Algebra 2

State Standard Number	State Standard Area/Description	Unit Name	Course Topic Description
A2.1	Solving Problems		
A2.1.A	Select and justify functions and equations to model and solve problems.	Linear and Quadratic Functions	Section E: Solving Quadratic Functions; pg 1-15
A2.1.B	Solve problems that can be represented by systems of equations and inequalities.	Systems of Equations and Inequalities	Section B: Systems of Equations; pg 1-20 Section C: Systems of Inequalities; pg 1-10
A2.1.C	Solve problems that can be represented by quadratic functions, equations, and inequalities.	Linear and Quadratic Functions	Section E: Solving Quadratic Functions; pg 1-15
A2.1.D	Solve problems that can be represented by exponential and logarithmic functions and equations.	Exponential and Logarithmic Functions	Section E: Solving Exponential and Logarithmic Equations; pg 1-14
A2.1.E	Solve problems that can be represented by inverse variations of the forms $f(x) = a/x + b$, $f(x) = a/ x^2 + b$, and $f(x) = a/(bx + c)$	Rational Functions	Section C: Solving Rational Equations and Inequalities; pg 1-15
A2.1.F	Solve problems involving combinations and permutations.	Probability and Statistics	Section B: Permutations and Combinations; pg 1-15
A2.2	Numbers, expressions, and operations		
A2.2.A	Explain how whole, integer, rational, real, and complex numbers are related, and identify the number system(s) within which a given algebraic equation can be solved.		
A2.2.B	Use the laws of exponents to simplify and evaluate numeric and algebraic expressions that contain rational exponents.	Radical Functions	Section A: Roots and Properties of Exponents
A2.2.C	Add, subtract, multiply, divide, and simplify rational and more general algebraic expressions.	Rational Functions	Section C: Solving Rational Equations and Inequalities; pg 1-15

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A2.3	Quadratic functions and equations		
A2.3.A	Translate between the standard form of a quadratic function, the vertex form, and the factored form; graph and interpret the meaning of each form.	Linear and Quadratic Functions	Section E: Solving Quadratic Functions; pg 1-15
A2.3.B	Determine the number and nature of the roots of a quadratic function.	Linear and Quadratic Functions	Section E: Solving Quadratic Functions; pg 1-15
A2.3.C	Solve quadratic equations and inequalities, including equations with complex roots.	Linear and Quadratic Functions	Section E: Solving Quadratic Functions; pg 1-15
A2.4	Exponential and logarithmic functions and equations		
A2.4.A	Know and use basic properties of exponential and logarithmic functions and the inverse relationship between them.	Exponential and Logarithmic Functions	Section A: Comparing Logarithmic and Exponential Functions; pg 1-12
A2.4.B	Graph an exponential function of the form f(x) = abx and its inverse logarithmic function.	Exponential and Logarithmic Functions	Section B: Graphing Exponential Functions and Domain and Range; pg 1-10

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A2.4.C	Solve exponential and logarithmic equations.	Exponential and Logarithmic Functions	Section E: Solving Exponential and Logarithmic Equations; pg 1-14
A2.5	Additional functions and equations		
A2.5.A	Construct new functions using the transformations f(x - h), f(x) + k, cf(x), and by adding and subtracting functions, and describe the effect on the original graph(s).	Linear and Quadratic Functions	Section D: Graphing Quadratic Functions; pg 1-10
A2.5.B	Plot points, sketch, and describe the graphs of functions of the form f (x) = a times the square root of x - c + d , and solve related equations.	Radical Functions	Section B: Graphing Radical Functions and Domain and Range; pg 1-13
A2.5.C	Plot points, sketch, and describe the graphs of functions of the form (x) = a/x + b, f(x) = a/x² + b, and f(x) = a/(bx + c), and solve related equations.	Rational Functions	Section B: Graphing Rational Functions and Domain and Range; pg 1-13
A2.5.D	Plot points, sketch, and describe the graphs of cubic polynomial functions of the form f(x) = ax³ + d as an example of higher order polynomials and solve related equations.		
A2.6	Probability, data, and distributions		
A2.6.A	Apply the fundamental counting principle and the ideas of order and replacement to calculate probabilities in situations arising from two-stage experiments (compound events).	Probability and Statistics	Section A: Introduction to Probability; pg 1-13

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A2.6.B	Given a finite sample space consisting of equally likely outcomes and containing events A and B, determine whether A and B are independent or dependent, and find the conditional probability of A given B.	Probability and Statistics	Section A: Introduction to Probability; pg 1-13
A2.6.C	Compute permutations and combinations, and use the results to calculate probabilities.	Probability and Statistics	Section B: Permutations and Combinations; pg 1-15
A2.6.D	Apply the binomial theorem to solve problems involving probability.	Probability and Statistics	Section C: Binomial Theorem; pg 1-9
A2.6.E	Determine if a bivariate data set can be better modeled with an exponential or a quadratic function and use the model to make predictions.		
A2.6.F	Calculate and interpret measures of variability and standard deviation and use these measures and the characteristics of the normal distribution to describe and compare data sets.	Probability and Statistics	Section D: Statistics; pg 1-14 Section E: Normal Distribution; pg 1-11
A2.6.G	Calculate and interpret margin of error and confidence intervals for population proportions.		
A2.7	Additional Key Content		
A2.7.A	Solve systems of three equations with three variables.	Systems of Equations and Inequalities	Section D: Systems of Equations with Three Variables; pg 1-11

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A2.7.B	Find the terms and partial sums of arithmetic and geometric series and the infinite sum for geometric series.	Discrete Mathematics: Sequences and Series	Section A: Arithmetic Sequences and Series; pg 1-15 Section B: Geometric Sequences and Series; pg 1-18
A2.8	Reasoning, problem solving, and communication		
A2.8.A	Analyze a problem situation and represent it mathematically.	Systems of Equations and Inequalities	Section A: Matrices and Determinants; pg 1-18
A2.8.B	Select and apply strategies to solve problems.	Linear and Quadratic Functions	Section F: Graphing Zeros and Min/Max Values; pg 1-14
A2.8.C	Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem.	Radical Functions	Section C: Solving Radical Equations and Inequalities; pg 1-15
A2.8.D	Generalize a solution strategy for a single problem to a class of related problems and apply a strategy for a class of related problems to solve specific problems.	Systems of Equations and Inequalities	Section A: Matrices and Determinants; pg 1-18
A2.8.E	Read and interpret diagrams, graphs, and text containing the symbols, language, and conventions of mathematics.	Linear and Quadratic Functions	Section E: Solving Quadratic Functions; pg 1-15
A2.8.F	Summarize mathematical ideas with precision and efficiency for a given audience and purpose.		

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A2.8.G	Use inductive reasoning and the properties of numbers to make conjectures, and use deductive reasoning to prove or disprove conjectures.		
A2.8.H	Synthesize information to draw conclusions and evaluate the arguments and conclusions of others.		