



Algebra 1 Mathematics Curriculum Framework

	Mathematics Curriculum Framework	I CAN Learn® Lesson #	I CAN Learn® Lesson Title
1.1.	Students use properties of numbers to demonstrate whether assertions are true or false.	HA1-020	Classifying Numbers into Subsets of Real Numbers
		HA1-040	The Addition Rule for Real Numbers
		HA1-045	Subtracting Real Numbers
		HA1-050	Multiplying Real Numbers
		HA1-055	Dividing Real Numbers
		HA1-062	Adding, Subtracting, Multiplying, and Dividing Real Numbers
		HA1-085	Simplifying Expressions Using the Properties of Real Numbers
		HA1-076	Basic Distributive Property
		HA1-090	Simplifying Expressions Using the Property of -1
		HA1-080	Simplifying and Evaluating Algebraic Expressions Containing Grouping Symbols
		HA1-130	Identifying Postulates, Theorems, and Properties
		HA1-881	Completing and Validating Algebraic Proofs
*2.0.	Students understand and use such operations as taking the opposite, finding the reciprocal, taking a root, and raising to a fractional power. They understand and use the rules of exponents.	HA1-030	Using Opposites and Absolute Values
		HA1-320	Simplifying Rational Expressions
		HA1-325	Multiplying Rational Expressions
		HA1-330	Dividing Rational Expressions
		HA1-340	Adding and Subtracting Rational Expressions
		HA1-345	Adding and Subtracting Polynomials and Rational Expressions
		HA1-350	Simplifying Complex Fractions
		HA1-360	Expressing Ratios in Simplest Form and Solving Equations Involving Proportions
		HA1-365	Solving Rational Equations
		HA1-480	Finding the Square Roots of Rational Numbers
		HA1-485	Writing Rational Numbers as Decimals or Fractions
		HA1-490	Simplifying Square Roots
		HA1-492	Simplifying Square and Cube Roots
		HA1-495	Simplifying Sums and Differences of Radicals
		HA1-500	Simplifying Products of Radicals
		HA1-505	Simplifying Quotients of Radicals
		HA1-510	Solving Radical Equations
		HA1-810	Simplifying Expressions Using the Multiplication Properties of Exponents (Fall 2009)
		HA1-815	Simplifying Expressions with Negative and Zero Exponents
		HA1-818	Simplifying Expressions Using the Division Properties of Exponents
3.0.	Students solve equations and inequalities involving absolute values.	HA1-210	Solving Equations Involving Absolute Value
		HA1-215	Solving Absolute Value Inequalities
*4.0.	Students simplify expressions before solving linear equations and inequalities in one variable, such as $3(2x-5) + 4(x-2) = 12$.	HA1-075	Simplifying Algebraic Expressions by Combining Like Terms

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		HA1-076	Basic Distributive Property
		HA1-080	Simplifying and Evaluating Algebraic Expressions Containing Grouping Symbols
		HA1-085	Simplifying Expressions Using the Properties of Real Numbers
		HA1-090	Simplifying Expressions Using the Property of -1
		HA1-115	Using the Addition and Subtraction Properties for Equations
		HA1-120	Using the Multiplication and Division Properties for Equations
		HA1-125	Solving Equations Using More Than One Property
		HA1-140	Solving Equations by Combining Like Terms
		HA1-145	Solving Equations with Variables on Both Sides
		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
		HA1-360	Expressing Ratios in Simplest Form and Solving Equations Involving Proportions
		HA1-382	Solving Linear Equations Using the Graphing Calculator
*5.0.	Students solve multistep problems, including word problems, involving linear equations and linear inequalities in one variable and provide justification for each step.	HA1-125	Solving Equations Using More Than One Property
		HA1-140	Solving Equations by Combining Like Terms
		HA1-145	Solving Equations with Variables on Both Sides
		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
		HA1-195	Solving Inequalities Using More Than One Property
*6.0.	Students graph a linear equation and compute the x- and y-intercepts (e.g., graph $2x + 6y = 4$). They are also able to sketch the region defined by linear inequality (e.g., they sketch the region defined by $2x + 6y < 4$).	HA1-380	Graphing Linear Equations
		HA1-398	Graphing Linear Equations Using Slope and y-Intercept or Slope and a Point
		HA1-415	Graphing Linear Inequalities with Two Variables
		HA1-416	Graphing Linear Inequalities with Two Variables Using the Graphing Calculator
*7.0.	Students verify that a point lies on a line, given an equation of the line. Students are able to derive linear equations by using the point-slope formula.	HA1-375	Identifying Solutions of Equations in Two Variables
		HA1-380	Graphing Linear Equations
		HA1-382	Solving Linear Equations Using the Graphing Calculator
		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
		HA1-405	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
		HA1-955	Analyzing Linear Functions (Point-Slope Formula)
8.0.	Students understand the concepts of parallel lines and perpendicular lines and how those slopes are related. Students are able to find the equation of a line perpendicular to a given line that passes through a given point.	HA1-395	Finding the Equation of a Line Parallel or Perpendicular to a Given Line
		HA1-401	How Variations of "m" and "b" Affect the Graph of $y = mx + b$
		HA1-866	Drawing a Line Using Slope-Intercept Form and Determining if Two Lines are Parallel or Perpendicular
		HA1-955	Analyzing Linear Functions
*9.0.	Students solve a system of two linear equations in two variables algebraically and are able to interpret the answer graphically.	HA1-455	Solving Systems of Linear Equations by Graphing

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	Students are able to solve a system of two linear inequalities in two variables and to sketch the solution sets.		
		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
		HA1-475	Graphing the Solution Set of a System of Linear Inequalities
		HA1-803	Solving Systems of Equations
		HA1-804	Solving Systems of Equations by Graphing
		HA1-805	Applying Algebra Concepts
		HA1-806	Solving Systems of Linear Equations Using the Graphing Calculator
		HA1-870	Solving Problems with Systems of Linear Equations and Inequalities
*10.0.	Students add, subtract, multiply, and divide monomials and polynomials. Students solve multistep problems, including word problems, by using these techniques.	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
		HA1-255	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
		HA1-862	Dividing Polynomials Using Factoring
		HA1-863	Dividing Polynomials Using Long Division
		HA1-920	Simplifying Algebraic Expressions Using the Distributive Property
11.0.	Students apply basic factoring techniques to second-and simple third-degree polynomials. These techniques include finding a common factor for all terms in a polynomial, recognizing the difference of two squares, and recognizing perfect squares of binomials.	HA1-270	Factoring the Greatest Common Monomial Factor from a Polynomial
		HA1-275	Factoring the Difference Between Two Squares and Perfect Trinomial Squares
		HA1-276	Factoring Sums and Differences of Cubes
		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
		HA1-802	Factoring
*12.0.	Students simplify fractions with polynomials in the numerator and denominator by factoring both and reducing them to the lowest terms.	HA1-320	Simplifying Rational Expressions
		HA1-325	Multiplying Rational Expressions
		HA1-330	Dividing Rational Expressions
		HA1-862	Dividing Polynomials Using Factoring
*13.0.	Students add, subtract, multiply, and divide rational expressions and functions. Students solve both computationally and conceptually challenging problems by using these techniques.	HA1-325	Multiplying Rational Expressions
		HA1-330	Dividing Rational Expressions
		HA1-340	Adding and Subtracting Rational Expressions
		HA1-345	Adding and Subtracting Polynomials and Rational Expressions
		HA1-350	Simplifying Complex Fractions
		HA1-360	Expressing Ratios in Simplest Form and Solving Equations Involving Proportions
		HA1-365	Solving Rational Equations

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*14.0.	Students solve a quadratic equation by factoring or completing the square.	HA1-291	Factoring Quadratic Equations Using the Graphing Calculator
		HA1-305	Solving Polynomial Equations by Factoring
		HA1-310	The Practical Use of Polynomial Equations
		HA1-525	Solving Quadratic Equations Involving Perfect Square Expressions
		HA1-530	Solving Quadratic Equations by Completing the Square
*15.0.	Students apply algebraic techniques to solve rate problems, work problems, and percent mixture problems.	HA1-150	Writing an Equation to Solve Word Problems
		HA1-160	Writing an Equation to Solve Distance, Rate, and Time 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
		HA1-441	Applications of Functions and Relations Involving Distance, Rate, and Time
		HA1-805	Applying Algebra Concepts (percent mixture problems)
16.0.	Students understand the concepts of a relation and a function, determine whether a given relation defines a function, and give pertinent information about given relations and functions.	HA1-436	Identifying Relations
		HA1-437	Identifying Relations as Functions
17.0.	Students determine the domain of independent variables and the range of dependent variables defined by a graph, a set of ordered pairs, or a symbolic expression.	HA1-438	Finding the Domain and Range of Functions
		HA1-439	Using Function Notation
		HA1-402	Translating Among Multiple Representations of Functions
		HA1-867	Identifying Domain and Range of Relations Given Graphs, Tables, or Sets of Ordered Pairs
18.0.	Students determine whether a relation defined by a graph, a set of ordered pairs, or a symbolic expression is a function and justify the conclusion.	HA1-437	Identifying Relations as Functions
*19.0.	Students know the quadratic formula and are familiar with its proof by completing the square.	HA1-530	Solving Quadratic Equations by Completing the Square
		HA1-535	Developing the Quadratic Formula and Using it to Solve Equations
*20.0.	Students use the quadratic formula to find the roots of a second-degree polynomial and to solve quadratic equations.	HA1-530	Solving Quadratic Equations by Completing the Square
		HA1-535	Developing the Quadratic Formula and Using it to Solve Equations
		HA1-905	Quadratic Equations with Irrational Roots
		HA1-935	Analyzing Graphs of Quadratic Functions
*21.0.	Students graph quadratic functions and know that their roots are the x-intercepts.	HA1-927	Graphing $f(x) = ax^2$ Using Dilations
		HA1-928	Graphing $f(x) = ax^2$ Using Dilations and Reflections
		HA1-929	Graphing $f(x) = ax^2 + c$ Using Dilations, Reflections, and Vertical Translations
		HA1-930	Graphing Quadratic Functions with Horizontal and Vertical Shifting
		HA1-931	Graphing Quadratic Functions with Dilations, Reflections, and Transformations
		HA1-935	Analyzing Graphs of Quadratic Functions
22.0.	Students use the quadratic formula or factoring techniques or both to determine whether the graph of a quadratic function will intersect the x-axis in zero, one, or two points.	HA1-535	Developing the Quadratic Formula and Using it to Solve Equations
		HA1-536	Solving Quadratic Equations Using the Graphing Calculator
		HA1-305	Solving Polynomial Equations by Factoring
		HA1-805	Applying Algebra Concepts
		HA1-905	Quadratic Equations with Irrational Roots
		HA1-925	Using the Discriminant to Analyze the Solution of a Quadratic Equation
		HA1-935	Analyzing Graphs of Quadratic Functions
		HA1-940	Applications of Quadratic Equations

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*23.0.	Students apply quadratic equations to physical problems, such as the motion of an object under the force of gravity.	HA1-945	Real-World Applications of Quadratic Functions
		HA1-805	Applying Algebra Concepts
24.1.	Students explain the difference between inductive and deductive reasoning and identify and provide examples of each.	HA1-940	Applications of Quadratic Equations
		HA1-449	Applying Inductive and Deductive Reasoning
24.2.	Students identify the hypothesis and conclusion in logical deduction.	HA1-130	Identifying Postulates, Theorems, and Properties
		HGM-035	Using Deductive Reasoning: Algebraic Proof
24.3.	Students use counterexamples to show that an assertion is false and recognize that a single counterexample is sufficient to refute an assertion.	HA1-449	Applying Inductive and Deductive Reasoning
		HGM-027	Identifying Counterexamples and Using Proof by Contradiction
25.1.	Students use properties of numbers to construct simple, valid arguments (direct and indirect) for, or formulate counterexamples to, claimed assertions.	HA1-881	Completing and Validating Algebraic Proofs
		HGM-035	Using Deductive Reasoning: Algebraic Proof
25.2.	Students judge the validity of an argument according to whether the properties of the real number system and the order of operations have been applied correctly at each step.	HGM-027	Identifying Counterexamples and Using Proof by Contradiction
		HA1-449	Applying Inductive and Deductive Reasoning
25.3.	Given a specific algebraic statement involving linear, quadratic, or absolute value expressions or equations or inequalities, students determine whether the statement is true sometimes, always, or never.	HA1-130	Identifying Postulates, Theorems, and Properties
		HA1-003	Order of Operations
		HA1-881	Completing and Validating Algebraic Proofs

MM1-Fundamentals of Mathematics
MPA-Pre-Algebra
HA1-Algebra 1
HGM-Geometry

Note: Standards were taken from the Mathematics Content Standards for California Public Schools - Kindergarten Through Grade Twelve document adopted by the California State Board of Education in December 1997 and published in 1999.

* Denotes Key Standards