



## Algebra 1 Mathematics Curriculum Framework

	Mathematics Curriculum Framework	Lesson Number	Lesson Title
<b>LANGUAGE OF ALGEBRA</b>			
LA.1.AI.1	Evaluate algebraic expressions, including radicals, by applying the order of operations	HA1-005	Evaluating Algebraic Expressions
		HA1-060	Evaluating Expressions Using the Order of Operations
		HA1-065	Evaluating Expressions Containing Exponents
		HA1-070	Evaluating Formulas for Given Values of the Variables
		HA1-135	Evaluating Formulas
LA.1.AI.2	Translate word phrases and sentences into expressions, equations, and inequalities, and vice versa	HA1-095	Translating Word Phrases into Algebraic Expressions
		HA1-104	Translating Word Statements into Equations
		HA1-105	Translating Word Statements into Inequalities
		HA1-150	Writing an Equation to Solve Word Problems
		HA1-155	Writing an Equation to Solve Consecutive Integer Problems
		HA1-160	Writing an Equation to Solve Distance, Rate, and Time Problems
		HA1-165	Using Equations to Solve Percent Problems
LA.1.AI.3	Apply the laws of (integral) exponents	HA1-860	Using the Laws of Exponents
		HA1-861	Simplifying Expressions with Negative and Zero Exponents
LA.1.AI.4	Solve problems involving scientific notation	HA1-235	Writing, Multiplying, and Dividing Numbers Written in Scientific Notation
LA.1.AI.5	Perform polynomial operations (addition, subtraction, multiplication) with and without manipulatives	HA1-245	Adding and Subtracting Polynomials
		HA1-255	Multiplying Two Binomials Using the FOIL Method
		HA1-260	Squaring a Binomial and Finding the Product of a Sum and Difference
		HA1-920	Simplifying Algebraic Expressions Using the Distributive Property
LA.1.AI.6	Simplify algebraic fractions by factoring	HA1-320	Simplifying Rational Expressions
		HA1-325	Multiplying Rational Expressions
		HA1-330	Dividing Rational Expressions
		HA1-335	Finding the LCD of Rational Expressions and Changing Fractions to Equivalent Fractions
		HA1-350	Simplifying Complex Fractions
LA.1.AI.7	Recognize when an expression is undefined	HA1-315	Defining Rational Expressions and Determining the Restricted Values
LA.1.AI.8	Simplify radical expressions such as $3/\sqrt{7}$	HA1-490	Simplifying Square Roots
		HA1-871	Simplifying Radical Expressions
LA.1.AI.9	Add, subtract, and multiply simple radical expressions like $3\sqrt{20} + 7\sqrt{5}$ and $4\sqrt{5} \cdot 2\sqrt{3}$	HA1-495	Simplifying Sums and Differences of Radicals
		HA1-500	Simplifying Products of Radicals
		HA1-872	Simplifying Sums and Differences of Radicals
		HA1-873	Simplifying Products of Radicals
<b>SOLVING EQUATIONS AND INEQUALITIES</b>			
SEI.2.AI.1	Solve multi-step equations and inequalities with rational coefficients	HA1-125	Solving Equations Using More Than One Property

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	<ul style="list-style-type: none"> <li>numerically (from a table or guess and check)</li> </ul>	HA1-140	Solving Equations by Combining Like Terms
	<ul style="list-style-type: none"> <li>algebraically (including the use of manipulatives)</li> </ul>	HA1-145	Solving Equations with Variables on Both Sides
	<ul style="list-style-type: none"> <li>graphically</li> </ul>	HA1-195	Solving Inequalities Using More Than One Property
	<ul style="list-style-type: none"> <li>technologically</li> </ul>	HA1-375	Identifying Solutions of Equations in Two Variables
		HA1-380	Graphing Linear Equations
		HA1-382	Solving Linear Equations Using the Graphing Calculator
		HA1-800	Solving Equations
SEI.2.AI.2	Solve systems of two linear equations	HA1-455	Solving Systems of Linear Equations by Graphing
	<ul style="list-style-type: none"> <li>numerically (from a table or guess and check)</li> </ul>	HA1-460	Solving Systems of Linear Equations by the Substitution Method
	<ul style="list-style-type: none"> <li>algebraically (including the use of manipulatives)</li> </ul>	HA1-465	Solving Systems of Linear Equations by the Addition/Subtraction Method
	<ul style="list-style-type: none"> <li>graphically</li> </ul>	HA1-470	Solving Systems of Linear Equations by the Multiply/Add/Subtract Method
	<ul style="list-style-type: none"> <li>technologically</li> </ul>	HA1-803	Solving Systems of Equations
		HA1-804	Solving Systems of Equations by Graphing
		HA1-806	Solving Systems of Linear Equations Using the Graphing Calculator
SEI.2.AI.3	Solve linear formulas and literal equations for a specified variable (Ex. Solve for $p$ in $l = prf$ .)	HA1-175	Solving Literal Equations
SEI.2.AI.4	Solve and graph simple absolute value equations and inequalities	HA1-210	Solving Equations Involving Absolute Value
		HA1-215	Solving Absolute Value Inequalities
SEI.2.AI.5	Solve real world problems that involve a combination of rates, proportions and percents	HA1-150	Writing an Equation to Solve Word Problems
		HA1-155	Writing an Equation to Solve Consecutive Integer Problems
		HA1-160	Writing an Equation to Solve Distance, Rate, and Time Problems
		HA1-165	Using Equations to Solve Percent Problems
		HA1-170	Solving Percent of Change Problems
		HA1-360	Expressing Ratios in Simplest Form and Solving Equations Involving Proportions
SEI.2.AI.6	Solve problems involving direct variation and indirect (inverse) variation to model rates of change	HA1-450	Solving Problems Involving Direct Variation
		HA1-453	Solving Problems Involving Inverse Variation
		HA1-858	Finding Inverse Relations and Determining if They are Functions
SEI.2.AI.7	Use coordinate geometry to represent and/or solve problems (midpoint, length of a line segment, and Pythagorean Theorem)	HA1-515	Using the Pythagorean Theorem
		HA1-516	Applications of the Pythagorean Theorem
		HA1-520	Finding the Distance Between Two Points on a Coordinate Plane
		HA1-876	Applying Length, Midpoint and Slope of a Segment on a Cartesian Plane
SEI.2.AI.8	Communicate real world problems graphically, algebraically, numerically and verbally	<i>Throughout</i>	
<b>LINEAR FUNCTIONS</b>			
LF.3.AI.1	Distinguish between functions and non-functions/relations by inspecting graphs, ordered pairs, mapping diagrams and/or tables of data	HA1-437	Identifying Relations as Functions
LF.3.AI.2	Determine domain and range of a relation from an algebraic expression, graphs, set of ordered pairs, or table of data	HA1-436	Identifying Relations
		HA1-437	Identifying Relations as Functions
LF.3.AI.3	Know and/or use function notation, including evaluating functions for given values in their domain	HA1-439	Using Function Notation
LF.3.AI.4	Identify independent variables and dependent variables in various representational modes: words, symbols, and/or graphs	HA1-438	Finding the Domain and Range of Functions
		HA1-439	Using Function Notation
LF.3.AI.5	Interpret the rate of change/slope and intercepts within the context of everyday life (Ex. telephone charges based on base rate (y-intercept) plus rate per minute (slope))	HA1-380	Graphing Linear Equations
		HA1-398	Graphing Linear Equations Using Slope and y-Intercept or Slope and a Point

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LF.3.AI.6	Calculate the slope given <ul style="list-style-type: none"> <li>two points</li> <li>the graph of a line</li> <li>the equation of a line</li> </ul>	HA1-401 HA1-385 HA1-395	How Variations of "m" and "b" Affect the Graph of $y = mx + b$ Finding the Slope of a Line from its Graph or from the Coordinates of Two Points Drawing a Line Using Slope-Intercept and Determining if Two Lines are Parallel
LF.3.AI.7	Determine by using slope whether a pair of lines are parallel, perpendicular, or neither	HA1-395	Drawing a Line Using Slope-Intercept and Determining if Two Lines are Parallel
		HA1-866	Drawing a Line Using Slope-Intercept Form and Determining if Two Lines are Parallel or Perpendicular
		HA1-955	Analyzing Linear Functions
LF.3.AI.8	Write an equation in slope-intercept form given <ul style="list-style-type: none"> <li>two points</li> <li>a point and y-intercept</li> <li>x-intercept and y-intercept</li> <li>a point and slope</li> <li>a table of data</li> <li>the graph of a line</li> </ul>	HA1-394 HA1-398 HA1-405 HA1-410 HA1-960	Interchanging Linear Equations Between Standard Form and Slope-Intercept Form Graphing Linear Equations Using Slope and y-Intercept or Slope and a Point 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 Real-World Applications of Linear Functions
LF.3.AI.9	Describe the effects of parameter changes, slope and/or y-intercept, on graphs of linear functions and vice versa	HA1-401	How Variations of "m" and "b" Affect the Graph of $y = mx + b$
<b>NON-LINEAR FUNCTIONS</b>			
NLF.4.AI.1	Factoring polynomials <ul style="list-style-type: none"> <li>greatest common factor</li> <li>binomials (difference of squares)</li> <li>trinomials</li> </ul>	HA1-265 HA1-270 HA1-275	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 Trinomial Squares
NLF.4.AI.2	Determine minimum, maximum, vertex, and zeros, given the graph	HA1-935 HA1-945	Analyzing Graphs of Quadratic Functions Real-World Applications of Quadratic Functions
NLF.4.AI.3	Solve quadratic equations using the appropriate methods with and without technology <ul style="list-style-type: none"> <li>factoring</li> <li>quadratic formula with real number solutions</li> </ul>	HA1-300 HA1-305 HA1-310 HA1-535 HA1-536	Factoring a Polynomial Completely Solving Polynomial Equations by Factoring The Practical Use of Polynomial Equations Developing the Quadratic Formula and Using it to Solve Equations Solving Quadratic Equations Using the Graphing Calculator
NLF.4.AI.4	Recognize function families and their connections including vertical shift and reflection over the x-axis <ul style="list-style-type: none"> <li>quadratics</li> <li>absolute value</li> <li>exponential functions</li> </ul>	HA1-892 HA1-927 HA1-928 HA1-929 HA1-930 HA1-931 HA1-950	Data Analysis Using the Graphing Calculator 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 Graphing Quadratic Functions with Horizontal and Vertical Shifting Graphing Quadratic Functions with Dilations, Reflections, and Transformations Graphing Absolute Value Functions
NLF.4.AI.5	Communicate real world problems graphically, algebraically, numerically and verbally	<i>Throughout</i>	
<b>DATA INTERPRETATION AND PROBABILITY</b>			
DIP.5.AI.1	Construct and use scatter plots and line of best fit to make inferences in real life situations	HA1-965	Determining the Best-Fitting Line
DIP.5.AI.2	Use simple matrices in addition, subtraction, and scalar multiplication	HA1-851	Performing Row Operations on Matrices
DIP.5.AI.3	Construct simple matrices for real life situations	<i>Lessons in Development</i> <i>Lessons in Development</i>	HA1-840 Introduction to Matrices ( <i>future release</i> ) and HA1-845 Performing Addition, Subtraction, and Scalar Multiplication with Matrices ( <i>future release</i> ) HA1-840 Introduction to Matrices ( <i>future release</i> )
DIP.5.AI.4	Determine the effects of changes in the data set on the measures of central tendency	HA1-540	Finding the Mean, Median, and Mode from Data and Frequency Distribution Tables

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DIP.5.AI.5	Use two or more box-and-whisker plots to compare data sets	HA1-541	Analyzing Data Using the Measures of Central Tendency and the Range
DIP.5.AI.6	Construct and interpret a cumulative frequency histogram in real life situations	HA1-885	Histograms and the Normal Distribution
DIP.5.AI.7	Recognize linear functions and non-linear functions by using a table or a graph	HA1-892	Data Analysis Using the Graphing Calculator
		HA1-965	Determining the Best-Fitting Line
DIP.5.AI.8	Compute simple probability with and without replacement	HA1-560	Determining Probability of an Event and Complementary Event from a Random Experiment
DIP.5.AI.9	Recognize patterns using explicitly defined and recursively defined linear functions	HA1-447	Identifying Number Patterns
		HA1-448	Finding the nth Term of a Pattern
DIP.5.AI.10	Communicate real world problems graphically, algebraically, numerically and verbally	<i>Throughout</i>	

*MM1-Fundamentals of Mathematics (Fall 2005)*

*MPA- Pre-Algebra*

*HA1-Algebra 1*

*Note: Standards were taken from the Arkansas Algebra 1 Mathematics Curriculum Framework document adopted by the Arkansas State Board of Education and revised in 2004.*