

Algebraic System of Numbers and Operations

check off all
completed
lessons

- Order of Operations
- Graphing Real Numbers Using a Number Line
- Classifying Numbers into Subsets of Real Numbers
- Adding Real Numbers Using a Number Line
- Comparing and Ordering Real Numbers
- Using Opposites and Absolute Values
- The Addition Rule for Real Numbers
- Subtracting Real Numbers
- Multiplying Real Numbers
- Dividing Real Numbers
- Adding, Subtracting, Multiplying, and Dividing Real Numbers
- Evaluating Expressions Using the Order of Operations
- Using the Laws of Exponents
- Simplifying Expressions with Negative and Zero Exponents
- Writing, Multiplying, and Dividing Numbers Written in Scientific Notation

Algebraic Expressions

check off all
completed
lessons

- Evaluating Algebraic Expressions
- Evaluating Expressions Containing Exponents
- Translating Word Phrases into Algebraic Expressions
- Evaluating Formulas for Given Values of the Variables
- Simplifying Expressions Using the Properties of Real Numbers
- Simplifying Algebraic Expressions by Combining Like Terms
- Basic Distributive Property
- Simplifying Expressions Using the Property of -1
- Simplifying and Evaluating Algebraic Expressions Containing Grouping Symbols
- Identifying Postulates, Theorems, and Properties
- Completing and Validating Algebraic Proofs

Equations

check off all
completed
lessons

- Translating Word Statements into Equations
- Using the Addition and Subtraction Properties for Equations
- Using the Multiplication and Division Properties for Equations
- Solving Equations Using More Than One Property
- Solving Equations by Combining Like Terms
- Solving Equations with Variables on Both Sides
- Writing an Equation to Solve Word Problems

Equations continued

check off all
completed
lessons

- Writing an Equation to Solve Consecutive Integer Problems
- Writing an Equation to Solve Distance, Rate, and Time Problems
- Using Equations to Solve Percent Problems
- Solving Percent of Change Problems
- Evaluating Formulas
- Solving Literal Equations

Inequalities

check off all
completed
lessons

- Finding Solution Sets of Open Sentences from Given Replacement Sets
- Translating Word Statements into Inequalities
- Graphing Equations and Inequalities on the Number Line
- Solving Inequalities Using the Addition and Subtraction Properties
- Solving Inequalities Using the Multiplication and Division Properties
- Solving Inequalities Using More Than One Property
- Combined Inequalities
- Solving Combined Inequalities
- Solving Equations Involving Absolute Value
- Solving Absolute Value Inequalities

Graphing Equations and Inequalities

check off all
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lessons

- Graphing Ordered Pairs on a Coordinate Plane
- Identifying Solutions of Equations in Two Variables
- Graphing Linear Equations
- Finding the Slope of a Line from its Graph or from the Coordinates of Two Points
- Interchanging Linear Equations Between Standard Form and Slope-Intercept Form
- Finding the Equation of a Line Parallel or Perpendicular to a Given Line
- Graphing Linear Equations Using Slope and y-Intercept or Slope and a Point
- How Variations of "m" and "b" Affect the Graph of $y = mx + b$
- Determining an Equation of a Line Given the Slope and Coordinates of One Point
- Determining an Equation of a Line Given the Coordinates of Two Points
- Graphing Linear Inequalities with Two Variables

Foundations of Functions

check off all
completed
lessons

- Identifying Relations
- Identifying Relations as Functions
- Finding the Domain and Range of Functions
- Using Function Notation
- Applications of Functions and Relations Involving Distance, Rate, and Time
- Interpreting Graphs of Functions in Real-Life Situations
- Finding the Inverses of Linear and Quadratic Functions
- Evaluating Composite Functions
- Performing Operations with Functions

Applications of Linear Functions

check off all
completed
lessons

- Identifying Number Patterns
- Finding the n th Term of a Pattern
- Solving Problems Involving Direct Variation
- Solving Problems Involving Inverse Variation
- Graphing Absolute Value Functions
- Analyzing Linear Functions
- Real-World Applications of Linear Functions
- Determining the Best-Fitting Line
- Applications of Absolute Value, Step, and Constant Functions

Systems of Linear Equations and Inequalities

check off all
completed
lessons

- Solving Systems of Linear Equations by Graphing
- Solving Systems of Linear Equations by the Substitution Method
- Solving Systems of Linear Equations by the Addition/Subtraction Method
- Solving Systems of Linear Equations by the Multiply/Add/Subtract Method
- Graphing the Solution Set of a System of Linear Inequalities
- Solving Problems with Systems of Linear Equations and Inequalities

Polynomial Operations

check off all
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lessons

- Identifying and Multiplying Monomials
- Dividing Monomials and Simplifying Expressions Having an Exponent of Zero
- Raising a Monomial or Quotient of Monomials to a Power
- Identifying the Degree of Polynomials and Simplifying by Combining Like Terms
- Adding and Subtracting Polynomials
- Simplifying Algebraic Expressions Using the Distributive Property
- Multiplying Two Binomials Using the FOIL Method

Polynomial Operations continued

- Squaring a Binomial and Finding the Product of a Sum and Difference

Polynomial Factoring

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lessons

- Writing a Number in Prime Factorization and Finding the Greatest Common Factor
- Factoring the Greatest Common Monomial Factor from a Polynomial
- Factoring the Difference Between Two Squares and Perfect Square Trinomials
- Factoring Sums and Differences of Cubes
- Factoring $x^2 + bx + c$ When c is Greater Than Zero
- Factoring $x^2 + bx + c$ When c is Less Than Zero
- Factoring $ax^2 + bx + c$
- Factoring by Removing a Common Factor and Grouping
- Factoring a Polynomial Completely
- Solving Polynomial Equations by Factoring
- The Practical Use of Polynomial Equations

Polynomial Division

check off all
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lessons

- Dividing Polynomials
- Dividing Polynomials Using Factoring
- Dividing Polynomials Using Long Division
- Dividing Polynomials Using Synthetic Division

Radical Expressions and Equations

check off all
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lessons

- Finding the Square Roots of Rational Numbers
- Writing Rational Numbers as Decimals or Fractions
- Simplifying Square Roots
- Simplifying Square and Cube Roots
- Simplifying Sums and Differences of Radicals
- Simplifying Products of Radicals
- Simplifying Quotients of Radicals
- Solving Radical Equations
- Using the Pythagorean Theorem
- Applications of the Pythagorean Theorem
- Finding the Distance Between Two Points on a Coordinate Plane
- Applying Length, Midpoint and Slope of a Segment on a Cartesian Plane

Quadratic Equations and Functions

- Solving Quadratic Equations Involving Perfect Square Expressions
- Solving Quadratic Equations by Completing the Square
- Developing the Quadratic Formula and Using it to Solve Equations
- Applying Algebra Concepts
- Quadratic Equations with Irrational Roots
- Complex Numbers
- Algebraic Operations with Complex Numbers
- Using the Discriminant to Analyze the Solution of a Quadratic Equation
- Graphing $f(x) = ax^2$ Using Dilations
- Graphing $f(x) = ax^2$ Using Dilations and Reflections
- Graphing $f(x) = ax^2 + c$ Using Dilations, Reflections, and Vertical Translations
- Analyzing Graphs of Quadratic Functions
- Applications of Quadratic Equations
- Real-World Applications of Quadratic Functions

check off all
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lessons

Probability and Statistics

- Making a Frequency Distribution Table
- Finding the Mean, Median, and Mode from Data and Frequency Distribution Tables
- Analyzing Data Using the Measures of Central Tendency and the Range
- Histograms and the Normal Distribution
- Computing the Range, Variance, and Standard Deviation of a Set of Data
- Drawing Inferences and Making Predictions from Tables and Graphs
- Applying Counting Techniques to Permutations and Combinations
- Determining Probability of an Event and Complementary Event from a Random Experiment
- Solving Problems Involving Independent, Dependent, and Mutually Exclusive and Inclusive Events
- Unions and Intersections of Sets Using Venn Diagrams

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lessons

Geometry

- Complementary and Supplementary Angles
- Using Models to Derive Formulas for Two-Dimensional Geometric Figures
- Using Models to Derive Formulas for Three-Dimensional Solids
- Constructing Solids from Different Perspectives

check off all
completed
lessons

Matrices

- Introduction to Matrices
- Operations with Matrices
- Identifying Matrices and Dimensions of a Matrix

check off all
completed
lessons

Matrices continued

- Performing Row Operations on Matrices
- Solving Systems of Linear Equations in Three Variables Using the Gauss-Jordan Method

Rational Expressions and Equations

check off all
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lessons

- Defining Rational Expressions and Determining the Restricted Values
- Simplifying Rational Expressions
- Multiplying Rational Expressions
- Dividing Rational Expressions
- Finding the LCD of Rational Expressions and Changing Fractions to Equivalent Fractions
- Adding and Subtracting Rational Expressions
- Adding and Subtracting Polynomials and Rational Expressions
- Simplifying Complex Fractions
- Expressing Ratios in Simplest Form and Solving Equations Involving Proportions
- Solving Rational Equations

Logarithms

check off all
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lessons

- Applying the Laws of Logarithms
- Determining the Value of Common and Natural Logarithms and Irrational Exponents
- Solving Exponential Equations
- Translating Exponential and Logarithmic Equations
- Solving Logarithmic Equations

Graphing Calculator Explorations

check off all
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lessons

- Solving Linear Equations Using the Graphing Calculator
- Graphing Linear Inequalities with Two Variables Using the Graphing Calculator
- Data Analysis Using the Graphing Calculator
- Solving Systems of Linear Equations Using the Graphing Calculator
- Factoring Quadratic Equations Using the Graphing Calculator
- Solving Quadratic Equations Using the Graphing Calculator

Advanced Algebra Lessons

check off all
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lessons

- Using the Algebraic System
- Solving Equations
- Solving Inequalities
- Factoring
- Drawing a Line Using Slope-Intercept Form and Determining if Two Lines are Parallel or Perpendicular
- Identifying Domain and Range of Relations Given Graphs, Tables, or Sets of Ordered Pairs
- Solving Systems of Equations by Graphing

Advanced Algebra Lessons continued

check off all
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lessons

- Solving Systems of Equations
- Simplifying Radical Expressions
- Simplifying Sums and Differences of Radicals
- Simplifying Products of Radicals
- Graphing Quadratic Functions with Horizontal and Vertical Shifting
- Graphing Quadratic Functions with Dilations, Reflections, and Transformations