geometric sequences: Identifying and writing an explicit rule
    - Writing recursive rules for arithmetic and geometric sequences
    - Identifying linear, quadratic, and exponential functions given ordered pairs

- Polynomials and Factoring (25 topics)

  - Polynomial Addition and Subtraction (2 topics)
    - Degree and leading coefficient of a univariate polynomial
    - Simplifying a sum or difference of two univariate polynomials

  - Polynomial Multiplication (8 topics)
    - Multiplying a univariate polynomial by a monomial with a positive coefficient
    - Multiplying binomials with leading coefficients of 1
    - Multiplying binomials with leading coefficients greater than 1
    - Multiplying binomials in two variables
    - Multiplying conjugate binomials: Univariate
    - Squaring a binomial: Univariate
    - Multiplying binomials with negative coefficients
    - Multiplication involving binomials and trinomials in one variable

  - Factoring Using the GCF (2 topics)
    - Introduction to the GCF of two monomials
    - Factoring out a monomial from a polynomial: Univariate

  - Factoring by Grouping (2 topics)

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    - Factoring a univariate polynomial by grouping: Problem type 1
    - Factoring a univariate polynomial by grouping: Problem type 2

  - 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 (5 topics)
    - Factoring a perfect square trinomial with leading coefficient 1
    - Factoring a perfect square trinomial with leading coefficient greater than 1
    - Factoring a difference of squares in one variable: Basic
    - Factoring a difference of squares in one variable: Advanced
    - Factoring a polynomial involving a GCF and a difference of squares: Univariate

  - Polynomial Division (1 topics)
    - Closure properties of integers and polynomials

- Quadratic Functions and Equations (44 topics)

  - Solving Quadratic Equations by Factoring (6 topics)
    - Solving an equation written in factored form
    - Finding the roots of a quadratic equation of the form $ax^2 + bx = 0$
    - Finding the roots of a quadratic equation with leading coefficient 1
    - Finding the roots of a quadratic equation with leading coefficient greater than 1
    - Solving a word problem using a quadratic equation with rational roots
    - Writing and solving a quadratic equation for a real-world problem involving area or volume

  - Quadratic Functions (26 topics)
    - Finding the vertex, intercepts, and axis of symmetry from the graph of a parabola
    - Graphing a parabola of the form $y = a(x-h)^2 + k$
    - Completing the square
    - Graphing a parabola of the form $y = x^2 + bx + c$
    - Graphing a parabola of the form $y = ax^2 + bx + c$: Integer coefficients
    - Finding the zeros of a quadratic function given its equation
    - Writing a quadratic function given its zeros
    - Finding the x-intercept(s) and the vertex of a parabola
    - 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
    - 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
    - Finding the domain and range from the graph of a parabola
    - Finding the domain and range from the graph of a parabola: Symbolic notation
    - 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
    - Solving a quadratic equation by graphing
    - Comparing properties of quadratic functions given in different forms
    - Classifying the graph of a function
    - Comparing linear, quadratic, and exponential functions given in different forms
    - Choosing a quadratic model and using it to make a prediction

  - Square Root Property (3 topics)
    - Solving an equation of the form $x^2 = a$ using the square root property
    - Solving a quadratic equation using the square root property: Decimal answers, basic
    - Solving a quadratic equation using the square root property: Decimal answers, advanced

  - Completing the Square and the Quadratic Formula (3 topics)
    - Solving a quadratic equation by completing the square: Decimal answers
    - Applying the quadratic formula: Decimal answers
    - Solving a word problem using a quadratic equation with irrational roots

  - Nonlinear Systems (2 topics)
    - Graphically solving a system of linear and quadratic equations
    - Solving a system of linear and quadratic equations

  - Function Operations and Inverse Functions (4 topics)

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    - Introduction to the composition of two functions
    - Composition of two functions: Basic
    - Inverse functions: Linear, discrete
    - Finding, evaluating, and interpreting an inverse function for a given linear relationship

- Radicals (8 topics)

  - Operations with Radical Expressions (4 topics)
    - Square root addition or subtraction
    - Square root multiplication: Basic
    - Square root multiplication: Advanced
    - Introduction to simplifying a product involving square roots using the distributive property

  - Division and Rationalization (4 topics)
    - Simplifying a quotient of square roots
    - Simplifying a quotient involving a sum or difference with a square root
    - Rationalizing a denominator: Quotient involving square roots
    - Rationalizing a denominator: Square root of a fraction

- Rational Expressions (4 topics)

  - Inverse Variation (4 topics)
    - 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

- Other Topics Available(*) (826 additional topics)

  - Arithmetic Readiness (109 topics)
    - Factors
    - Prime numbers
    - Prime factorization
    - Greatest common factor of 2 numbers
    - Greatest common factor of 3 numbers
    - Least common multiple of 2 numbers
    - Least common multiple of 3 numbers
    - Word problem involving the least common multiple of 2 numbers
    - Word problem with common multiples
    - Equivalent fractions
    - Finding the LCD of two fractions
    - Addition or subtraction of fractions with the same denominator
    - Introduction to addition or subtraction of fractions with different denominators
    - Addition and subtraction of 3 fractions with different denominators
    - Word problem involving addition or subtraction of fractions with different denominators
    - Fractional part of a circle
    - Product of a unit fraction and a whole number
    - Product of a fraction and a whole number: Problem type 1
    - Introduction to fraction multiplication
    - Product of a fraction and a whole number: Problem type 2
    - Multiplication of 3 fractions
    - Word problem involving fractions and multiplication
    - Multi-step word problem involving fractions and multiplication
    - The reciprocal of a number
    - Division involving a whole number and a fraction
    - Fraction division
    - Complex fraction without variables: Problem type 1
    - Word problem involving fractions and division
    - Writing an improper fraction as a mixed number
    - Writing a mixed number as an improper fraction
    - Mixed number addition with the same denominator and renaming
    - Mixed number subtraction with the same denominator and renaming
    - Addition or subtraction of mixed numbers with different denominators without renaming
    - Addition of mixed numbers with different denominators and renaming
    - Subtraction of mixed numbers with different denominators and renaming
    - Word problem involving addition or subtraction of mixed numbers with different denominators
    - Mixed number multiplication
    - Multiplication of a mixed number and a whole number
    - Division with a mixed number and a whole number
    - Mixed number division
    - Word problem involving multiplication or division with mixed numbers
    - Rounding to tens or hundreds
    - Rounding to hundreds or thousands

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- Decimal place value: Tenths and hundredths
- Fractional position on a number line
- Plotting fractions on a number line
- Reading decimal position on a number line: Tenths
- Reading decimal position on a number line: Hundredths
- Introduction to ordering decimals
- Ordering decimals
- Using a calculator to convert a fraction to a rounded decimal
- Ordering fractions and decimals
- Addition of aligned decimals
- Decimal addition with 3 numbers
- Subtraction of aligned decimals
- Decimal subtraction: Advanced
- Decimal addition and subtraction with 3 or more numbers
- Estimating a sum of whole numbers: Problem type 1
- Estimating a sum of whole numbers: Problem type 2
- Estimating a decimal sum or difference
- Word problem with addition of 3 or 4 decimals and whole numbers
- Multiplication of a decimal by a power of ten
- Decimal multiplication: Problem type 1
- Multiplication of a decimal by a power of 0.1
- Estimating a product of decimals
- Word problem with multiplication of two decimals
- Division of a decimal by a power of ten
- Division of a decimal by a 1-digit decimal
- Division of a decimal by a 2-digit decimal
- Word problem with multiple decimal operations: Problem type 2
- Word problem with division of two decimals
- Converting a fraction to a terminating decimal: Basic
- Converting a fraction to a terminating decimal: Advanced
- Converting a fraction to a repeating decimal: Basic
- Converting a fraction to a repeating decimal: Advanced
- Converting a decimal to a proper fraction in simplest form: Basic
- Converting a decimal to a proper fraction in simplest form: Advanced
- Converting a decimal to a mixed number and an improper fraction in simplest form: Advanced
- Writing ratios using different notations
- Writing ratios for real-world situations
- Identifying statements that describe a ratio
- Simplifying a ratio of whole numbers: Problem type 1
- Simplifying a ratio of decimals
- Using tables to compare ratios
- Finding a unit price
- Computing unit prices to find the better buy
- Word problem on unit rates associated with ratios of whole numbers: Decimal answers
- Finding a rate given a pictorial representation of a real-world situation
- Introduction to converting a percentage to a decimal
- Introduction to converting a decimal to a percentage
- Converting a percentage to a fraction in simplest form
- Using a calculator to convert a fraction to a rounded percentage
- Finding a percentage of a total amount: Real-world situations
- Finding a percentage of a total amount without a calculator: Sales tax, commission, discount
- Estimating a tip without a calculator
- Writing a ratio as a percentage
- Writing a ratio as a percentage without a calculator
- Finding the rate of a tax or commission
- U.S. Customary length conversion with whole number values
- U.S. Customary length conversions involving rounding decimals
- 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
- Metric distance conversion with whole number values
- Metric distance conversion with decimal values
- Time unit conversion with whole number values
- Simplifying a ratio of whole numbers: Problem type 2
- Converting between metric and U.S. Customary unit systems
- Conversions with currency

- Real Numbers (112 topics)
  - Plotting integers on a number line
  - Plotting opposite integers on a number line
  - Plotting rational numbers on a number line
  - Reading the temperature from a thermometer
  - Ordering integers
  - Comparing integers using a number line

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- Finding opposites of integers
- Approximating the location of irrational numbers on a number line
- Ordering real numbers
- Interpreting absolute values in context as distances from zero
- Finding all numbers with a given absolute value
- Addition and subtraction with 4 or 5 integers
- Word problem with addition or subtraction of integers
- Operations with absolute value: Problem type 1
- Operations with absolute value: Problem type 2
- Computing the distance between two integers on a number line
- Word problem with multiplication or division of integers
- Identifying equivalent signed fractions
- Signed fraction subtraction involving double negation
- Signed fraction addition or subtraction: Advanced
- Addition and subtraction of 3 fractions involving signs
- Signed fraction multiplication: Advanced
- Signed fraction division
- Signed decimal addition and subtraction with 3 numbers
- Signed decimal multiplication
- Signed decimal division
- Writing expressions using exponents
- Introduction to exponents
- Power of 10: Positive exponent
- Order of operations with whole numbers and grouping symbols
- Order of operations with whole numbers and exponents: Advanced
- Order of operations with fractions: Problem type 1
- Order of operations with fractions: Problem type 2
- Order of operations with fractions: Problem type 3
- Squaring decimal bases: Products greater than 0.1
- Exponents and decimals: Products less than 0.1
- Order of operations with decimals: Problem type 1
- Order of operations with decimals: Problem type 2
- Order of operations with decimals: Problem type 3
- Exponents and integers: Problem type 2
- Order of operations with integers and exponents
- Evaluating an algebraic expression: Whole number addition or subtraction
- Evaluating an algebraic expression: Whole number multiplication or division
- Evaluating an algebraic expression: Whole number operations and exponents
- Converting between temperatures in Fahrenheit and Celsius
- Evaluating a linear expression: Signed fraction multiplication with addition or subtraction
- Evaluating a linear expression: Signed decimal addition and subtraction
- Evaluating a linear expression: Signed decimal multiplication with addition or subtraction
- Identifying numbers as integers or non-integers
- Identifying rational decimal numbers
- Identifying true statements about rational and irrational numbers
- Identifying numbers as rational or irrational
- Interpreting a Venn diagram of 2 sets
- Interpreting a Venn diagram of 3 sets
- Constructing a Venn diagram to classify rational numbers
- Constructing a Venn diagram to describe relationships between sets of rational numbers
- Constructing a Venn diagram to classify real numbers
- Constructing a Venn diagram to describe relationships between sets of real numbers
- Properties of addition
- Introduction to adding fractions with variables and common denominators
- Combining like terms: Fractional coefficients
- Combining like terms: Decimal coefficients
- Understanding the distributive property
- Multiplying a constant and a linear monomial
- Distributive property: Fractional coefficients
- Properties of real numbers
- Identifying parts in an algebraic expression
- Identifying equivalent algebraic expressions
- Identifying properties used to simplify an algebraic expression
- Using distribution with double negation and combining like terms to simplify: Multivariate
- Identifying solutions to a one-step linear equation: Problem type 1
- Identifying solutions to a one-step linear equation: Problem type 2
- Additive property of equality with whole numbers
- Additive property of equality with fractions and mixed numbers
- Multiplicative property of equality with whole numbers
- Multiplicative property of equality with whole numbers: Fractional answers
- Perimeter of a polygon
- Perimeter of a square or a rectangle
- Finding the missing length in a figure
- Area of a square or a rectangle

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- Introduction to area of a piecewise rectangular figure
- Area of a piecewise rectangular figure
- Area between two rectangles
- Word problem involving the area of a rectangle: Problem type 2
- Word problem involving the area between two rectangles
- Area of a parallelogram
- Area of a triangle
- Area of a trapezoid
- Circumference of a circle
- 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
- Area involving rectangles and circles
- Area between two concentric circles
- Word problem involving the area between two concentric circles
- Area involving inscribed figures
- Word problem involving the volume of a rectangular prism
- Word problem involving the rate of filling or emptying a rectangular prism
- Volume of a triangular prism
- Volume of a pyramid
- Volume of a cylinder
- Word problem involving the volume of a cylinder
- Word problem involving the rate of filling or emptying a cylinder
- Volume of a cone
- Volume of a cone: Exact answers in terms of pi
- Volume of a sphere
- Surface area of a cube or a rectangular prism
- Surface area of a triangular prism
- Surface area of a cylinder
- Surface area of a cylinder: Exact answers in terms of pi
- Surface area of a sphere

- Linear Equations (94 topics)
  - Using two steps to solve an equation with whole numbers
  - Introduction to using substitution to solve a linear equation
  - Solving an equation to find the value of an expression
  - Identifying properties used to solve a linear equation
  - Introduction to solving a linear equation with a variable on each side
  - Solving a linear equation with several occurrences of the variable: Variables on both sides and two distributions
  - Clearing fractions in an equation
  - Solving a linear equation with several occurrences of the variable: Fractional forms with monomial numerators
  - Solving a 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
  - Translating a phrase into a one-step expression
  - Solving a fraction word problem using a linear equation of the form $Ax = B$
  - Choosing stories that can be represented by given one-step equations
  - Comparing arithmetic and algebraic solutions to a word problem
  - Choosing stories that can be represented by given two-step equations
  - Writing an equation of the form $A(x + B) = C$ to solve a word problem
  - Writing and solving a real-world problem given an equation with the variable on both sides
  - 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 fraction word problem using a linear equation with the variable on both sides
  - Solving a word problem with three unknowns using a linear equation
  - Solving a word problem involving consecutive integers
  - Solving a value mixture problem using a linear equation
  - Solving a word problem involving rates and time conversion
  - Solving a distance, rate, time problem using a linear equation
  - Converting a repeating decimal to a fraction
  - Finding side lengths of squares given an area and a 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
  - Finding supplementary and complementary angles
  - Solving equations involving vertical angles
  - Finding an angle measure of a triangle given two angles
  - Finding angle measures of a triangle given angles with variables
  - Writing an equation to find angle measures of a triangle given angles with variables
  - Finding angle measures of an isosceles triangle given angles 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

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- Word problem involving a conversion between U.S. Customary units of weight and metric units of mass
- Converting between compound units: Advanced
- Word problem involving conversion between compound units using dimensional analysis
- 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 2
- Finding a missing side length given two similar triangles
- Relationships about ratios within and between similar triangles
- Similar polygons
- Similar right triangles
- Indirect measurement
- Finding lengths using scale models
- Using a scale drawing to find actual area
- Circumference ratios
- Applying the percent equation: Problem type 2
- Finding the total amount given the percentage of a partial amount
- Finding the sale price without a calculator given the original price and percent discount
- Finding the total cost including tax or markup
- Combined effect of more than one markup or discount
- Finding the original amount given the result of a percentage increase or decrease
- Finding the original price given the sale price and percent discount
- Finding the percentage increase or decrease: Basic
- Finding the percentage increase or decrease: Advanced
- Finding the absolute error and percent error of a measurement
- Computing a percent mixture
- 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
- Finding the principal, rate, or time of a simple interest loan or investment
- Computing the interest and repayment amount for a simple interest loan whose term is given in months or days
- Finding the principal, rate, or time for a simple interest loan whose term is given in months or days
- Introduction to solving an absolute value equation
- 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
- Calculating income tax
- Comparing discounts
- Computations involving cost of living and hourly wage
- Using a family budget estimator to determine the minimum monthly budget and average hourly wage needed for a family
- Hourly gross pay with overtime
- Gross pay with commission and salary
- Gross pay with variable commission scale
- Calculations involving purchases with debit and credit cards
- Comparing costs of checking accounts
- Reading a credit report
- Understanding the impact of a credit score
- Calculating and comparing monthly payments using the ALEKS loan calculator
- Calculating monthly payment, total payment, and interest using the ALEKS loan calculator
- Calculating and comparing total loan payments using the ALEKS loan calculator
- Calculating and comparing simple interest and compound interest
- Using the ALEKS periodic deposit calculator to compute savings which include periodic deposits

- Linear Inequalities (46 topics)
  - Translating a sentence into a one-step inequality
  - Introduction to identifying solutions to an inequality
  - Writing an inequality for a real-world situation
  - Identifying solutions to a one-step linear inequality
  - Additive property of inequality with whole numbers
  - Additive property of inequality with signed fractions
  - Additive property of inequality with signed decimals
  - Multiplicative property of inequality with whole numbers
  - Solving a linear inequality with multiple occurrences of the variable: Problem type 3
  - Solving a word problem using a one-step linear inequality
  - Solving a word problem involving area using a one-step linear inequality: Area and lengths
  - 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 numbers using descriptive and roster forms
  - Identifying elements of sets for a real world situation
  - Writing sets for a real-world situation using descriptive and roster forms

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- Identifying infinite sets and determining cardinalities of finite sets
- Identifying equivalent and equal sets
- Identifying equivalent and equal sets for a real-world situation
- Writing sets of natural numbers using set-builder and roster forms
- Writing sets of integers using set-builder and roster forms
- Membership and cardinality of sets
- Identifying true statements involving subsets and proper subsets
- Identifying true statements about set membership and subsets
- Writing subsets
- Determining the total number of subsets of a set
- Writing subsets for a real-world situation
- Determining the number of subsets for a real-world situation
- Finding sets and complements of sets
- Finding sets and complements of sets for a real-world situation
- Union and intersection of finite sets
- Constructing a Venn diagram with 2 sets
- Interpreting Venn diagram cardinalities with 2 sets for a real-world situation
- Constructing a Venn diagram with 2 sets to solve a word problem
- Constructing a Venn diagram with 3 sets
- Interpreting Venn diagram cardinalities with 3 sets for a real-world situation
- Constructing a Venn diagram with 3 sets to solve a word problem
- Writing a compound inequality given a graph on the number line
- Solving a compound linear inequality: Graph solution, advanced
- 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

- Functions and Lines (83 topics)
  - Plotting a point in the coordinate plane: Mixed number coordinates
  - Naming the quadrant or axis of a point given its graph
  - Naming the quadrant or axis of a point given its coordinates
  - Naming the quadrant or axis of a point given the signs of its coordinates
  - Finding distances between points that share a common coordinate given their coordinates
  - Plotting points that share a coordinate and using absolute value to find the distance between them
  - Function tables with two-step rules
  - Writing a function rule given a table of ordered pairs: Two-step rules
  - Finding x- and y-intercepts of a line given the equation: Advanced
  - Graphing a line given its x- and y-intercepts
  - Interpreting a line graph
  - Identifying proportional relationships in equations
  - Identifying proportional relationships in tables by calculating unit rates: Whole numbers
  - Identifying proportional relationships in tables by calculating unit rates: Fractions
  - Determining whether a relationship is proportional given a real-world situation
  - Identifying proportional relationships in graphs: Basic
  - Identifying proportional relationships in graphs: Advanced
  - Graphing a relationship given a real-world situation to determine if the relationship is proportional
  - Writing an equation and describing a proportional relationship given a graph or table
  - Finding slope given the graph of a line in quadrant 1 that models a real-world situation
  - 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
  - Writing an equation and graphing a line given its slope and y-intercept
  - Graphing a line given its equation in point-slope form
  - Writing the equations of vertical and horizontal lines through a given point
  - Comparing linear functions to the parent function $y = x$
  - Finding slopes of lines parallel and perpendicular to a line given in slope-intercept form
  - Finding slopes of lines parallel and perpendicular to a line given in the form $Ax + By = C$
  - Identifying parallel and perpendicular lines from equations
  - Writing equations of lines parallel and perpendicular to a given line through a point
  - Identifying parallel and perpendicular lines from coordinates
  - Finding inputs and outputs of a two-step function that models a real-world situation: Two variable equation
  - Writing and evaluating a function that models a real-world situation: Basic
  - Writing and evaluating a function that models a real-world situation: Advanced
  - Writing an equation and drawing its graph to model a real-world situation: Basic
  - Combining functions to write a new function that models a real-world situation
  - Identifying independent and dependent quantities from tables and graphs
  - Identifying independent and dependent variables from equations or real-world situations
  - Constructing a scatter plot
  - Sketching the line of best fit

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- 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
- Variable expressions as inputs of functions: Problem type 1
- Evaluating a piecewise-defined function
- Finding outputs of a one-step function that models a real-world situation: Function notation
- Finding inputs and outputs of a function from its graph
- Domain and range from the graph of a discrete relation
- Finding domain and range from a linear graph in context
- Finding intercepts of a nonlinear function given its graph
- Finding where a function is increasing, decreasing, or constant given the graph
- Finding local maxima and minima of a function given the graph
- Choosing a graph to fit a narrative: Basic
- Choosing a graph to fit a narrative: Advanced
- Graphing an integer function and finding its range for a given domain
- Graphing a function of the form $f(x) = ax + b$: Integer slope
- Graphing a function of the form $f(x) = ax + b$: Fractional slope
- Graphing an absolute value equation of the form $y = A|x|$
- Graphing an absolute value equation in the plane: Basic
- Graphing an absolute value equation in the plane: Advanced
- Graphing a parabola of the form $y = ax^2 + c$
- Graphing a function of the form $f(x) = ax^2$
- Graphing a function of the form $f(x) = ax^2 + c$
- Graphing a cubic function of the form $y = ax^3$
- 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
- 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
- Translating the graph of a function: One step
- Translating the graph of a function: Two steps
- Transforming the graph of a function by reflecting over an axis
- Writing an equation for a function after a vertical and horizontal translation

- Linear Systems (19 topics)
  - Identifying the solution of systems of linear equations from graphs
  - Graphically solving a system of linear equations both of the form $y=mx+b$
  - Using a graphing calculator to solve a system of linear equations: Advanced
  - Solving a system of linear equations with fractional coefficients
  - Solving a system of linear equations with decimal coefficients
  - 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
  - Scalar multiplication of a matrix
  - Addition or subtraction of matrices
  - Linear combination of matrices
  - Completing Gauss-Jordan elimination with a 2x2 matrix
  - Gauss-Jordan elimination with a 2x2 matrix
  - Solving a word problem using a system of linear equations of the form $Ax + By = C$
  - Solving a percent mixture 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
  - Graphing a system of three linear inequalities
  - Solving a word problem using a system of linear inequalities: Problem type 1

- Exponents and Exponential Functions (41 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 of 10: Negative exponent
  - Ordering numbers with negative exponents
  - Product rule with negative exponents
  - Power and quotient rules with negative exponents: Problem type 2
  - Power, product, and quotient rules with negative exponents
  - Finding all square roots of a number

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- Estimating a square root
- Order of operations with exponents and radicals
- Finding n^{th} roots of perfect n^{th} powers with signs
- Rational exponents: Unit fraction exponents and bases involving signs
- Rational exponents: Negative exponents and fractional bases
- Rational exponents: Products and quotients with negative exponents
- Rational exponents: Powers of powers with negative exponents
- Introduction to scientific notation with positive exponents
- Scientific notation with a positive exponent
- Introduction to scientific notation with negative exponents
- Scientific notation with a negative exponent
- Converting between scientific notation and standard form in a real-world situation
- Expressing calculator notation as scientific notation
- Multiplying numbers written in scientific notation: Basic
- Multiplying numbers written in scientific notation: Advanced
- Multiplying numbers written in decimal form or scientific notation in a real-world situation
- Dividing numbers written in scientific notation: Basic
- Dividing numbers written in scientific notation: Advanced
- Finding powers of numbers written in scientific notation
- Finding the scale factor between numbers given in scientific notation in a real-world situation
- Adding or subtracting numbers written in scientific notation: Same exponents, basic
- Adding or subtracting numbers written in scientific notation: Same exponents, advanced
- Adding or subtracting numbers written in scientific notation: Different exponents
- Estimating the sum or difference of two numbers written in scientific notation
- 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 $f(x) = -b^{-x}$
- Finding the future value and interest for an investment earning compound interest
- Finding the present value of an investment earning compound interest
- Solving an exponential equation by finding common bases: Linear exponents
- Identifying arithmetic and geometric sequences

- Polynomials and Factoring (31 topics)
  - Degree of a multivariate polynomial
  - Simplifying a sum or difference of three univariate polynomials
  - Simplifying a sum or difference of multivariate polynomials
  - Multiplying a univariate polynomial by a monomial with a negative coefficient
  - Multiplying a multivariate polynomial by a monomial
  - Multiplying conjugate binomials: Multivariate
  - Squaring a binomial: Multivariate
  - Multiplication involving binomials and trinomials in two variables
  - 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 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 in two variables
  - Factoring a difference of squares in two variables
  - 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: Univariate
  - Dividing a polynomial by a monomial: Multivariate
  - Simplifying a ratio of factored polynomials: Linear factors
  - Simplifying a ratio of polynomials using GCF factoring
  - Polynomial long division: Problem type 1
  - Polynomial long division: Problem type 2
  - Polynomial long division: Problem type 3

- Quadratic Functions and Equations (12 topics)
  - Solving a quadratic equation needing simplification
  - Writing a quadratic equation given the roots and the leading coefficient
  - 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
  - Range of a quadratic function
  - Solving a quadratic equation by completing the square: Exact answers
  - Applying the quadratic formula: Exact answers

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- Discriminant of a quadratic equation
- Graphing a quadratic inequality: Problem type 1
- Graphing a quadratic inequality: Problem type 2
- Using a graphing calculator to solve a nonlinear system of equations: Basic
- Sum, difference, and product of two functions

- Radicals (72 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 the nth root of a perfect n^{th} power fraction
  - Finding the nth root of a perfect n^{th} power monomial
  - Table for a square 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 square root function: Problem type 3
  - 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
  - Simplifying a higher root of a whole number
  - Introduction to simplifying a higher radical expression
  - Simplifying a higher radical expression: Univariate
  - Simplifying a higher radical expression: Multivariate
  - 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
  - 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
  - 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
  - Rationalizing a denominator: Quotient involving a monomial
  - Rationalizing a denominator using conjugates: Integer numerator
  - Rationalizing a denominator using conjugates: Square root in numerator
  - 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 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 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 of the form $x^3 = a$ using integers
  - Finding the side length of a cube given its volume
  - Introduction to the Pythagorean Theorem
  - Pythagorean Theorem
  - Word problem involving the Pythagorean Theorem
  - Identifying side lengths that give right triangles
  - Informal proof of the Pythagorean Theorem
  - Using the Pythagorean Theorem and a quadratic equation to find side lengths of a right triangle
  - Distance between two points in the plane: Exact answers
  - Distance between two points in the plane: Decimal answers
  - Midpoint of a line segment in the plane
  - Finding an endpoint of a line segment given the other endpoint and the midpoint
  - Sine, cosine, and tangent ratios: Numbers for side lengths
  - Sine, cosine, and tangent ratios: Variables for side lengths
  - Using a calculator to approximate sine, cosine, and tangent values
  - Using the Pythagorean Theorem to find a sine, cosine, or tangent ratio in a right triangle
  - Using the Pythagorean Theorem to find several trigonometric ratios in a right triangle
  - Understanding trigonometric ratios through similar right triangles
  - Relationship between the sines and cosines of complementary angles
  - Using a trigonometric ratio to find a side length in a right triangle

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- Solving a right triangle
- Using trigonometry to find a length in a word problem with one right triangle
- Using trigonometry to find a length in a word problem with two right triangles
- 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

- Data Analysis and Probability (123 topics)
  - Identifying statistical questions
  - Classification of variables
  - Classifying samples
  - Choosing an appropriate method for gathering data: Problem type 1
  - Choosing an appropriate method for gathering data: Problem type 2
  - Introduction to expectation
  - Making predictions using experimental data for compound events
  - Constructing a frequency distribution for grouped data
  - Constructing a frequency distribution for non-grouped data
  - Constructing a relative frequency distribution for grouped data
  - Constructing a two-way frequency table: Basic
  - Constructing a two-way frequency table: Advanced
  - Computing a percentage from a table of values
  - Making an inference using a two-way frequency table
  - Calculating relative frequencies in a contingency table
  - Calculating relative frequencies in a contingency table: Advanced
  - Finding if a question can be answered by the data
  - Making a reasonable inference based on proportion statistics
  - Constructing a line plot
  - Constructing a line plot with fractional values: Fourths
  - Making part-to-whole, part-to-part, and equivalence comparisons given a line plot
  - Constructing a bar graph for non-numerical data
  - Interpreting a bar graph
  - Making part-to-whole, part-to-part, and equivalence comparisons given a bar graph
  - Interpreting a double bar graph
  - Constructing a frequency distribution and a histogram
  - Interpreting a histogram
  - Interpreting a stem-and-leaf plot
  - Interpreting a circle graph or pie chart
  - Finding a percentage of a total amount in a circle graph
  - Making part-to-part and equivalence comparisons given a circle graph
  - Computations from a circle graph
  - Angle measure in a circle graph
  - Constructing a percent bar graph
  - Mode of a data set
  - Range of a data set
  - Finding the mode and range from a line plot
  - How changing a value affects the range and IQR
  - Mean of a data set
  - Finding the mean of a symmetric distribution
  - Computations involving the mean, sample size, and sum of a data set
  - Finding the value for a new score that will yield a given mean
  - Rejecting unreasonable claims based on average statistics
  - Weighted mean
  - Mean and median of a data set
  - How changing a value affects the mean and median
  - Finding outliers in a data set
  - Choosing the best measure to describe data
  - Identifying peaks, symmetry, gaps, and clusters in a line plot
  - Identifying the center, spread, and shape of a data set
  - Computing mean absolute deviation from a list of numerical values
  - Percentage of data below a specified value
  - Interpreting percentile ranks
  - Percentiles
  - Comparing measures of center and variation
  - Finding sample size and comparing samples for estimating the mean
  - 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
  - Factorial expressions

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- Counting arrangements of objects that are not all distinct
- Computing permutations and combinations
- Word problem involving permutations
- Word problem involving combinations
- Introduction to permutations and combinations
- Permutations, combinations, and the multiplication principle for counting
- 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
- Probability of selecting one card from a standard deck
- Probabilities of an event and its complement
- Experimental and theoretical probability
- Finding the odds in favor and against
- Converting between probability and odds
- Finding odds in favor and against drawing a card from a standard deck
- Area as probability
- Computing expected value in a game of chance
- Computing expected value in a business application
- Determining a sample space and outcomes for an event: Experiment involving multiple selections
- Outcomes and event probability
- Experimental and theoretical probability for compound events
- Probabilities involving two rolls of a die
- Probabilities of a permutation and a combination
- Identifying independent events given descriptions of experiments
- Probability of independent events
- Probability of independent events involving a standard deck of cards
- Probability of dependent events
- Probability of dependent events involving a survey
- Probability of dependent events involving a standard deck of cards
- Determining outcomes for unions, intersections, and complements of events
- 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
- Computing conditional probability using a sample space
- 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
- Computing conditional probability to make an inference using a two-way frequency table
- Computing conditional probability using a large two-way frequency table
- Conditional probability: Basic
- Identifying outcomes in a random number table used to simulate a simple event
- Using a random number table to simulate a simple event
- Generating a random number table with technology to simulate a simple event
- Identifying outcomes in a random number table used to simulate a compound event
- Using a random number table to simulate a compound event
- Generating a random number table with technology to simulate a compound event
- Generating random samples from a population with known characteristics
- Using a random number table to make a fair decision
- Population standard deviation
- Using the empirical rule to identify values and percentages of a normal distribution
- Word problem involving calculations from a normal distribution

- Rational Expressions (84 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: Factors with exponents
  - Simplifying a ratio of linear polynomials: 1, -1, and no simplification
  - Simplifying a ratio of polynomials by factoring a quadratic with leading coefficient 1
  - Simplifying a ratio of polynomials: Problem type 1
  - 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 multivariate monomials
  - Multiplying rational expressions involving linear expressions
  - Multiplying rational expressions involving quadratics with leading coefficients of 1
  - Multiplying rational expressions involving quadratics with leading coefficients greater than 1

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- Multiplying rational expressions involving multivariate quadratics
- Dividing rational expressions involving multivariate monomials
- Dividing rational expressions involving linear expressions
- Dividing rational expressions involving quadratics with leading coefficients of 1
- Dividing rational expressions involving quadratics with leading coefficients greater than 1
- Dividing rational expressions involving multivariate quadratics
- Multiplication and division of 3 rational expressions
- Introduction to the LCM of two monomials
- Least common multiple of two monomials
- Finding the LCD of rational expressions with linear denominators: Relatively prime
- 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 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 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: Basic
- Adding rational expressions with linear denominators without common factors: Advanced
- Adding rational expressions with linear denominators with common factors: Basic
- Adding rational expressions with linear denominators with common factors: Advanced
- Adding rational expressions with denominators ax-b and b-ax
- Adding rational expressions involving different quadratic denominators
- Adding 3 rational expressions with different quadratic denominators
- Complex fraction without variables: Problem type 2
- Complex fraction involving univariate monomials
- 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 5
- 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 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: Proportional form, basic
- 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
- 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 1
- Solving for a variable in terms of other variables in a rational equation: Problem type 2
- Solving for a variable in terms of other variables in a rational equation: Problem type 3
- Word problem involving multiple rates
- Solving a work problem using a rational equation
- Solving a distance, rate, time problem using a rational equation
- Ordering fractions with variables
- Word problem on inverse variation involving the completion of a task
- Finding the asymptotes of a rational function: Constant over linear
- Finding the asymptotes of a rational function: Linear over linear
- Graphing a rational function: Constant over linear
- Graphing a rational function: Linear over linear

*__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.

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