



Algebra 2 Semester 1 Final Assessment Blueprint	
Year: 2024-2025	Method of Delivery: Online
Subject: Math	Administration Window: December 9-19

Resources
Algebra 2 Curriculum Map

Standards At-A Glance		
Standard	Number of Items	Standard Description
MA.9-12.A1.A-CED.A.1	3	Create equations and inequalities in one variable and use them to solve problems. Include problem-solving opportunities utilizing real-world context. Focus on linear, quadratic, exponential and piecewise-defined functions (limited to absolute value and step).
MA.9-12.A1.A-REI.D.11	1	Explain why the x -coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately (e.g., using technology to graph the functions, make tables of values, or find successive approximations). Focus on cases where $f(x)$ and/or $g(x)$ are linear, quadratic, exponential and piecewise-defined functions (limited to absolute value and step).
MA.9-12.A2.A-APR.B.2	1	Know and apply the Remainder and Factor Theorem: For a polynomial $p(x)$ and a number a , the remainder on division by $(x - a)$ is $p(a)$, so $p(a) = 0$ if and only if $(x - a)$ is a factor of $p(x)$.
MA.9-12.A2.A-APR.B.3	1	Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial. Focus on quadratic, cubic, and quartic polynomials including polynomials for which factors are not provided.
MA.9-12.A2.A-APR.D.6	2	Rewrite rational expressions in different forms; write $a(x)/b(x)$ in the form $q(x) + r(x)/b(x)$, where $a(x)$, $b(x)$, $q(x)$, and $r(x)$ are polynomials with the degree of $r(x)$ less than the degree of $b(x)$, using inspection, long division, or for the more complicated examples, a computer algebra system.
MA.9-12.A2.A-REI.A.1	1	Explain each step in solving an equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method. Extend from quadratic equations to rational and radical equations.
MA.9-12.A2.A-REI.A.2	1	Solve rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.
MA.9-12.A2.A-REI.B.4	1	Fluently solve quadratic equations in one variable. Solve quadratic equations by inspection (e.g., for $x^2 = 49$), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as $a + bi$ for real numbers a and b .
MA.9-12.A2.A-REI.C.7	1	Solve a system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically.
MA.9-12.A2.A-SSE.A.2	4	Use structure to identify ways to rewrite polynomial and rational expressions. Focus on polynomial operations and factoring patterns.
MA.9-12.A2.F-BF.A.1	1	Write a function that describes a relationship between two quantities. Functions include linear, quadratic, exponential, polynomial, logarithmic, rational, sine, cosine, tangent, square root, cube root and piecewise-defined functions. Include problem-solving opportunities utilizing real-world context.
MA.9-12.A2.F-BF.A.1.b	1	Combine function types using arithmetic operations and function composition.
MA.9-12.A2.F-BF.B.3	1	Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k f(x)$, and $f(x - k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them. Functions include linear, quadratic, exponential, polynomial, logarithmic, rational, sine, cosine, tangent, square root, cube root and piecewise-defined functions.
MA.9-12.A2.F-IF.B.4	9	For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Include problem-solving opportunities utilizing a real-world context. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity. Functions include linear, quadratic, exponential, polynomial, logarithmic, rational, sine, cosine, tangent, square root, cube root and piecewise-defined functions.
MA.9-12.A2.F-IF.B.6	1	Calculate and interpret the average rate of change of a continuous function (presented symbolically or as a table) on a closed interval. Estimate the rate of change from a graph. Include problem-solving opportunities utilizing real-world context. Functions include linear, quadratic, exponential, polynomial, logarithmic, rational, sine, cosine, tangent, square root, cube root and piecewise-defined functions.
MA.9-12.A2.F-IF.C.7	1	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. Functions include linear, quadratic, exponential, polynomial, logarithmic, rational, sine, cosine, tangent, square root, cube root and piecewise-defined functions.
MA.9-12.A2.F-IF.C.8	1	Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.
MA.9-12.A2.F-IF.C.9	1	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions.). Functions include linear, quadratic, exponential, polynomial, logarithmic, rational, sine, cosine, tangent, square root, cube root and piecewise-defined functions.
MA.9-12.A2.N-CN.A.1	2	Apply the relation $i^2 = -1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers. Write complex numbers in the form $a + bi$ with a and b real.
MA.9-12.A2.N-CN.C.7	1	Solve quadratic equations with real coefficients that have complex solutions.

*Some items may be tagged to more than one standard.

Depth of Knowledge	
DOK	Number of Items
Level 1: Recall	18
Level 2: Skill/Concept	14
Level 3: Strategic Thinking	0

Item Types Included		
Type	Number of Items	Description
MC	32	Multiple Choice - Select one answer