Algebra 1 CR, Algebra 2 CR, Geometry CR
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State Standard Number	State Standard Area/Description	Course Name	Unit Name	Course Topic Description
1	Number and Operations			
1.1	Understand and apply numbers, ways of representing numbers, and the relationships among numbers and different number systems.			
1.1.PO 1	Justify with examples the relation between the number system being used (natural numbers, whole numbers, integers, rational numbers and irrational numbers) and the question of whether or not an equation has a solution in that number system.	Algebra I CR	Real Numbers	Section 1
1.1.PO 2	Sort sets of numbers as finite or infinite, and justify the sort.			
1.1.PO 3	Express that the distance between two numbers is the absolute value of their difference.			
1.2	Understand and apply numerical operations and their relationship to one another.			
1.2.PO 1	Solve word problems involving absolute value, powers, roots, and scientific notation.	Algebra I CR Algebra 2 CR	Variables and Expressions Inequalities Linear and Quadratic Functions Radical Functions Exponential and Logarithmic Functions	Section 4 Section 3 Section B Dispersed throughout Section C
1.2.PO 2	Summarize the properties of and connections between real number operations; justify manipulations of	Algebra I CR	Variables and Expressions Real Numbers	Section 2 Section 5

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	expressions using the properties of real number operations.	Algebra 2 CR	Equations Linear and Quadratic Functions	Section 1 Section B
1.2.PO 3	Calculate powers and roots of rational and irrational numbers.	Algebra 1 CR Algebra 2 CR	Variables and Expressions Radical Functions	Sections 3, 4 Section A
1.2.PO 4	Compute using scientific notation.	Algebra I CR	Polynomials	Section 1
1.3	Use estimation strategies reasonably and fluently while integrating content from each of the other strands.			
1.3.PO 1	Determine rational approximations of irrational numbers.			
1.3.PO 2	Use estimation to determine the reasonableness of a solution.	Algebra I CR	Real Numbers	Section 4
1.3.PO 3	Determine when an estimate is more appropriate than an exact answer.			
1.3.PO 4	Estimate the location of the rational or irrational numbers on a number line.			
2	Data Analysis, Probability, and Discrete Mathematics			
2.1	Understand and apply data collection, organization, and representation to analyze and sort data.			
2.1.PO 1	Draw inferences about data sets from lists, tables, matrices, and plots.	Algebra I CR Algebra 2 CR	Variables and Expressions Solving Systems Systems of Equations and Inequalities	Section 5 Section 5 Section A
2.1.PO 2	Organize collected data into an appropriate graphical representation with or without technology.	Algebra I CR	Solving Systems	Section 5

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2.1.PO 3	Display data, including paired data, as lists, tables, matrices, and plots with or without technology; make predictions and observations about patterns or departures from patterns.	Algebra I CR Algebra 2 CR	Variables and Expressions Systems of Equations and Inequalities	Section 5 Section A
2.1.PO 4	Make inferences by comparing data sets using one or more summary statistics.	Algebra I CR	Solving Systems	Section 5
2.1.PO 5	Determine which measure of center is most appropriate in a given situation and explain why.	Algebra I CR Algebra 2 CR	Solving Systems Probability and Statistics	Section 5 Section D
2.1.PO 6	Evaluate the reasonableness of conclusions drawn from data analysis.			
2.1.PO 7	Identify misrepresentations and distortions in displays of data and explain why they are misrepresentations or distortions.			
2.1.PO 8	Design simple experiments or investigations and collect data to answer questions.	Algebra 2 CR	Probability and Statistics	Section D
2.2	Understand and apply the basic concepts of probability.			
2.2.PO 1	Make predictions and solve problems based on theoretical probability models.	Algebra I CR Algebra 2 CR	Rational Expressions Probability and Statistics	Section 5 Section A
2.2.PO 2	Determine the theoretical probability of events, estimate probabilities using experiments, and compare the two.	Algebra I CR Algebra 2 CR	Rational Expressions Probability and Statistics	Section 5 Section A
2.2.PO 3	Use simulations to model situations involving independent and dependent events.	Algebra 2 CR	Probability and Statistics	Section A

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2.2.PO 4	Explain and use the law of large numbers (that experimental results tend to approach theoretical probabilities after a large number of trials).			
2.2.PO 5	Use concepts and formulas of area to calculate geometric probabilities.			
2.3	Understand and demonstrate the systematic listing and counting of possible outcomes.			
2.3.PO 1	Apply the addition and multiplication principles of counting, representing these principles algebraically using factorial notation.	Algebra I CR Algebra 2 CR	Rational Expressions Probability and Statistics	Section 5 Section A, B
2.3.PO 2	Apply appropriate means of computing the number of possible arrangements of items using permutations where order matters, and combinations where order does not matter.	Algebra I CR Algebra 2 CR	Rational Expressions Probability and Statistics	Section 5 Section B
2.3.PO 3	Determine the number of possible outcomes of an event.	Algebra I CR Algebra 2 CR	Rational Expressions Probability and Statistics	Section 5 Section A
2.4	Understand and apply vertex-edge graphs.			
2.4.PO 1	Solve network problems using graphs and matrices.			
3	Patterns, Algebra, and Functions			
3.1	Identify patterns and apply pattern recognition to reason mathematically while integrating content from each of the other strands.			

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3.1.PO 1	Recognize, describe, and analyze sequences using tables, graphs, words, or symbols; use sequences in modeling.	Algebra I CR Algebra 2 CR	Functions and Linear Equations Discrete Mathematics: Sequences and Series	Section 3 Sections A, B
3.1.PO 2	Determine a specific term of a sequence.	Algebra I CR Algebra 2 CR	Functions and Linear Equations Discrete Mathematics: Sequences and Series	Section 3 Sections A, B
3.1.PO 3	Create sequences using explicit and recursive formulas involving both subscripts and function notation.	Algebra I CR Algebra 2 CR	Functions and Linear Equations Discrete Mathematics: Sequences and Series	Section 3 Sections A, B
3.2	Describe and model functions and their relationships.			
3.2.PO 1	Sketch and interpret a graph that models a given context, make connections between the graph and the context, and solve maximum and minimum problems using the graph.	Algebra I CR Algebra 2 CR	Quadratics and Radicals Linear and Quadratic Functions	Section 1 Section F
3.2.PO 2	Determine if a relationship represented by an equation, graph, table, description, or set of ordered pairs is a function.	Algebra I CR Algebra 2 CR	Functions and Linear Equations Linear and Quadratic Functions	Section 4 Section A
3.2.PO 3	Use function notation; evaluate a function at a specified value in its domain.	Algebra I CR Algebra 2 CR	Functions and Linear Equations Linear and Quadratic Functions	Section 4 Section A
3.2.PO 4	Use equations, graphs, tables, descriptions, or sets of ordered pairs to express a relationship between two variables.	Algebra I CR Algebra 2 CR	Functions and Linear Equations Linear and Quadratic Functions	Section 2 Sections C, D

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3.2.PO 5	Recognize and solve problems that can be modeled using a system of two equations in two variables.	Algebra 1 CR Algebra 2 CR	Solving Systems Linear and Quadratic Functions Systems of Equations and Inequalities	Sections 1, 2 Section C Section B
3.2.PO 6	Recognize and solve problems that can be modeled using a quadratic function.	Algebra I CR Algebra 2 CR	Quadratics and Radicals Linear and Quadratic Functions	Dispersed throughout Section D, E, G
3.2.PO 7	Determine domain and range of a function from an equation, graph, table, description, or set of ordered pairs.	Algebra I CR Algebra 2 CR	Functions and Linear Equations Linear and Quadratic Functions	Section 1 Section A
3.3	Represent and analyze mathematical situations and structures using algebraic representations.			
3.3.PO 1	Create and explain the need for equivalent forms of an equation or expression.			
3.3.PO 2	Solve formulas for specified variables.	Algebra I CR	Equations	Section 4
3.3.PO 3	Write an equation given a table of values, two points on the line, the slope and a point on the line, or the graph of the line.	Algebra I CR Geometry CR Algebra 2 CR	Functions and Linear Equations Parallel Lines and Coordinate Plane Linear and Quadratic Functions	Sections 2, 4 Section 3 Section C
3.3.PO 4	Determine from two linear equations whether the lines are parallel, perpendicular, coincident, or intersecting but not perpendicular.	Algebra I CR Geometry CR Algebra 2 CR	Functions or Linear Equations Parallel Lines and Coordinate Plane Systems of Equations and Inequalities	Section 4 Section 3 Section B

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3.3.PO 5	Solve linear equations and equations involving absolute value, with one variable.	Algebra I CR Algebra 2 CR	Equations Inequalities Linear and Quadratic Functions	Section 4 Section 3 Section B
3.3.PO 6	Solve linear inequalities in one variable.	Algebra I CR Algebra 2 CR	Inequalities Linear and Quadratic Functions	Sections 1, 2, 3 Section B
3.3.PO 7	Solve systems of two linear equations in two variables.	Algebra I CR Algebra 2 CR	Solving Systems Systems of Equations and Inequalities	Sections 1, 2 Section B
3.3.PO 8	Simplify and evaluate polynomials, rational expressions, expressions containing absolute value, and radicals.	Algebra I CR Algebra 2 CR	Polynomials Quadratics and Radicals Rational Expressions Radical Functions	Section 2 Section 3 Section 2 Section A
3.3.PO 9	Multiply and divide monomial expressions with integer exponents.	Algebra I CR Algebra 2 CR	Variables and Expressions Polynomials Radical Functions	Section 4 Section 3 Section A
3.3.PO 10	Add, subtract, and multiply polynomial and rational expressions.	Algebra I CR	Polynomials Rational Expressions	Sections 2, 3 Section 2
3.3.PO 11	Solve square root equations involving only one radical.	Algebra I CR Algebra 2 CR	Quadratics and Radicals Radical Functions	Section 5 Sections B, C
3.3.PO 12	Factor quadratic polynomials in the form of $ax^2 + bx + c$ where a, b, and c are integers.	Algebra I CR Algebra 2 CR	Polynomials Linear and Quadratic Functions	Sections 4, 5 Section E
3.3.PO 13	Solve quadratic equations.	Algebra I CR Algebra 2 CR	Polynomials Quadratics and Radicals Linear and	Section 5 Sections 1, 2 Section E

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			Quadratic Functions	
3.3.PO 14	Factor higher order polynomials.			
3.3.PO 15	Solve problems using operations with matrices.	Algebra I CR Algebra 2 CR	Solving Systems Systems of Equations and Inequalities	Section 4 Section A
3.4	Analyze how changing the values of one quantity corresponds to change in the values of another quantity.			
3.4.PO 1	Determine the slope and intercepts of the graph of a linear function, interpreting slope as a constant rate of change.	Algebra I CR Algebra 2 CR	Functions and Linear Equations Linear and Quadratic Functions	Section 2 Section 2
3.4.PO 2	Solve problems involving rate of change.	Algebra I CR	Equations Functions and Linear Equations	Section 5 Sections 2, 4
3.4.PO 3	Solve interest problems.	Algebra 2 CR	Exponential and Logarithmic Functions	Section C
4	Geometry and Measurement			
4.1	Analyze the attributes and properties of 2- and 3-dimensional figures and develop mathematical arguments about their relationships.			
4.1.PO 1	Use the basic properties of a circle (relationships between angles, radii, intercepted arcs, chords, tangents, and secants) to prove basic theorems and solve problems.	Geometry CR Algebra 2 CR	Circles Geometry	Sections 1, 2 Section C
4.1.PO 2	Visualize solids and surfaces in 3-dimensional space when given 2-dimensional representations and create 2-dimensional representations for the surfaces of 3-dimensional objects.			

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4.1.PO 3	Create and analyze inductive and deductive arguments concerning geometric ideas and relationships.	Geometry CR	Reasoning and Introduction to Proof	Section 1
4.1.PO 4	Apply properties, theorems, and constructions about parallel lines, perpendicular lines, and angles to prove theorems.	Geometry CR	Connections from Algebra Parallel Lines and Coordinate Plane	Section 6 Section 1
4.1.PO 5	Explore Euclid's five postulates in the plane and their limitations.			
4.1.PO 6	Solve problems using angle and side length relationships and attributes of polygons.	Geometry CR	Quadrilaterals Similarity	Section 4 Section 3
4.1.PO 7	Use the hierarchy of quadrilaterals in deductive reasoning.	Geometry CR Algebra 2 CR	Quadrilaterals Geometry	Sections 1, 2, 3 Section A
4.1.PO 8	Prove similarity and congruence of triangles.	Geometry CR	Triangles Similarity	Section 2 Sections 1, 2
4.1.PO 9	Solve problems using the triangle inequality property.			
4.1.PO 10	Solve problems using right triangles, including special triangles.	Geometry CR	Triangles Special Triangles	Section 2 Section 3
4.1.PO 11	Solve problems using the sine, cosine, and tangent ratios of the acute angles of a right triangle.	Geometry CR Algebra 2 CR	Right Triangle and Trigonometry Trigonometric Functions	Sections 1, 2 Section A
4.2	Apply spatial reasoning to create transformations and use symmetry to analyze mathematical situations.			
4.2.PO 1	Determine whether a transformation of a 2-dimensional figure on a coordinate plane represents a translation, reflection, rotation, or dilation and whether congruence is preserved.	Geometry CR	Perimeters and Areas	Section 6

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4.2.PO 2	Determine the new coordinates of a point when a single transformation is performed on a 2-dimensional figure.	Geometry CR	Perimeters and Areas	Section 6
4.2.PO 3	Sketch and describe the properties of a 2-dimensional figure that is the result of two or more transformations.			
4.2.PO 4	Determine the effects of a single transformation on linear or area measurements of a 2-dimensional figure.			
4.3	Specify and describe spatial relationships using rectangular and other coordinate systems while integrating content from each of the other strands.			
4.3.PO 1	Determine how to find the midpoint between two points in the coordinate plane.	Geometry CR	Parallel Lines and Coordinate Plane	Section 2
4.3.PO 2	Illustrate the connection between the distance formula and the Pythagorean Theorem.	Geometry CR	Parallel Lines and Coordinate Plane	Section 2
4.3.PO 3	Determine the distance between two points in the coordinate plane.	Geometry CR	Parallel Lines and Coordinate Plane	Section 2
4.3.PO 4	Verify characteristics of a given geometric figure using coordinate formulas for distance, midpoint, and slope to confirm parallelism, perpendicularity, and congruence.	Geometry CR	Parallel Lines and Coordinate Plane	Sections 2, 3
4.3.PO 5	Graph a linear equation or linear inequality in two variables.	Algebra I CR Algebra 2 CR	Functions and Linear Equations Linear and Quadratic Functions	All sections Section C
4.3.PO 6	Describe how changing the parameters of a linear function affect the shape and position of its graph.	Algebra 2 CR	Linear and Quadratic Functions	Section D

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4.3.PO 7	Determine the solution to a system of linear equations in two variables from the graphs of the equations.	Algebra I CR Algebra 2 CR	Solving Systems Systems of Equations and Inequalities	Section 1 Section B
4.3.PO 8	Graph a quadratic function and interpret x-intercepts as zeros.	Algebra I CR Algebra 2 CR	Quadratics and Radicals Linear and Quadratic Functions	Section 1 Section E, F
4.4	Understand and apply appropriate units of measure, measurement techniques, and formulas to determine measurements.			
4.4.PO 1	Use dimensional analysis to keep track of units of measure when converting.			
4.4.PO 2	Find the length of a circular arc; find the area of a sector of a circle.	Geometry CR Algebra 2 CR	Circles Geometry	Section 2 Section C
4.4.PO 3	Determine the effect that changing dimensions has on the perimeter, area, or volume of a figure.			
4.4.PO 4	Solve problems involving similar figures using ratios and proportions.	Geometry Algebra 2 CR	Similarity Geometry	Section 2 Section B
4.4.PO 5	Calculate the surface area and volume of 3-dimensional figures and solve for missing measures.	Geometry	Perimeters and Areas	Sections 4, 5
5	Structure and Logic			
5.1	Use reasoning to solve mathematical problems.			
5.1.PO 1	Select an algorithm that explains a particular mathematical process; determine the purpose of a simple mathematical algorithm.			
5.1.PO 2	Analyze algorithms for validity and equivalence recognizing the purpose of the algorithm.			

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5.2	Evaluate situations, select problem-solving strategies, draw logical conclusions, develop and describe solutions, and recognize their applications.			
5.2.PO 1	Analyze a problem situation, determine the question(s) to be answered, organize given information, determine how to represent the problem, and identify implicit and explicit assumptions that have been made.	Algebra I CR	Real Numbers	Section 4
5.2.PO 2	Solve problems by formulating one or more strategies, applying the strategies, verifying the solution(s), and communicating the reasoning used to obtain the solution(s).	Algebra I CR	Real Numbers	Section 4
5.2.PO 3	Evaluate a solution for reasonableness and interpret the meaning of the solution in the context of the original problem.	Algebra I CR	Real Numbers	Section 4
5.2.PO 4	Generalize a solution strategy for a single problem to a class of related problems; explain the role of generalizations in inductive and deductive reasoning.	Algebra I CR Geometry CR	Variables and Expressions Reasoning and Introduction to Proof	Section 5 Sections 1, 3
5.2.PO 5	Summarize and communicate mathematical ideas using formal and informal reasoning.			
5.2.PO 6	Synthesize mathematical information from multiple sources to draw a conclusion, make inferences based on mathematical information, evaluate the conclusions of others, analyze a mathematical argument, and recognize flaws or gaps in reasoning.	Algebra I CR	Variables and Expressions	Section 5

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5.2.PO 7	Find structural similarities within different algebraic expressions and geometric figures.			
5.2.PO 8	Use inductive reasoning to make conjectures, use deductive reasoning to analyze and prove a valid conjecture, and develop a counterexample to refute an invalid conjecture.	Algebra I CR Geometry CR	Variables and Expressions Reasoning and Introduction to Proof	Section 5 Sections 1, 3
5.2.PO 9	State the inverse, converse, and contrapositive of a given statement and state the relationship between the truth value of these statements and the original statement.	Geometry CR	Reasoning and Introduction to Proof	Sections 2, 3
5.2.PO 10	List related if... then statements in logical order.	Geometry CR	Reasoning and Introduction to Proof	Sections 1, 2
5.2.PO 11	Draw a simple valid conclusion from a given if...then statement and a minor premise.	Geometry CR	Reasoning and Introduction to Proof	Sections 2
5.2.PO 12	Construct a simple formal deductive proof.	Geometry CR	Reasoning and Introduction to Proof	Sections 4, 5
5.2.PO 13	Identify and explain the roles played by definitions, postulates, propositions and theorems in the logical structure of mathematics, including Euclidean geometry.	Geometry CR	Reasoning and Introduction to Proof	Sections 2, 4