

**Course Title: Algebra 2/Algebra 2 Honors**

**Course Number: 1200330/1200340**

Florida Standard	Content Focus	Number of Questions
<i>Reporting Category 1: Algebra and Modeling</i>		
MAFS.912.A-APR.1.1	Understand that polynomials form a system analogous to the integers; namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.	1
MAFS.912.A-APR.2.2	Know and apply the Remainder 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 $p(x)$ .	1
MAFS.912.A-APR.4.6	Rewrite simple 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.	1
MAFS.912.A-CED.1.1	Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions and simple rational, absolute, and exponential functions.	1
MAFS.912.A-REI.1.2	Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.	2
MAFS.912.A-REI.2.4	Solve quadratic equations in one variable. a. Use the method of completing the square to transform any quadratic equation in $x$ into an equation of the form $(x - p)^2 = q$ that has the same solutions. Derive the quadratic formula from this form. b. 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.	2
MAFS.912.A-REI.3.7	Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. For example, find the points of intersection between the line $y = -3x$ and the circle $x^2 + y^2 = 3$ .	1

MAFS.912.A-SSE.1.2	Use the structure of an expression to identify ways to rewrite it. For example, see $x^4 - y^4$ as $(x^2)^2 - (y^2)^2$ , thus recognizing it as a difference of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$ .	1
MAFS.912.A-SSE.2.3	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. a. Factor a quadratic expression to reveal the zeros of the function it defines.	1
MAFS.912.N-CN.3.7	Solve quadratic equations with real coefficients that have complex solutions.	1
<i>Reporting Category Total</i>		12
<b><i>Reporting Category 2: Functions and Modeling</i></b>		
MAFS.912.F-BF.1.2	Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.	1
MAFS.912.F-BF.2.3	Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$ , $kf(x)$ , $f(kx)$ , 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.	1
MAFS.912.F-BF.2.4	Find inverse functions. a. Solve an equation of the form $f(x) = c$ for a simple function, $f$ , that has an inverse and write an expression for the inverse. For example, $f(x) = 2 \times 3$ or $f(x) = (x + 1)/(x - 1)$ for $x \neq 1$ . b. Verify by composition that one function is the inverse of another. c. Read values of an inverse function from a graph or a table, given that the function has an inverse. d. Produce an invertible function from a non-invertible function by restricting the domain.	1
MAFS.912.F-BF.2.a	Use the change of base formula.	1
MAFS.912.F-IF.2.4	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. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.	1

MAFS.912.F-IF.3.7	Graph functions expressed symbolically and show key features of the graph by hand in simple cases and using technology for more complicated cases. a. Graph linear and quadratic functions and show intercepts, maxima, and minima. b. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions. c. Graph polynomial functions, identifying zeros when suitable factorizations are available and show ing end behavior. d. Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available and showing end behavior.	2
MAFS.912.F-IF.3.8	Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. a. Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context. b. Use the properties of exponents to interpret expressions for exponential functions.	1
MAFS.912.F-LE.2.5	Interpret the parameters in a linear or an exponential function in terms of a context.	1
MAFS.912.F-TF.1.1	Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle; convert between degrees and radians.	2
MAFS.912.A-APR.2.3	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.	1
<i>Reporting Category Total</i>		12
<b><i>Reporting Category 3: Statistics, Probability, and the Number System</i></b>		
MAFS.912.C-CN.1.1	Know there is a complex number, $i$ , such that $i^2 = -1$ , and every complex number has the form $a + bi$ with $a$ and $b$ real.	1
MAFS.912.C-CN.1.2	Use the relation $i^2 = -1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.	2
MAFS.912.N-RN.1.2	Rewrite expressions involving radicals and rational exponents using the properties of exponents.	1

MAFS.912.S-CP.1.2	Understand that two events $A$ and $B$ are independent if the probability of $A$ and $B$ occurring together is the product of their probabilities, and use this characterization to determine if they are independent.	1
MAFS.912.S-CP.1.4	Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities. For example, collect data from a random sample of students in your school on their favorite subject among math, science, and English. Estimate the probability that a randomly selected student from your school will favor science given that the student is in tenth grade. Do the same for other subjects and compare the results.	1
MAFS.912.S-CP.2.7	Apply the Addition Rule, $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$ , and interpret the answer in terms of the model.	1
MAFS.912.S-IC.2.4	Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling.	1
<i>Reporting Category Total</i>		8