Algebra 2 Content Priority Academic Student Skills

	Standard 1: Number Systems and Algebraic Operations - The student will perform operations with rational, radical, and polynomial expressions, as well as expressions involving complex numbers.
A2.1.1a	Rational Exponents - Convert expressions from radical notations to rational exponents and vice versa.
A2.1.1b	Rational Exponents - Add, subtract, multiply, divide, and simplify radical expressions and expressions containing rational exponents.
A2.1.2a	Polynomial and Rational Expressions - Divide polynomial expressions by lower degree polynomials.
A2.1.2b	Polynomial and Rational Expressions - Add, subtract, multiply, divide, and simplify rational expressions, including complex fractions.
A2.1.3a*	Complex Numbers - Recognize that to solve certain problems and equations, number systems need to be extended from real numbers to complex numbers.
A2.1.3b	Complex Numbers - Add, subtract, multiply, divide, and simplify expressions involving complex numbers.
	Standard 2: Relations and Functions - The student will use the relationships among the solution of an equation, zero of a function, x-intercepts of a graph, and factors of a polynomial expression to solve problems involving relations and functions.
A2.2.1a	Functions and Function Notation - Recognize the parent graphs of polynomial, exponential, radical, quadratic, and logarithmic functions and predict the effects of transformations on the parent graphs, using various methods and tools which may include graphing calculators.
A2.2.1b	Functions and Function Notation - Add, subtract, multiply, and divide functions using function notation.
A2.2.1c	Functions and Function Notation - Combine functions by composition.
A2.2.1d	Functions and Function Notation - Use algebraic, interval, and set notations to specify the domain and range of functions of various types.
A2.2.1e	Functions and Function Notation - Find and graph the inverse of a function, if it exists.
A2.2.2a	Systems of Equations - Model a situation that can be described by a system of equations or inequalities and use the model to answer questions about the situation.
A2.2.2b	Systems of Equations - Solve systems of linear equations and inequalities using various methods and tools which may include substitution, elimination, matrices, graphing, and graphing calculators.
A2.2.2c*	Systems of Equations - Use either one quadratic equation and one linear equation or two quadratic equations to solve problems.
A2.2.3a	Quadratic Equations and Functions - Solve quadratic equations by graphing, factoring, completing the square and quadratic formula.
A2.2.3b	Quadratic Equations and Functions - Graph a quadratic function and identify the x- and y-intercepts and maximum or minimum value, using various methods and tools which may include a graphing calculator.
A2.2.3c	Quadratic Equations and Functions - Model a situation that can be described by a quadratic function and use the model to answer questions about the situation.
A2.2.4	Identify, graph, and write the equations of the conic sections (circle, ellipse, parabola, and hyperbola).
A2.2.5a	Exponential and Logarithmic Functions - Graph exponential and logarithmic functions.

A2.2.5b	Exponential and Logarithmic Functions - Apply the inverse relationship between exponential and logarithmic functions to convert from one form to another.
A2.2.5c	Exponential and Logarithmic Functions - Model a situation that can be described by an exponential or logarithmic function and use the model to answer questions about the situation.
A2.2.6a	Polynomial Equations and Functions - Solve polynomial equations using various methods and tools which may include factoring and synthetic division.
A2.2.6b	Polynomial Equations and Functions - Sketch the graph of a polynomial function.
A2.2.6c	Polynomial Equations and Functions - Given the graph of a polynomial function, identify the x- and y-intercepts, relative maximums and relative minimums, using various methods and tools which may include a graphing calculator.
A2.2.6d	Polynomial Equations and Functions - Model a situation that can be described by a polynomial function and use the model to answer questions about the situation.
A2.2.7a	Rational Equations and Functions - Solve rational equations.
A2.2.7b	Rational Equations and Functions - Sketch the graph of a rational function.
A2.2.7c	Rational Equations and Functions - Given the graph of a rational function, identify the x- and y-intercepts, vertical asymptotes, using various methods and tools which may include a graphing calculator.
A2.2.7d	Rational Equations and Functions - Model a situation that can be described by a rational function and use the model to answer questions about the situation.
Standard 3: Data Analysis and Statistics - The student will use data analysis and statistics to formulate and justify predictions from a set of data.	
A2.3.1a	Analysis of Collected Data Involving Two Variables - Interpret data on a scatter plot using a linear, exponential, or quadratic model/equation.
A2.3.1b	Analysis of Collected Data Involving Two Variables - Identify whether the model/equation is a curve of best fit for the data, using various methods and tools which may include a graphing calculator.
A2.3.2a*	Measures of Central Tendency and Variability - Analyze and synthesize data from a sample using appropriate measures of central tendency (mean, median, mode, weighted average).
A2.3.2b*	Measures of Central Tendency and Variability - Analyze and synthesize data from a sample using appropriate measures of variability (range, variance, standard deviation).
A2.3.2c*	Measures of Central Tendency and Variability - Use the characteristics of the Gaussian normal distribution (bell-shaped curve) to solve problems.
A2.3.2d*	Measures of Central Tendency and Variability - Identify how given outliers affect representations of data.
A2.3.3	Identify and use arithmetic and geometric sequences and series to solve problems.

Algebra 2 Process

	Process Standard 1: Problem Solving
HS.1.1	Apply a wide variety of problem-solving strategies (identify a pattern, use equivalent representations) to solve problems from within and outside mathematics.
HS.1.2	Identify the problem from a described situation, determine the necessary data and apply appropriate problem-solving strategies.
	Process Standard 2: Communication
HS.2.1	Use mathematical language and symbols to read and write mathematics and to converse with others.
HS.2.2	Demonstrate mathematical ideas orally and in writing.
HS.2.3	Analyze mathematical definitions and discover generalizations through investigations.
	Process Standard 3: Reasoning
HS.3.1	Use various types of logical reasoning in mathematical contexts and real-world situations.
HS.3.2	Prepare and evaluate suppositions and arguments.
HS.3.3	Verify conclusions, identify counterexamples, test conjectures, and justify solutions to mathematical problems.
HS.3.4	Justify mathematical statements through proofs.
	Process Standard 4: Connections
HS.4.1	Link mathematical ideas to the real world (e.g., statistics helps qualify the confidence we can have when drawing conclusions based on a sample).
HS.4.2	Apply mathematical problem-solving skills to other disciplines.
HS.4.3	Use mathematics to solve problems encountered in daily life.
HS.4.4	Relate one area of mathematics to another and to the integrated whole (e.g., connect equivalent representations to corresponding problem situations or mathematical concepts).
	Process Standard 5: Representation
HS.5.1	Use algebraic, graphic, and numeric representations to model and interpret mathematical and real world situations.
HS.5.2	Use a variety of mathematical representations as tools for organizing, recording, and communicating mathematical ideas (e.g., mathematical models, tables, graphs, spreadsheets).
HS.5.3	Develop a variety of mathematical representations that can be used flexibly and appropriately.