

Missouri State Core Curriculum
Standards updated 2008
Algebra I

Strand	Description	Boardworks High School Algebra presentations
Number and Operations	1. Understand numbers, ways of representing numbers, relationships among numbers and number systems	
	1A. Compare and order rational and irrational numbers, including finding their approximate locations on a number line	Exponents and roots Exponent laws Negative exponents and reciprocals Rational exponents Radicals Classifying numbers Set notation Calculating with integers Direct proportion Inverse proportion
	1B. Use real numbers and various models, drawings, etc. to solve problems	–
	1C. Use a variety of representations to demonstrate an understanding of very large and very small numbers	Scientific notation Calculations involving scientific notation
	2. Understand meanings of operations and how they relate to one another	
	2B. Describe the effects of operations, such as multiplication, division, and computing powers and roots on the magnitude of quantities	Exponents and roots Exponent laws Negative exponents and reciprocals Rational exponents Radicals
	2D. Apply operations to real numbers, using mental computation or paper-and-pencil calculations for simple cases and technology for more complicated cases	Calculating with integers

3. Compute fluently and make reasonable estimates	
3D. Judge the reasonableness of numerical computations and their results	–
3E. Solve problems involving proportions	Direct proportion Inverse proportion
1. Understand patterns, relations and functions	
1B. Generalize patterns using explicitly or recursively defined functions	Sequences and rules Arithmetic sequences Geometric sequences Other types of sequences Sequences and series The sum of an arithmetic series The sum of a geometric series
1C. Compare and contrast various forms of representations of patterns	Sequences and rules Arithmetic sequences Geometric sequences Other types of sequences Sequences and series The sum of an arithmetic series The sum of a geometric series
1D. Understand and compare the properties of linear and nonlinear functions	Solving linear equations Non-linear functions Graphs of important non-linear functions
1E. Describe the effects of parameter changes on linear, exponential growth/decay and quadratic functions including intercepts	The laws of logarithms Solving equations involving logarithms Exponentials and logarithms Exponential growth and decay Graphs of important non-linear functions Graphs of quadratic functions Plotting and sketching graphs Linear graphs Slopes and intercepts Parallel and perpendicular lines
2. Represent and analyze mathematical situations and structures using algebraic symbols	

Algebraic Relationships

<p>2A. Use symbolic algebra to represent and solve problems that involve linear and quadratic relationships including equations and inequalities</p>	<p>Solving linear equations Equations with parentheses and fractions Using equations to solve problems Factoring Factoring quadratic expressions Algebraic fractions Quadratic equations and factoring Completing the square The quadratic formula Equations involving algebraic fractions Problems leading to quadratic equations Solving quadratic equations Inequalities Solving linear inequalities Inequalities and regions Inequalities in two variables Quadratic inequalities</p>
<p>2B. Describe and use algebraic manipulations, including factoring and rules of integer exponents and apply properties of exponents (including order of operations) to simplify expressions</p>	<p>Exponents Zero, negative and fractional exponents Factoring</p>
<p>2C. Use and solve equivalent forms of equations (linear, absolute value, and quadratic)</p>	<p>Solving linear equations Equations with parentheses and fractions Using equations to solve problems Factoring Factoring quadratic expressions Algebraic fractions Quadratic equations and factoring Completing the square The quadratic formula Equations involving quadratic fractions Problems leading to quadratic equations Solving quadratic equations Absolute value functions</p>

	2D. Use and solve systems of linear equations or inequalities with 2 variables	Systems of equations and graphs The elimination method for systems of equations The substitution method for systems of equations Problems leading to systems of equations Inequalities Solving linear inequalities Inequalities and regions Inequalities in two variables
	3. Use mathematical models to represent and understand quantitative relationships	
	3A. Identify quantitative relationships and determine the type(s) of functions that might model the situation to solve the problem	Linear graphs Non-linear functions Non-linear relationships Graphs of important non-linear functions Plotting and sketching graphs Graphs of quadratic functions Exponential growth and decay
	4. Analyze change in various contexts	
	4A. Analyze linear and quadratic functions by investigating rates of change, intercepts and zeros	Linear graphs Slopes and intercepts Graphs of quadratic functions
Geometric and Spatial Relationships	1. Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships	
	1B. Apply geometric properties such as similarity and angle relationship to solve multi-step problems in 2 dimensions	Introducing the Pythagorean Theorem Pythagorean triples Finding unknown lengths Applying the Pythagorean Theorem in 2D Applying the Pythagorean Theorem in space Right triangles Cylinders, cones and spheres
	4. Use visualization, spatial reasoning and geometric modeling to solve problems	
	4B. Draw or use visual models to represent and solve problems	-

Measurement	2. Apply appropriate techniques, tools and formulas to determine measurements	
	2D. Describe the effects of operations, such as multiplication, division and computing powers and roots on magnitudes of quantities and effects of computation on precision which include the judging of reasonableness of numerical computations and their results	–
	2E. Use unit analysis to solve problems	–
Data and probability	1. Formulate questions that can be addressed with data and collect, organize and display relevant data to answer them	
		Specifying the problem and planning Types of data Collecting data
	1A. Formulate questions and collect data about a characteristic which includes sample spaces and distributions	Methods of sampling part 1 Methods of sampling part 2
	1C. Select and use appropriate graphical representation of data and given one-variable quantitative data, display the distribution and describe its shape	The normal distribution The binomial distribution part 1 The binomial distribution part 2
	2. Select and use appropriate statistical methods to analyze data	
		The mode The mean The median Which measure of central tendency?
	2A. Apply statistical measures of center to solve problems	
	2C. Given a scatterplot, determine an equation for a line of best fit	Scatter plots Lines of best fit
	3. Develop and evaluate inferences and predictions that are based on data	
3A. Make conjectures about possible relationships between 2 characteristics of a sample on the basis of scatter plots of the data	Scatter plots Lines of best fit Non-linear relationships	