



## *Prep for Intermediate Algebra*

This course covers the topics outlined below. You can customize the scope and sequence of this course to meet your curricular needs.

Curriculum Show All (161 topics + 59 additional topics)

- Real Numbers (49 topics)
  - ◆ Fractions and Decimals (12 topics)
    - ◇ Fractional position on a number line
    - ◇ Plotting fractions on a number line
    - ◇ Simplifying a fraction
    - ◇ Using a common denominator to order fractions
    - ◇ Addition or subtraction of fractions with different denominators
    - ◇ Product of a fraction and a whole number: Problem type 1
    - ◇ Fraction multiplication
    - ◇ Fraction division
    - ◇ Mixed arithmetic operations with fractions
    - ◇ Decimal place value: Tenths and hundredths
    - ◇ Rounding decimals
    - ◇ Ordering decimals
  - ◆ Percents and Proportions (9 topics)
    - ◇ Converting between percentages and decimals
    - ◇ Applying the percent equation
    - ◇ Writing a ratio as a percentage without a calculator
    - ◇ Finding the sale price without a calculator given the original price and percent discount
    - ◇ Finding the original price given the sale price and percent discount
    - ◇ Finding simple interest without a calculator
    - ◇ Solving a one-step word problem using the formula  $d = rt$
    - ◇ Solving a proportion of the form  $x/a = b/c$
    - ◇ Word problem on proportions: Problem type 1
  - ◆ Signed Numbers (21 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
    - ◇ Signed fraction addition or subtraction: Basic
    - ◇ Signed fraction addition or subtraction: Advanced
    - ◇ Signed decimal addition and subtraction
    - ◇ Signed decimal addition and subtraction with 3 numbers
    - ◇ Integer multiplication and division
    - ◇ Multiplication of 3 or 4 integers
    - ◇ Signed fraction multiplication: Basic
    - ◇ Signed fraction multiplication: Advanced
    - ◇ Exponents and integers: Problem type 1
    - ◇ Exponents and signed fractions

- ◇ Order of operations with integers
- ◇ Order of operations with integers and exponents
- ◇ Evaluating a linear expression: Integer multiplication with addition or subtraction
- ◇ Evaluating a quadratic expression: Integers
- ◇ Absolute value of a number
- ◇ Operations with absolute value: Problem type 2
- ◆ Properties of Real Numbers (7 topics)
  - ◇ Identifying numbers as integers or non-integers
  - ◇ Properties of addition
  - ◇ Distributive property: Whole number coefficients
  - ◇ Distributive property: Integer coefficients
  - ◇ Combining like terms: Integer coefficients
  - ◇ Combining like terms: Advanced
  - ◇ Combining like terms in a quadratic expression
- Linear Equations and Inequalities (38 topics)
  - ◆ Linear Equations (16 topics)
    - ◇ Additive property of equality with integers
    - ◇ Additive property of equality with a negative coefficient
    - ◇ Multiplicative property of equality with integers
    - ◇ Multiplicative property of equality with decimals
    - ◇ Multiplicative property of equality with fractions
    - ◇ Multiplicative property of equality with signed fractions
    - ◇ Solving a two-step equation with integers
    - ◇ Solving a two-step equation with signed fractions
    - ◇ 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 fractional coefficients
    - ◇ 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: Variables on both sides and two distributions
    - ◇ Solving equations with zero, one, or infinitely many solutions
    - ◇ Introduction to algebraic symbol manipulation
    - ◇ Algebraic symbol manipulation: Problem type 1
    - ◇ Algebraic symbol manipulation: Problem type 2
  - ◆ Applications of Linear Equations (9 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
    - ◇ Solving a fraction word problem using a linear equation of the form  $Ax = B$
    - ◇ Solving a word problem with two unknowns using a linear equation
    - ◇ Solving a decimal word problem using a linear equation of the form  $Ax + B = C$
    - ◇ Solving a value mixture problem using a linear equation
    - ◇ Solving a percent mixture problem using a linear equation
    - ◇ Solving a distance, rate, time problem using a linear equation
  - ◆ Linear Inequalities and Applications (12 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
    - ◇ Graphing a compound inequality on the number line
    - ◇ Solving a linear inequality: Problem type 1
    - ◇ Solving a linear inequality: Problem type 2

- ◇ Solving a linear inequality: Problem type 3
  - ◇ Solving a linear inequality: Problem type 4
  - ◇ Solving a linear inequality: Problem type 5
  - ◇ Solving a compound linear inequality: Graph solution, basic
  - ◇ Writing an inequality for a real-world situation
  - ◇ Solving a decimal word problem using a two-step linear inequality
- ◆ Absolute Value Equations and Inequalities (1 topics)
  - ◇ Solving an absolute value equation of the form  $a|x| = b$  or  $|x| + a = b$
- Functions, Lines, and Systems (32 topics)
  - ◆ Functions and Relations (2 topics)
    - ◇ Table for a linear function
    - ◇ Evaluating functions: Linear and quadratic or cubic
  - ◆ Ordered Pairs (5 topics)
    - ◇ Reading a point in the coordinate plane
    - ◇ Plotting a point in the coordinate plane
    - ◇ Table for a linear equation
    - ◇ Finding a solution to a linear equation in two variables
    - ◇ Determining whether given points lie on one, both, or neither of 2 lines given equations
  - ◆ Graphing (7 topics)
    - ◇ Graphing a line given its  $x$ - and  $y$ -intercepts
    - ◇ Graphing a line given its equation in slope-intercept form
    - ◇ Graphing a line given its equation in standard form
    - ◇ Graphing a line through a given point with a given slope
    - ◇ Graphing a vertical or horizontal line
    - ◇ Graphing a linear inequality in the plane: Vertical or horizontal line
    - ◇ Graphing a linear inequality in the plane: Slope-intercept form
  - ◆ Equations of Lines (9 topics)
    - ◇ Finding the  $y$ -intercept of a line given its equation
    - ◇ Finding  $x$ - and  $y$ -intercepts of a line given the equation: Advanced
    - ◇ Finding slope given the graph of a line on a grid
    - ◇ Finding slope given two points on the line
    - ◇ Finding the slope of a line given its equation
    - ◇ Writing the equation of a line given the  $y$ -intercept and another point
    - ◇ Writing the equation of a line given the slope and a point on the line
    - ◇ Writing the equation of a line through two given points
    - ◇ Finding slopes of lines parallel and perpendicular to a line given in the form  $Ax + By = C$
  - ◆ Applications (4 topics)
    - ◇ Interpreting a line graph
    - ◇ Interpreting the graphs of two functions
    - ◇ Writing an equation and drawing its graph to model a real-world situation: Advanced
    - ◇ Application problem with a linear function: Finding a coordinate given the slope and a point
  - ◆ Systems of Linear Equations (5 topics)
    - ◇ Graphically solving a system of linear equations
    - ◇ Solving a system of linear equations using substitution
    - ◇ Solving a system of linear equations using elimination with multiplication and addition
    - ◇ 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
- Exponents, Polynomials, and Radicals (26 topics)
  - ◆ Properties of Exponents (13 topics)
    - ◇ 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 of exponents
- ◇ Product rule with positive exponents: Multivariate
- ◇ Product rule with negative exponents
- ◇ Introduction to the quotient rule of exponents
- ◇ Quotient of expressions involving exponents
- ◇ Quotient rule with negative exponents: Problem type 1
- ◇ Introduction to the power rules of exponents
- ◇ Power rules with positive exponents
- ◇ Power of a power rule with negative exponents
- ◇ Power and product rules with positive exponents
- ◆ Scientific Notation (2 topics)
  - ◇ Scientific notation with a positive exponent
  - ◇ Scientific notation with a negative exponent
- ◆ Polynomial Expressions (5 topics)
  - ◇ Simplifying a sum or difference of two univariate polynomials
  - ◇ Multiplying a univariate polynomial by a monomial with a positive coefficient
  - ◇ Multiplying binomials with leading coefficients of 1
  - ◇ Multiplying conjugate binomials: Univariate
  - ◇ Squaring a binomial: Univariate
- ◆ Factoring (5 topics)
  - ◇ Introduction to the GCF of two monomials
  - ◇ Factoring out a monomial from a polynomial: Univariate
  - ◇ Factoring a quadratic with leading coefficient 1
  - ◇ Factoring a quadratic with leading coefficient greater than 1
  - ◇ Factoring a difference of squares
- ◆ Radicals (1 topics)
  - ◇ Square root of a perfect square
- Geometry (16 topics)
  - ◆ Applying Formulas (8 topics)
    - ◇ Perimeter of a square or a rectangle
    - ◇ Area of a square or a rectangle
    - ◇ Area of a triangle
    - ◇ Area of a parallelogram
    - ◇ Circumference and area of a circle
    - ◇ Volume of a rectangular prism
    - ◇ Volume of a cylinder
    - ◇ Surface area of a cube or a rectangular prism
  - ◆ Applications (8 topics)
    - ◇ Finding an angle measure of a triangle given two angles
    - ◇ Finding an angle measure for a triangle with an extended side
    - ◇ Solving equations involving vertical angles
    - ◇ Finding a side length given the perimeter and side lengths with variables
    - ◇ Finding the side length of a rectangle given its perimeter or area
    - ◇ Finding the perimeter or area of a rectangle given one of these values
    - ◇ Area of a piecewise rectangular figure
    - ◇ Perimeter involving rectangles and circles
- Other Topics Available(\*) (59 additional topics)
  - ◆ Real Numbers (12 topics)
    - ◇ Fractional part of a circle
    - ◇ Computing a percentage from a table of values
    - ◇ Finding the percentage increase or decrease: Advanced

- ◇ Computations from a circle graph
- ◇ Word problem on unit rates associated with ratios of whole numbers: Decimal answers
- ◇ Solving a word problem involving rates and time conversion
- ◇ Exponents and integers: Problem type 2
- ◇ Identifying numbers as rational or irrational
- ◇ Properties of real numbers
- ◇ Set-builder notation
- ◇ Union and intersection of finite sets
- ◇ Set-builder and interval notation
- ◆ Linear Equations and Inequalities (10 topics)
  - ◇ Solving an equation to find the value of an expression
  - ◇ Solving a linear equation with several occurrences of the variable: Fractional forms with binomial numerators
  - ◇ 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
  - ◇ Finding the value for a new score that will yield a given mean
  - ◇ Solving a compound linear inequality: Interval notation
  - ◇ Solving a decimal word problem using a linear inequality with the variable on both sides
  - ◇ Solving an absolute value equation of the form  $|ax+b| = c$
  - ◇ Solving an absolute value inequality: Basic
- ◆ Functions, Lines, and Systems (17 topics)
  - ◇ Variable expressions as inputs of functions: Problem type 1
  - ◇ Identifying functions from relations
  - ◇ Vertical line test
  - ◇ Domain and range from ordered pairs
  - ◇ Domain and range from the graph of a continuous function
  - ◇ Graphing a parabola of the form  $y = ax^2$
  - ◇ Graphing a cubic function of the form  $y = ax^3$
  - ◇ Graphing an absolute value equation in the plane: Advanced
  - ◇ Writing the equations of vertical and horizontal lines through a given point
  - ◇ Writing equations of lines parallel and perpendicular to a given line through a point
  - ◇ Application problem with a linear function: Finding a coordinate given two points
  - ◇ Solving a  $2 \times 2$  system of linear equations that is inconsistent or consistent dependent
  - ◇ Solving a  $3 \times 3$  system of linear equations: Problem type 1
  - ◇ Solving a distance, rate, time problem using a system of linear equations
  - ◇ 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  $3 \times 3$  system of linear equations: Problem type 1
- ◆ Exponents, Polynomials, and Radicals (16 topics)
  - ◇ Evaluating expressions with exponents of zero
  - ◇ Power rules with negative exponents
  - ◇ Multiplying and dividing numbers written in scientific notation
  - ◇ Simplifying a sum or difference of three univariate polynomials
  - ◇ 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
  - ◇ Square root of a rational perfect square
  - ◇ Cube root of an integer
  - ◇ Estimating a square root
  - ◇ Simplifying the square root of a whole number less than 100
  - ◇ Square root of a perfect square monomial
  - ◇ Simplifying a radical expression with an even exponent

- ◇ Square root addition or subtraction
- ◇ Square root multiplication: Advanced
- ◇ Rationalizing the denominator of a radical expression
- ◆ Geometry (4 topics)
  - ◇ Surface area of a cylinder: Exact answers in terms of  $\pi$
  - ◇ Similar polygons
  - ◇ Area involving rectangles and circles
  - ◇ Word problem involving the area between two concentric circles

**\*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.*