Algebra I CR

State Standard Number	State Standard Area / Description	Unit Name	Course Topic Description
AI.1	Number and Operation		
AI.1.a	Compare, order, describe, and classify rational numbers to include integers, fractions, decimals, and absolute values.	Real Numbers	Rational Numbers Algebraic Expressions
AI.1.b	Add, subtract, multiply, and divide rational numbers.	Real Numbers	Addition and Subtraction of Rational Numbers Multiplication and Division of Rational Numbers
AI.1.c	Read, write, and represent rational numbers.	Real Numbers	Rational Numbers
AI.1.d	Convert between standard and scientific notation.	Polynomials	Section 1: Polynomials
AI.1.e	Evaluate numerical expressions with whole number exponents.	Variables and Expressions	Exponents and Roots
AI.1.f	Apply number theory concepts to include primes, composites, prime factorizations, least common multiples, and greatest common factors.	Polynomials	Section 4: Polynomials
AI.1.g	Evaluate numerical expressions using order of operations.	Variables and Expressions	Review Order of Operations
AI.1.h	Estimate to predict computation results.	Real Numbers	Estimation and Problem Solving
AI.1.i	Understand the meanings and effects of operations with fractions, decimals, and integers.	Real Numbers	Throughout Unit
AI.1.1	Understand numbers, ways of representing numbers, relationships among numbers, and number systems.	Throughout Course	Throughout Course

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AI.1.1.1	Demonstrate meanings for real numbers, absolute value, integer exponents, and square roots.	Real Numbers Values and Expressions	Algebraic Expressions
AI.1.1.1.a	Classify real numbers as rational or irrational.	Real Numbers	Rational Numbers
AI.1.1.1.b	Distinguish between exact and approximate values of irrational numbers.	Real Numbers	Rational Numbers
AI.1.1.1.c	Locate the position of a number on the number line and know its distance from the origin is its absolute value.		
AI.1.1.1.d	Approximate the location of an irrational number on a number line.		
AI.1.1.1.e	Demonstrate the meanings of terms with exponents which are integers.		
AI.1.1.2	Demonstrate how the properties of real numbers apply to rational numbers.	Real Numbers	Rational Numbers

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AI.1.1.2.a	Demonstrate that squaring and taking the square root are inverse operations.		
AI.1.2	Understand meanings of operations and how they relate to one another.	Throughout Course	Throughout Course
AI.1.2.1	Judge the effects of multiplication, division, addition, subtraction, exponents, and square roots on the magnitudes of quantities.	Throughout Course	Throughout Course
AI.1.2.1.a	Estimate square roots between consecutive integers.		
AI.1.3	Compute fluently and make reasonable estimates.	Real Numbers	Estimation and Problem Solvings
AI.1.3.1	Perform computations with exponents, radicals, and scientific notation.	Quadratics and Radicals Polynomials	Simplifying Radicals Section 1: Polynomials
AI.1.3.1.a	Use order of operations and the properties of real numbers (substitution, commutative, associative, distributive, inverse, identity, multiplicative property of zero) to simplify expressions including polynomials, rational expressions, and expressions containing radicals and absolute values.	Variables and Expressions	The Commutative Property, The Associative Property, The Distributive Property, Properties with 0 and 1
AI.1.3.1.b	Simplify square roots containing radicands which are not perfect squares.	Quadratics and Radicals	Simplifying Radicals

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AI.1.3.1.c	Add, subtract, and multiply square roots.	Variables and Expressions	Exponents and Roots
AI.1.3.1.d	Multiply and divide numbers in scientific notation.	Polynomials	Section 1: Polynomials
AI.1.3.2	Apply number sense to contextual situations and judge reasonableness of solutions.	Throughout Course	Throughout Course
AI.1.3.2.a	Use appropriate methods to estimate answers and know if they are reasonable.	Real Numbers	Estimation and Problem Solving
AI.1.3.2.b	Select a suitable method of computing from mental mathematics, paper and pencil, calculators, or computers.	Throughout Course	Throughout Course
AI.1.3.3	Use the properties of real numbers to simplify expressions.	Real Numbers	Closure and Properties of Equality
AI.1.3.3.a	Use the properties of exponents to add, subtract, and multiply polynomials, and to divide a polynomial by a monomial.	Variables and Expressions	Exponents and Roots
AI.1.3.3.b	Factor polynomials using greatest common factor.	Polynomials	Section 4: Polynomials

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AI.1.3.3.c	Factor quadratic expressions where the leading coefficient is 1 or -1.	Quadratics	
AI.2	Concepts and Principles of Measurement		
AI.2.a	Understand both metric and customary systems of measurement.		
AI.2.b	Understand relationships among units and convert from one unit to another within the same system.		
AI.2.c	Understand, select, and use units of appropriate size and type to measure angles, perimeter, area, surface area, and volume.		
AI.2.d	Use appropriate methods and units to estimate measurements.		
AI.2.e	Select and apply techniques and tools to accurately find length, area, volume, and angle measures to appropriate levels of precision.		
AI.2.f	Select and use formulas to determine the circumference and area of circles.		

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AI.2.g	Select and use formulas to determine the perimeters and areas of triangles and quadrilaterals.	Variables and Expressions	Exponents and Roots
AI.2.h	Develop strategies to determine the areas of irregular shapes.		
AI.2.i	Solve problems involving scale factors, rates, ratios, and proportions.	Equations	Proportions and Percent
AI.2.1	Understand measurable attributes of objects and the units, systems, and processes of measurement.		
AI.2.1.1	Make decisions about units and scales that are appropriate for a given problem.		
AI.2.1.1.a	Appropriately scale a graph for a given situation.		
AI.2.2	Apply appropriate techniques, tools, and formulas to determine measurements.		
AI.2.2.1	Convert rates using dimensional analysis.		

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AI.2.2.1.a	Use dimensional analysis to convert rates within the U.S. customary system and within the metric system.		
AI.3	Concepts and Language of Algebra and Functions		
AI.3.a	Represent, analyze, and generalize a variety of patterns with tables, graphs, words, and, when possible, symbolic rules.	Equations	Equations
AI.3.b	Relate and compare different forms of representation for a relationship.	Equations	Equations
AI.3.c	Demonstrate an initial conceptual understanding of different uses of variables.	Equations	Equations
AI.3.d	Determine solutions for one- and two-step linear equations.	Equations	Equations
AI.3.e	Recognize and generate equivalent forms for simple algebraic expressions.	Equations	Equations
AI.3.f	Model and solve contextualized problems using various representations such as graphs, tables, and equations.	Throughout Course	Throughout Course

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AI.3.g	Identify attributes of the Cartesian coordinate system, such as quadrants, origin, and axes.	Functions and Linear Equations	Functions and Linear Equations
AI.3.1	Understand patterns, relations, and functions.	Functions and Linear Equations	Functions and Linear Equations
AI.3.1.1	Represent linear patterns and functional relationships in a table and as a graph.	Functions and Linear Equations	Section 1: Functions and Linear Equations
AI.3.1.1.a	Determine whether a relation is a function given graphs, charts, ordered pairs, mappings, or equations.	Functions and Linear Equations	Section 4: Functions and Linear Equations
AI.3.1.1.b	Define and interpret relations and functions numerically, graphically, and algebraically.	Functions and Linear Equations	Section 4: Functions and Linear Equations
AI.3.1.1.c	Use patterns of change in function tables to develop the concept of rate of change.	Functions and Linear Equations	Section 2: Functions and Linear Equations
AI.3.1.1.d	Identify domain and range for given graphs, charts, ordered pairs, and mappings.	Functions and Linear Equations	Section 1: Functions and Linear Equations
AI.3.1.1.e	Graph linear equations and inequalities on a coordinate plane when given a contextual situation, a table of values, two or more colinear points, the slope and intercept of the line, or an equation.	Functions and Linear Equations	Section 4: Functions and Linear Equations

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AI.3.1.1.f	Create a table of values given a contextual situation or a linear equation.		
AI.3.1.1.g	Graph one-variable inequalities, compound inequalities, and absolute value equations and inequalities on a number line.		
AI.3.1.2	Describe the graphs of linear and quadratic functions and discuss their appearances in terms of the basic concepts of intercepts and rate of change.	Functions and Linear Equations	Section 2: Functions and Linear Equations
AI.3.1.2.a	Given the graph of a line, appropriate context, two or more collinear points, or an equation, determine the slope, x-intercept, and y-intercept of a line.	Functions and Linear Equations	Section 2: Functions and Linear Equations
AI.3.1.2.b	Identify a quadratic function by its degree.		
AI.3.1.2.c	Identify the graphs of quadratic functions as parabolas that open up or down depending upon the leading coefficients in the equations.	Quadratics and Radicals	Graphing Quadratic Functions
AI.3.1.2.d	Relate the solutions of quadratic functions to the points where the graphs of the functions cross the x-axes.	Quadratics and Radicals	Solving by Using Square Roots
AI.3.2	Represent and analyze mathematical situations and structures using algebraic symbols.	Equations	Equations

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AI.3.2.1	Represent linear patterns and relationships with an equation.	Functions and Linear Equations	Section 3: Functions and Linear Equations
AI.3.2.1.a	Evaluate functions written in function notation.	Functions and Linear Equations	Section 4: Functions and Linear Equations
AI.3.2.1.b	Write linear equations and inequalities in various forms given the graph of a line, a contextual situation, two or more collinear points, a point and the slope of a line, or a set of data.	Functions and Linear Equations Inequalities	Section 4: Functions and Linear Equations Section 2: Inequalities
AI.3.2.2	Recognize and generate equivalent forms of algebraic expressions and solve equations, inequalities, and systems of equations.	Equations	Throughout Unit
AI.3.2.2.a	Model contextual situations by writing systems of linear equations containing no more than two variables.	Functions and Linear Equations	Section 4: Functions and Linear Equations
AI.3.2.2.b	Solve an equation involving several variables for one variable in terms of the others.	Equations	Formulas and Absolute Value
AI.3.2.2.c	Solve multi-step linear equations and inequalities.	Functions and Linear Equations Inequalities	Section 4: Functions and Linear Equations Section 2: Inequalities
AI.3.2.2.d	Solve one-variable compound inequalities.	Equations	Multi-Step Equations

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AI.3.2.2.e	Solve one-variable absolute value equations and inequalities.	Equations Inequalities	Formulas and Absolute Value
AI.3.2.2.f	Solve linear systems of equations and inequalities involving two variables using multiple strategies.	Inequalities	Section 2: Inequalities (only inequalities are covered)
AI.3.2.2.g	Solve quadratic equations by factoring.		
AI.3.3	Use mathematical models to represent and understand quantitative relationships.	Throughout Course	Throughout Course
AI.3.3.1	Develop proportional relationships to solve problems.	Equations	Proportions and Percent
AI.3.3.1.a	Solve problems using proportions.	Equations	Proportions and Percent
AI.3.3.1.b	Solve percent application problems.	Equations	Proportions and Percent
AI.3.4	Analyze change in various contexts.	Throughout Course	Throughout Course

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AI.3.4.1	Interpret changes to the parent function y = x.		
AI.3.4.1.a	Compare and contrast the graphs of x = k , y = k , y = kx and y = kx+b where k and b are rational numbers.		
AI.4	Concepts and Principles of Geometry		
AI.4.a	No objectives at this course level.		
AI.5	Data Analysis, Probability, and Statistics		
AI.5.a	Analyze and interpret tables, charts, and graphs including frequency tables, scatter plots, broken line graphs, line plots, bar graphs, histograms, circle graphs, and stem-and-leaf plots.	Variables and Expressions	Logic and Graphs
AI.5.b	Explain and justify conclusions drawn from tables, charts, and graphs.	Variables and Expressions	Logic and Graphs
AI.5.c	Collect, organize, and display data with appropriate notation in tables, charts, and graphs, including scatter plots, broken line graphs, line plots, bar graphs, histograms, and stem-andleaf plots.	Solving Systems	Section 5: Solving Systems

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AI.5.d	Choose and calculate the appropriate measure of central tendency-mean, median, and mode.	Solving Systems	Section 5: Solving Systems
AI.5.e	Explain the significance of distribution of data, including range, frequency, gaps, and clusters.		
AI.5.f	Model situations of probability using simulations.	Polynomials	Section 5: Polynomials
AI.5.g	Recognize equally likely outcomes.		
AI.5.h	Explain that probability ranges from 0% to 100% and identify a situation as having high or low probability.		
AI.5.i	Make predictions based on experimental and theoretical probabilities.	Polynomials	Section 5: Polynomials
AI.5.j	Conduct statistical experiments and interpret results using tables, charts, or graphs.		
AI.5.k	Use proportionality and the basic understanding of probability to make and test conjectures about the results of experiments and simulations.		

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AI.5.1	Collect, organize, and display data using a variety of formats.	Throughout Course	Throughout Course
0	No objectives at this course level.		
AI.5.2	Select and use appropriate statistical methods to analyze data.	Solving Systems	Section 5: Solving Systems
AI.5.2.1	Make predictions and draw conclusions based on measures of central tendency.	Solving Systems	Section 5: Solving Systems
AI.5.2.1.a	Find missing data when given an expected mean.		
AI.5.2.1.b	Predict how changes in data (such as inclusion/exclusion of additional data or outliers) will affect measures of central tendency.	Solving Systems	Section 5: Solving Systems
AI.5.2.1.c	Identify and explain misleading uses of data.		
AI.5.2.2	Make predictions using linear relations, scatter plots, trend lines, charts, and tables.		

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AI.5.2.2.a	Graph scatter plots, sketch lines of best fit, and identify positive and negative correlations.		
AI.5.2.2.b	Predict how changes in data will affect line of best fit.		
AI.5.2.2.c	Write the equation of a line of best fit.		
AI.5.3	Develop and evaluate inferences and predictions that are based on data.		
0	No objectives at this course level.		
AI.5.4	Understand basic concepts of probability.		
0	No objectives at this course level.		