

LARSON'S **ALGEBRA 1**

Larson's Algebra 1
correlated to
Missouri Mathematics Grade-Level Expectations
Grade 9



www.meridiancg.com

(800) 530-2355

**Larson’s Algebra 1 correlated to Missouri Mathematics Grade-Level Expectations
Grade 9**

| Missouri Mathematics Grade-Level Expectations | | Larson’s Algebra 1 | |
|--|---|---|---|
| | | Module | Topic |
| Number and Operations | | | |
| 1. The student understands numbers, ways of representing numbers, relationships among numbers and number systems. | | | |
| A. | The student compares and orders rational and irrational numbers, including finding their approximate locations on a number line. | Real Numbers | The Real Number Line |
| | | Solving Linear Equations | Solving Absolute Value Equations |
| 2. The student understands meanings of operations and how they relate to one another. | | | |
| B. | The student describes the effects of operations, such as multiplication and division, and computing powers and roots on the magnitude of quantities. | Real Numbers | Dividing Real Numbers |
| | | Exponents and Exponential Functions | Multiplication Properties of Exponents |
| | | Exponents and Exponential Functions | Division Properties of Exponents |
| | | Radicals and Functions | Operations with Radical Expressions |
| C. | The student applies properties of exponents (including order of operations) to simplify expressions. | Exponents and Exponential Functions | All Topics |
| | | Radicals and Functions | Rational Exponents |
| D. | The student applies operations to real numbers, using mental computation or paper-and-pencil calculations for simple cases and technology for more complicated cases. | Covered in many topics of Larson’s Algebra 1. | |
| 3. The student computes fluently and makes reasonable estimates. | | | |
| D. | The student judges the reasonableness of numerical computations and their results. | Algebra and Expressions | Exponents and Powers |
| | | Algebra and Expressions | Variable Expressions |
| | | Quadratic Equations and Functions | Solving Quadratic Equations by Finding Square Roots |
| | | Algebraic Connections to Geometry | The Distance Formula |
| E. | The student solves problems involving proportions | Rational Expressions and Equations | Solving Proportions |
| | | Rational Expressions and Equations | Algebra and Proportions |

**Larson’s Algebra 1 correlated to Missouri Mathematics Grade-Level Expectations
Grade 9**

| Missouri Mathematics Grade-Level Expectations | | Larson’s Algebra 1 | |
|---|--|--|---|
| | | Module | Topic |
| Algebraic Relations | | | |
| 1. The student understands patterns, relations and functions. | | | |
| B. | The student generalizes patterns represented graphically or numerically using words or symbolic rules, including recursively defined functions. | Solving Linear Equations | Solving Divisions Equations |
| | | Graphing Linear Equations | The Coordinate Plane |
| C. | The student compares and contrasts various forms of representations of patterns. | | |
| D. | The student understands and compares the properties of linear and exponential functions (including intercepts). | Graphing Linear Equations | The Slope of a Line |
| | | Graphing Linear Equations | Graphing Lines Using Slope-Intercept Form |
| | | Writing Linear Equations | Slope-Intercept Form |
| | | Writing Linear Equations | Point-Slope Form |
| | | Quadratic Equations and Functions | Many Topics |
| E. | The student describes the effects of parameter changes on linear functions. | Graphing Linear Equations | The Slope of a Line |
| 2. The student represents and analyzes mathematical situations and structures using algebraic symbols. | | | |
| A. | The student uses symbolic algebra to represent and solve problems that involve linear relationships, including absolute value and recursive relationships. | Solving and Graphing Linear Inequalities | Solving Absolute-Value Inequalities |
| | | Also covered in many other topics of Larson’s Algebra 1. | |
| B. | The student describes and uses algebraic manipulations, including factoring and rules of integer exponents. | Exponents and exponential Functions | All Topics |
| | | Polynomials and Factoring | All Topics |
| | | Also covered in many other topics of Larson’s Algebra 1. | |
| C. | The student uses and solves equivalent forms of equations and inequalities (linear). | Solving Linear Equations | All Topics |
| D. | The student uses and solves systems of linear equations with two variables. | Solving Systems of Linear Equations and Inequalities | Many Topics |

**Larson's Algebra 1 correlated to Missouri Mathematics Grade-Level Expectations
Grade 9**

| Missouri Mathematics Grade-Level Expectations | | Larson's Algebra 1 | |
|---|--|---|--|
| | | Module | Topic |
| 3. The student uses mathematical models to represent and understand quantitative relationships. | | | |
| A. | The student identifies quantitative relationships and determines the type(s) of functions that might model the situation to solve the problem. | Algebra and Expressions | Combining Like Terms |
| | | Functions and Graphs | Using Function Notation |
| | | Writing Linear Equations | Modeling with Linear Functions |
| | | Also covered in other topics of Larson's Algebra 1. | |
| 4. The student analyzes change in various contexts. | | | |
| A. | The student analyzes linear functions by investigating rates of change and intercepts. | Basic Algebra | Writing Rates |
| | | Graphing Linear Equations | Graphing Lines Using Intercepts |
| | | Writing Linear Equations | Slope-Intercept Form |
| | | Also covered in other topics of Larson's Algebra 1. | |
| Geometric and Spatial Relationships | | | |
| 1. The student analyzes characteristics and properties of two- and three-dimensional geometric shapes and develops mathematical arguments about geometric relationships. | | | |
| A. | The student solves problems involving angle relationships (supplementary, complementary angles) and Pythagorean Theorem. | Algebraic Connections to Geometry | The Pythagorean Theorem and its Converse |
| | | Algebraic Connections to Geometry | The Triangle Inequality |
| B. | The student applies geometric properties and relationships such as similarity, to solve multi-step problems in 2-dimensions. | | |
| 2. The student specifies locations and describes spatial relationships using coordinate geometry and other representational systems. | | | |
| A. | The student solves problems related to 2-dimensional objects by finding the distance on a Cartesian Plane. | Algebraic Connections to Geometry | The Distance Formula |
| 3. The student applies transformations and uses symmetry to analyze situations. | | | |
| A. | The student represents translations, reflections, rotations, and dilations of objects in the coordinate plane. | Writing Linear Equations | Point-Slope Form and Equations of Parallel Lines |
| | | Algebraic Connections to Geometry | Equations of Perpendicular Lines |
| B. | The student translates and reflects linear functions. | Writing Linear Equations | Point-Slope Form and Equations of Parallel Lines |

**Larson's Algebra 1 correlated to Missouri Mathematics Grade-Level Expectations
Grade 9**

| Missouri Mathematics Grade-Level Expectations | | Larson's Algebra 1 | |
|--|---|--|---------------------------------|
| | | Module | Topic |
| 4. The student uses visualization, spatial reasoning and geometric modeling to solve problems. | | | |
| A. | The student draws and uses vertex-edge graphs or networks to find optimal solutions. | | |
| B. | The student draws or uses visual models to represent and solve problems. | Covered in many topics of Larson's Algebra 1. | |
| Measurement | | | |
| 1. The student understands measurable attributes of objects and the units, systems and processes of measurement. | | | |
| A. | The student identifies and justifies appropriate units of measure for velocity. | | |
| 2. The student applies appropriate techniques, tools and formulas to determine measurements. | | | |
| B. | The student solves problems of angle measure, including those involving triangles or other polygons. | | |
| C. | The student determines the surface area and volume of geometric figures, including cones, spheres, and cylinders. | Polynomials and Factoring | Cubic Polynomials and Factoring |
| E. | The student uses unit analysis to solve problems involving rates. | Basics of Algebra | Writing Rates |
| Data and Probability | | | |
| 1. The student formulates questions that can be addressed with data and collects, organizes, and displays relevant data to answer them. | | | |
| A. | The student formulates questions, designs studies and collects data about a characteristic. | | |
| C. | The student selects, creates and uses appropriate graphical representation of data. | Basics of Algebra | Writing Rates |
| | | Graphing Linear Equations | Graphing Linear Equations |
| | | Also covered in many other topics of Larson's Algebra 1. | |
| 2. The student selects and uses appropriate statistical methods to analyze data. | | | |
| A. | The student applies statistical concepts to solve problems. | | |
| B. | Given one-variable quantitative data, the student displays the distribution and describes its shape. | | |
| C. | Given a scatter plot, the student determines an equation for a line of best fit. | Writing Linear Equations | Modeling with Linear Functions |
| 3. The student develops and evaluates inferences and predictions that are based on data. | | | |
| A. | The student makes conjecture about possible relationships between two characteristics of a sample on the basis of scatter plots of the data and approximate lines of fit. | Basics of Algebra | Writing Rates |

**Larson's Algebra 1 correlated to Missouri Mathematics Grade-Level Expectations
Grade 9**

| Missouri Mathematics Grade-Level Expectations | | Larson's Algebra 1 | |
|--|---|---|---|
| | | Module | Topic |
| (3.A. continued) | | Graphing Linear Equations | The Coordinate Plane |
| | | Writing Linear Equations | Writing Linear Equations Using Two Points |
| | | Also covered in other topics of Larson's Algebra 1. | |
| 4. The student understands and applies basic concepts of probability. | | | |
| A. | The student constructs sample spaces and distributions. | | |