

Algebra 2

State Standard Number	State Standard Area/Description	Unit Name	Course Topic Description
1	Students will represent and analyze mathematical situations and properties using patterns, relations, functions and algebraic symbols.		
RF.1.AII.1	Determine, with or without technology, the domain and range of a relation defined by a graph, a table of values, or a symbolic equation including those with restricted domains and whether a relation is a function	Linear and Quadratic Functions	Section A: Functions and Relations; pg 1-19
RF.1.AII.2	Evaluate, add, subtract, multiply, and divide functions and give appropriate domain and range restrictions	Linear and Quadratic Functions	Section A: Functions and Relations; pg 1-19
RF.1.AII.3	Determine the inverse of a function (Graph, with and without appropriate technology, functions and their inverses)	Linear and Quadratic Functions	Section A: Functions and Relations; pg 1-19
RF.1.AII.4	Analyze and report, with and without appropriate technology, the effect of changing coefficients, exponents, and other parameters on functions and their graphs (linear, quadratic, and higher degree polynomial)	Linear and Quadratic Functions	Section C: Writing and Graphing Linear Functions; pg 1-19 Section D: Graphing Quadratic Functions; pg 1-10
RF.1.AII.5	Graph, with and without appropriate technology, functions defined as piece-wise and step		
RF.1.AII.6	Recognize periodic phenomena (sine or cosine functions such as sound waves, length of daylight, circular motion)		
RF.1.AII.7	Investigate and identify key characteristics of period functions and their graphs (period, amplitude, maximum, and minimum)	Trigonometric Functions	Section E: Graphing Trigonometric Functions; pg 1-14
RF.1.AII.8	Use basic properties of frequency and amplitude to solve problems		

Algebra 2

RF.1.AII.9	Apply the concepts of functions to real world situations	Linear and Quadratic Functions	Section F: Graphing Zeros and Min/Max Values; pg 1-14
2	Students will analyze and apply various methods to model, graph and solve linear and absolute value equations and inequalities.		
LEI.2.AII.1	Solve, with and without appropriate technology, absolute value equations and inequalities written in one or two variables, and graph solutions.	Linear and Quadratic Functions	Section B: Solving Linear and Inequalities; pg 1-17
LEI.2.AII.2	Solve, with and without appropriate technology, systems of linear equations with two variables and graph the solution set	Systems of Equations and Inequalities	Section B: Systems of Equations; pg 1-20
LEI.2.AII.3	Develop and apply, with and without appropriate technology, the basic operations and properties of matrices (associative, commutative, identity, and inverse)	Systems of Equations and Inequalities	Section A: Matrices and Determinants; pg 1-18
LEI.2.AII.4	Solve, with and without appropriate technology, systems of linear equations with three variables using algebraic methods, including matrices		
LEI.2.AII.5	Apply, with or without technology, the concepts of linear and absolute value equations and inequalities and systems of linear equations and inequalities to model real world situations including linear programming	Systems of Equations and Inequalities	Section B: Systems of Equations; pg 1-20

Algebra 2

3	Students will use algebraic, graphical, and numerical methods to analyze, compare, translate, and solve quadratic equations.		
QEF.3.AII.1	Perform computations with radicals		
QEF.3.AII.1.a	simplify radicals with different indices	Radical Functions	Section A: Roots and Properties of Exponents; pg 1-10
QEF.3.AII.1.b	add, subtract, multiply and divide radicals		
QEF.3.AII.1.c	rationalize denominators		
QEF.3.AII.1.d	solve equations that contain radicals or radical expressions	Radical Functions	Section C: Solving Radical Equations and Inequalities; pg 1-15
QEF.3.AII.2	Extend the number system to include the complex numbers		
QEF.3.AII.2.a	define the set of complex numbers		

Algebra 2

QEF.3.AII.2.b	add, subtract, multiply, and divide complex numbers		
QEF.3.AII.2.c	rationalize denominators		
QEF.3.AII.3	Analyze and solve quadratic equations with and without appropriate technology by		
QEF.3.AII.3.a	factoring	Linear and Quadratic Functions	Section E: Solving Quadratic Functions; pg 1-15
QEF.3.AII.3.b	graphing	Linear and Quadratic Functions	Section E: Solving Quadratic Functions; pg 1-15
QEF.3.AII.3.c	extracting the square root	Linear and Quadratic Functions	Section E: Solving Quadratic Functions; pg 1-15
QEF.3.AII.3.d	completing the square	Linear and Quadratic Functions	Section E: Solving Quadratic Functions; pg 1-15
QEF.3.AII.3.e	using the quadratic formula	Linear and Quadratic Functions	Section E: Solving Quadratic Functions; pg 1-15

Algebra 2

QEF.3.AII.4	Derive the quadratic formula and use it to solve equations	Linear and Quadratic Functions	Section E: Solving Quadratic Functions; pg 1-15
QEF.3.AII.5	Develop and analyze, with and without appropriate technology, quadratic relations		
QEF.3.AII.5.a	graph a parabolic relationship when given its equation	Linear and Quadratic Functions	Section D: Graphing Quadratic Functions; pg 1-10
QEF.3.AII.5.b	write an equation when given its roots (zeros or solutions) or graph	Linear and Quadratic Functions	Section G: Determining a Quadratic Function; pg 1-11
QEF.3.AII.5.c	determine the nature of the solutions graphically and by evaluating the discriminant	Linear and Quadratic Functions	Section E: Solving Quadratic Functions; pg 1-15
QEF.3.AII.5.d	determine the maximum or minimum values and the axis of symmetry both graphically and algebraically	Linear and Quadratic Functions	Section F: Graphing Zeros and Min/Max Values; pg 1-14
QEF.3.AII.6	Apply the concepts of quadratic equations and functions to model real world situations by using appropriate technology when needed	Linear and Quadratic Functions	Section G: Determining a Quadratic Function; pg 1-11
4	Students will use algebraic, graphical, and numerical methods to analyze, compare, translate, and solve polynomial and rational equations.		

Algebra 2

PRF.4.AII.1	Determine the factors of polynomials by		
PRF.4.AII.1.a	using factoring techniques including grouping and the sum or difference of two cubes		
PRF.4.AII.1.b	using long division		
PRF.4.AII.1.c	using synthetic division		
PRF.4.AII.2	Analyze and sketch, with and without appropriate technology, the graph of a given polynomial function, determining the characteristics of domain and range, maximum and minimum points, end behavior, zeros, multiplicity of zeros, y-intercept, and symmetry	Linear and Quadratic Functions	Section D: Graphing Quadratic Functions; pg 1-10 Section F: Graphing Zeros and Min/Max Values; pg 1-14
PRF.4.AII.3	Write the equation of a polynomial function given its roots	Linear and Quadratic Functions	Section G: Determining a Quadratic Function; pg 1-11
PRF.4.AII.4	Identify the equation of a polynomial function given its graph or table	Linear and Quadratic Functions	Section G: Determining a Quadratic Function; pg 1-11
PRF.4.AII.5	Identify the characteristics of graphs of power functions of the form $f(x) = ax$ to the n power, for negative integral values of n , including domain, range, end behavior, and behavior at $x = 0$, and compare these characteristics to the graphs of related positive integral		

Algebra 2

	power functions		
PRF.4.AII.6	Simplify, add, subtract, multiply, and divide with rational expressions		
PRF.4.AII.7	Establish the relationship between radical expressions and expressions containing rational exponents	Radical Functions	Section A: Roots and Properties of Exponents; pg 1-10
PRF.4.AII.8	Simplify variable expressions containing rational exponents using the laws of exponents	Radical Functions	Section A: Roots and Properties of Exponents; pg 1-10
5	Students will graph exponential functions and relate them to logarithms. They will solve real world problems using exponential functions.		
ELF.5.AII.1	Recognize the graphs of exponential functions distinguishing between growth and decay	Exponential and Logarithmic Functions	Section C: Exponential Growth and Decay; pg 1-14
ELF.5.AII.2	Graph exponential functions and identify key characteristics: domain, range, intercepts, asymptotes, and end behavior	Exponential and Logarithmic Functions	Section B: Graphing Exponential Functions and Domain and Range; pg 1-10
ELF.5.AII.3	Identify the effect that changes in the parameters of the base have on the graph of the exponential function	Exponential and Logarithmic Functions	Section B: Graphing Exponential Functions and Domain and Range; pg 1-10

Algebra 2

ELF.5.AII.4	Recognize and solve problems that can be modeled using exponential functions	Exponential and Logarithmic Functions	Section E: Solving Exponential and Logarithmic Functions; pg 1-14
ELF.5.AII.5	Establish the relationship between exponential and logarithmic functions	Exponential and Logarithmic Functions	Section A: Comparing Exponential and Logarithmic Functions; pg 1-12
ELF.5.AII.6	Evaluate simple logarithms using the definition	Exponential and Logarithmic Functions	Section E: Solving Exponential and Logarithmic Functions; pg 1-14
ELF.5.AII.7	Use properties of logarithms to manipulate logarithmic expressions	Exponential and Logarithmic Functions	Section E: Solving Exponential and Logarithmic Functions; pg 1-14
6	Students will evaluate and interpret data, make predictions based on data, and apply basic understanding of probability to solve real world problems.		
DAP.6.AII.1	Find regression line for scatter plot, using appropriate technology, and interpret the correlation coefficient		
DAP.6.AII.2	Interpret and use the correlation coefficient to assess the strength of the linear relationship between two variables		
DAP.6.AII.3	Find the quadratic curve of best fit using appropriate technology		

Algebra 2

DAP.6.AII.4	Identify strengths and weaknesses of using regression equations to approximate data		
DAP.6.AII.5	Compute and explain measures of spread (range, percentiles, variance, standard deviation)	Probability and Statistics	Section D: Statistics; pg 1-14
DAP.6.AII.6	Describe the characteristics of a Gaussian normal distribution	Probability and Statistics	Section E: Normal Distribution; pg 1-11