



## Algebra I Correlation to Mathematics Framework

	Mathematics Curriculum Framework	I CAN Learn <sup>®</sup> Lesson #	I CAN Learn <sup>®</sup> Lesson Title
	<b>EXPRESSIONS AND OPERATIONS</b>		
A.1	The student will represent verbal quantitative situations algebraically and evaluate these expressions for given replacement values of the variables.	HA1-095	Translating Word Phrases into Algebraic Expressions
		HA1-079	Using a Concrete Model to Simplify Algebraic Expressions
		HA1-005	Evaluating Algebraic Expressions
		HA1-065	Evaluating Expressions Containing Exponents
		HA1-070	Evaluating Formulas for Given Values of the Variables
A.2	The student will perform operations on polynomials, including		
	a) applying the laws of exponents to perform operations on expressions;	HA1-810	Simplifying Expressions Using the Multiplication Properties of Exponents
		HA1-815	Simplifying Expressions with Negative and Zero Exponents
		HA1-818	Simplifying Expressions Using the Division Properties of Exponents
	b) adding, subtracting, multiplying, and dividing polynomials; and	HA1-220	Identifying and Multiplying Monomials
		HA1-225	Dividing Monomials and Simplifying Expressions Having an Exponent of Zero
		HA1-230	Raising a Monomial or Quotient of Monomials to a Power
		HA1-240	Identifying the Degree of Polynomials and Simplifying by Combining Like Terms
		HA1-245	Adding and Subtracting Polynomials
		HA1-920	Simplifying Algebraic Expressions Using the Distributive Property
		HA1-255	Multiplying Two Binomials Using the FOIL Method
		HA1-260	Squaring a Binomial and Finding the Product of a Sum and Difference
		HA1-355	Dividing Polynomials
	c) factoring completely first- and second-degree binomials and trinomials in one or two variables. Graphing calculators will be used as a tool for factoring and for confirming algebraic factorizations.	HA1-270	Factoring the Greatest Common Monomial Factor from a Polynomial
		HA1-271	Factoring Trinomials and the Differences of Squares Using Algebra Tiles
		HA1-275	Factoring the Difference Between Two Squares and Perfect Trinomial Squares
		HA1-280	Factoring $x^2 + bx + c$ When $c$ is Greater Than Zero
		HA1-285	Factoring $x^2 + bx + c$ When $c$ is Less Than Zero
		HA1-290	Factoring $ax^2 + bx + c$
		HA1-291	Factoring Quadratic Equations Using the Graphing Calculator
		HA1-295	Factoring by Removing a Common Factor and Grouping
		HA1-300	Factoring a Polynomial Completely
A.3	The student will express the square roots and cube roots of whole numbers and the square root of a monomial algebraic expression in simplest radical form.	HA1-480	Finding the Square Roots of Rational Numbers
		HA1-490	Simplifying Square Roots
		HA1-492	Simplifying Square and Cube Roots
		HA1-525	Solving Quadratic Equations Involving Perfect Square Expressions

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	<b>EQUATIONS AND INEQUALITIES</b>		
A.4	The student will solve multistep linear and quadratic equations in two variables, including		
	a) solving literal equations (formulas) for a given variable;	HA1-175	Solving Literal Equations
	b) justifying steps used in simplifying expressions and solving equations, using field properties and axioms of equality that are valid for the set of real numbers and its subsets;	HA1-075	Simplifying Algebraic Expressions by Combining Like Terms
		HA1-076	Basic Distributive Property
		HA1-085	Simplifying Expressions Using the Properties of Real Numbers
		HA1-079	Using a Concrete Model to Simplify Algebraic Expressions
		HA1-090	Simplifying Expressions Using the Property of -1
		HA1-080	Simplifying and Evaluating Algebraic Expressions Containing Grouping Symbols
		HA1-115	Using the Addition and Subtraction Properties for Equations
		HA1-120	Using the Multiplication and Division Properties for Equations
		HA1-124	Using a Concrete Model to Solve One- and Two-Step Equations
		HA1-125	Solving Equations Using More Than One Property
		HA1-140	Solving Equations by Combining Like Terms
		HA1-144	Using a Concrete Model to Solve Equations with Variables on Both Sides
		HA1-145	Solving Equations with Variables on Both Sides
	c) solving quadratic equations algebraically and graphically;	HA1-305	Solving Polynomial Equations by Factoring
		HA1-935	Analyzing Graphs of Quadratic Functions
		HA1-525	Solving Quadratic Equations Involving Perfect Square Expressions
		HA1-530	Solving Quadratic Equations by Completing the Square
		HA1-535	Developing the Quadratic Formula and Using it to Solve Equations
		HA1-536	Solving Quadratic Equations Using the Graphing Calculator
	d) solving multistep linear equations algebraically and graphically;	HA1-382	Solving Linear Equations Using the Graphing Calculator
		HA1-124	Using a Concrete Model to Solve One- and Two-Step Equations
		HA1-125	Solving Equations Using More Than One Property
		HA1-140	Solving Equations by Combining Like Terms
		HA1-144	Using a Concrete Model to Solve Equations with Variables on Both Sides
		HA1-145	Solving Equations with Variables on Both Sides
	e) solving systems of two linear equations in two variables algebraically and graphically; and	HA1-455	Solving Systems of Linear Equations by Graphing
		HA1-460	Solving Systems of Linear Equations by the Substitution Method
		HA1-465	Solving Systems of Linear Equations by the Addition/Subtraction Method
		HA1-470	Solving Systems of Linear Equations by the Multiply/Add/Subtract Method
		HA1-806	Solving Systems of Linear Equations Using the Graphing Calculator
	f) solving real-world problems involving equations and systems of equations.	HA1-441	Applications of Functions and Relations Involving Distance, Rate, and Time
		HA1-442	Interpreting Graphs of Functions in Real-Life Situations
		HA1-450	Solving Problems Involving Direct Variation
		HA1-960	Real-World Applications of Linear Functions
		HA1-150	Writing an Equation to Solve Word Problems
		HA1-362	Solving Work Problems
		HA1-165	Using Equations to Solve Percent Problems
		HA1-170	Solving Percent of Change Problems
		HA1-310	The Practical Use of Polynomial Equations
		HA1-945	Real-World Applications of Quadratic Functions
		HA1-805	Applying Algebra Concepts
		HA1-870	Solving Problems with Systems of Linear Equations and Inequalities

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A.5	The student will solve multistep linear inequalities in two variables, including		
	a) solving multistep linear inequalities algebraically and graphically;	HA1-105	Translating Word Statements into Inequalities
		HA1-180	Graphing Equations and Inequalities on the Number Line
		HA1-185	Solving Inequalities Using the Addition and Subtraction Properties
		HA1-190	Solving Inequalities Using the Multiplication and Division Properties
		HA1-195	Solving Inequalities Using More Than One Property
		HA1-200	Combined Inequalities
		HA1-205	Solving Combined Inequalities
	b) justifying steps used in solving inequalities, using axioms of inequality and properties of order that are valid for the set of real numbers and its subsets;	HA1-105	Translating Word Statements into Inequalities
		HA1-180	Graphing Equations and Inequalities on the Number Line
		HA1-185	Solving Inequalities Using the Addition and Subtraction Properties
		HA1-190	Solving Inequalities Using the Multiplication and Division Properties
		HA1-195	Solving Inequalities Using More Than One Property
		HA1-200	Combined Inequalities
		HA1-205	Solving Combined Inequalities
	c) solving real-world problems involving inequalities; and	HA1-105	Translating Word Statements into Inequalities
	d) solving systems of inequalities.	HA1-475	Graphing the Solution Set of a System of Linear Inequalities
A.6	The student will graph linear equations and linear inequalities in two variables, including		
	a) determining the slope of a line when given an equation of the line, the graph of the line, or two points on the line. Slope will be described as rate of change and will be positive, negative, zero, or undefined; and	HA1-380	Graphing Linear Equations
		HA1-385	Finding the Slope of a Line from its Graph or from the Coordinates of Two Points
		HA1-398	Graphing Linear Equations Using Slope and y-Intercept or Slope and a Point
		HA1-401	How Variations of "m" and "b" Affect the Graph of $y = mx + b$
		HA1-415	Graphing Linear Inequalities with Two Variables
		HA1-416	Graphing Linear Inequalities with Two Variables Using the Graphing Calculator
		HA1-394	Interchanging Linear Equations Between Standard Form and Slope-Intercept Form
	b) writing the equation of a line when given the graph of the line, two points on the line, or the slope and a point on the line.	HA1-405	Determining an Equation of a Line Given the Slope and Coordinates of One Point
		HA1-410	Determining an Equation of a Line Given the Coordinates of Two Points
		HA1-395	Finding the Equation of a Line Parallel or Perpendicular to a Given Line
		HA1-415	Graphing Linear Inequalities with Two Variables
		HA1-416	Graphing Linear Inequalities with Two Variables Using the Graphing Calculator
<b>FUNCTIONS</b>			
A.7	The student will investigate and analyze function (linear and quadratic) families and their characteristics both algebraically and graphically, including		
	a) determining whether a relation is a function;	HA1-436	Identifying Relations
		HA1-437	Identifying Relations as Functions
	b) domain and range;	HA1-438	Finding the Domain and Range of Functions
		HA1-402	Translating Among Multiple Representations of Functions
	c) zeros of a function;	HA1-935	Analyzing Graphs of Quadratic Functions
	d) x- and y-intercepts;	HA1-380	Graphing Linear Equations
		HA1-398	Graphing Linear Equations Using Slope and y-Intercept or Slope and a Point
	e) finding the values of a function for elements in its domain; and	HA1-375	Identifying Solutions of Equations in Two Variables
		HA1-439	Using Function Notation
	f) making connections between and among multiple representations of	HA1-402	Translating Among Multiple Representations of Functions

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	functions including concrete, verbal, numeric, graphic, and algebraic.		
		HA1-441	Applications of Functions and Relations Involving Distance, Rate, and Time
		HA1-442	Interpreting Graphs of Functions in Real-Life Situations
A.8	The student, given a situation in a real-world context, will analyze a relation to determine whether a direct or inverse variation exists, and represent a direct variation algebraically and graphically and an inverse variation algebraically.	HA1-450	Solving Problems Involving Direct Variation
		HA1-453	Solving Problems Involving Inverse Variation
<b>STATISTICS</b>			
A.9	The student, given a set of data, will interpret variation in real-world contexts and calculate and interpret mean absolute deviation, standard deviation, and z-scores.	HA1-885	Histograms and the Normal Distribution
		HA1-555	Computing the Range, Variance, and Standard Deviation of a Set of Data
A.10	The student will compare and contrast multiple univariate data sets, using box-and-whisker plots.	MPA-097	Constructing Box-and-Whisker Plots
A.11	The student will collect and analyze data, determine the equation of the curve of best fit in order to make predictions, and solve real-world problems, using mathematical models. Mathematical models will include linear and quadratic functions.	HA1-965	Determining the Best-Fitting Line
		HA1-892	Data Analysis Using the Graphing Calculator

MM1-Fundamentals of Mathematics

MPA- Pre-Algebra

HA1-Algebra 1

Note: Standards were taken from the Mathematics Standards of Learning for Virginia Public Schools Algebra I document adopted by the Virginia State Board of Education in February 2009.