

Mathematics Curriculum	
Algebra II	Scope
The learner will be able to:	
Patterns, Algebra and Functions	
-- identify the slope, x and y intercepts, find points on a line for a given equation, and write linear equations applying differing combinations of necessary information .	R
-- obtain solutions to, and/or graph absolute value, equations, and/or inequalities with one variable .	M
-- solve real-world problems using equations and inequalities .	M
-- obtain solutions to polynomial equations (over the field of complex numbers) applying the following theorems: Remainder, Factor, and Fundamental Theorem of Algebra .	D
-- obtain solutions to the following types of equations: linear, absolute value, rational, radical, exponential, logarithmic, and quadratic; through the use of suitable methods and tools including estimation, mental math and technology. .	M
-- determine the value of expressions that have fractional exponents, and apply fractional exponents in the simplification of radical expressions .	M
-- perform the four basic operations and simplify with rational expressions .	M
-- solve systems of linear inequalities (two variables) by graphing .	M
-- use the definition and properties of logarithms in the evaluation of logarithms .	I
-- find the values of common and natural logs through the use of suitable technologies .	M
-- approximate the real roots of polynomial equations through the application of technology .	M
-- determine the quotients of polynomials through the application of the most suitable methods .	M
-- identify and graph the relationships existing among the various forms (vertex form, x-intercept form, standard form) of quadratic equations .	M
-- solve and describe the solutions of quadratic equations in real-world problems applying many different solution strategies (factoring, quadratic formula, sketching the graph) .	D

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The learner will be able to:	
-- describe the roots of quadratic equations through the use of the discriminant, and by graphing the related function .	M
-- obtain solutions to systems of linear equations through the application of various methods, including matrices, elimination and substitution .	M
-- use the equal, not equal, greater than, and less than symbols to represent equalities and inequalities.	R
-- solve literal equations, those whose coefficients are letters, for a specific variable .	D
-- apply laws of exponents to simplify and evaluate algebraic expressions including nonintegral exponents (Mastery).	M
-- correctly manipulate numbers and expressions with negative exponents, understanding their reciprocal nature .	M
-- factor common factors, trinomials, perfect square trinomials, difference between two squares. sum/difference between cubes .	M
-- solve for the value of a variable given in an inequality by manipulating the inequality correctly .	M
-- define functions (including absolute value, radical, rational, linear, quadratic, exponential, logarithmic and polynomial) and make their graphs .	M
-- evaluate a function $f(x)$ for any given x and use technology to relate this to the graph of $f(x)$ and table values .	M
-- find inverse relations and/or determine if they are functions .	I
-- make graphs of quadratic functions, find their minimum or maximum values, find the number of zeros and the value of the zeros even if those zeros are imaginary .	M
-- determine the composition of two functions .	I
-- solve real world problems involving growth and decay .	M

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The learner will be able to:	
-- determine whether a given relationship is a function or a relation .	R
-- determine algebraic equations from graphs of continuous functions .	M
-- analyze graphs of functions to determine the effects of parameter changes .	D
-- solve for the zeros of a polynomial function by applying synthetic division .	M
-- determine and describe the domain and range for a given function .	M
-- graph relations and/or functions with the aid of concepts including domain, range, and rule. .	M
Calculus and Pre-Calculus	
-- use a given equation of a parabola to find the vertex, axis of symmetry, and direction and then graph the parabola .	D
-- define complex numbers and their additive inverses, their conjugates, and their absolute values .	M
-- perform the four basic operations on complex numbers .	M
-- solve problems using parametric equations, using technology when necessary .	D
Number Sense, Properties and Operations	
-- simplify radical expressions and rationalize denominators through the application of the properties of radicals. .	M
-- determine real nth roots of real numbers and recognize perfect nth powers .	R
-- apply ratios and proportions in the analysis of various problem solving situations such as direct variation .	M
-- assess the reasonableness of a solution .	M
Problem Solving	
-- use a variety of solution strategies to solve problems including: identifying patterns, making lists, working backwards, applying logical reasoning, guessing, checking, modeling and using appropriate technology .	D

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Algebra II	Scope
The learner will be able to:	
Data Analysis, Statistics, & Probability	
-- investigate paired data sets by studying patterns in scatterplots determining least squares regression lines, and finding correlation coefficients .	D,M