AMSCO
a division of Perfection Learning

AMSCO Algebra 2 alignment to Indiana Algebra II Skills

Algebra Strand	No.	Skill	AMSCO A2
REAL NUMBERS AND EXPRESSIONS	AII.CNE.1	Know there is an imaginary number, i, such that i^2 = -1, and every complex number can be written in the form a + bi, with a and b real. Use the relation i^2 = –1 and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.	2.5
	AII.CNE.2	Translate expressions between radical and exponent form and simplify them using the laws of exponents.	5.3
	AII.CNE.3	Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide algebraic rational expressions.	4.1
	AII.CNE.4	Rewrite algebraic rational expressions in equivalent forms (e.g., using laws of exponents and factoring techniques).	4.1, 4.2
	AII.CNE.5	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 long division and synthetic division.	4.1, 4.2
	AII.CNE.6	Find partial sums of arithmetic and geometric series and represent them using sigma notation.	8.2, 8.4
FUNCTIONS	AII.F.1	Determine whether a relation represented by a table, graph, or equation is a function.	R.3
	AII.F.2	Understand composition of functions and combine functions by composition.	6.4
	AII.F.3	Understand that an inverse function can be obtained by expressing the dependent variable of one function as the independent variable of another, as f and g are inverse functions if and only if f(x)=y and g(y)=x, for all values of x in the domain of f and all values of y in the domain of g. Find the inverse of a function that has an inverse.	6.4
	AII.F.4	Understand that if the graph of a function contains a point (a, b), then the graph of the inverse relation of the function contains the point (b, a); the inverse is a reflection over the line y = x.	6.4
	AII.F.5	Describe the effect on the graph of f(x) by replacing f(x) with f(x) + k, k f(x), f(kx), and f(x + k) for specific values of k (both positive and negative) with and without technology. Find the value of k given the graph of f(x) and the graph of f(x) + k, k f(x), f(kx), or f(x + k).	4.4, 6.1, 7.2, 9.5
SYSTEMS OF EQUATIONS	AII.SE.1	Solve a system of equations consisting of a linear equation and a quadratic equation in two variables algebraically and graphically with and without technology (e.g., find the points of intersection between the line y = –3x and the circle x^2 + y^2 = 3).	3.9
	AII.SE.2	Solve systems of two or three linear equations in two or three variables algebraically and using technology.	1.4
	AII.SE.3	Represent real-world problems using a system of linear equations in three variables and solve such problems with and without technology. Interpret the solution and determine whether it is reasonable.	1.2, 1.3

EQUATIONS AND FUNCTIONS	AII.Q.1	Represent real-world problems that can be modeled with quadratic functions using tables, graphs, and equations; translate fluently among these representations. Solve such problems with and without technology. Interpret the solutions and determine whether they are reasonable.	2.7, 2.8
	AII.Q.2	Use completing the square to rewrite quadratic functions into the form y = a(x + h)^2 + k, and graph these functions with and without technology. Identify intercepts, zeros, domain and range, and lines of symmetry. Understand the relationship between completing the square and the quadratic formula.	2.4, 2.6
	AII.Q.3	Use the discriminant to determine the number and type of solutions of a quadratic equation in one variable with real coefficients; find all solutions and write complex solutions in the form of a ± bi for real numbers a and b.	2.6
EXPONENTIAL AND LOGARITHMIC EQUATIONS AND FUNCTIONS	AII.EL.1	Write arithmetic and geometric sequences both recursively and with an explicit formula; use them to model situations and translate between the two forms.	8.1, 8.2, 8.3, 8.4
	AII.EL.2	Graph exponential functions with and without technology. Identify and describe features, such as intercepts, zeros, domain and range, and asymptotic and end behavior.	6.1
	AII.EL.3	Identify the percent rate of change in exponential functions written as equations, such as y = (1.02)^t, y = (0.97)^t, y = (1.01)12^t, y = (1.2)^t/10, and classify them as representing exponential growth or decay.	6.1
	AII.EL.4	Use the properties of exponents to transform expressions for exponential functions (e.g., the expression 1.15^t can be rewritten as (1.15^1/12)^12t ≈ 1.012^12t to reveal the approximate equivalent monthly interest rate if the annual rate is 15%).	6.2
	AII.EL.5	Know that the inverse of an exponential function is a logarithmic function. Represent exponential and logarithmic functions using graphing technology and describe their inverse relationship.	7.1, 7.2
	AII.EL.6	Use the laws of exponents to derive the laws of logarithms. Use the laws of logarithms and the inverse relationship between exponential functions and logarithms to evaluate expressions and solve equations in one variable.	7.4
	AII.EL.7	Represent real-world problems using exponential equations in one or two variables and solve such problems with and without technology. Interpret the solutions and determine whether they are reasonable.	6.2, 7.5

POLYNOMIAL, RATIONAL, AND OTHER EQUATIONS AND FUNCTIONS	AII.PR.1	Solve real-world and other mathematical problems involving polynomial equations with and without technology. Interpret the solutions and determine whether the solutions are reasonable.	3.8
	AII.PR.2	Graph relations and functions including polynomial, square root, and piecewise-defined functions (including step functions and absolute value functions) with and without technology. Identify and describe features, such as intercepts, zeros, domain and range, end behavior, and lines of symmetry.	1.1, 1.2, 2.4, 2.6, 2.7, 3.5, 3.6, 4.4, 5.5
	AII.PR.3	Solve real-world and other mathematical problems involving rational and radical functions, including direct, inverse, and joint variation. Give examples showing how extraneous solutions may arise.	4.3, 4.4, 5.4, 5.5, 6.4
DATA ANALYSIS, STATISTICS, AND PROBABILITY	AII.DSP.1	Make inferences and justify conclusions from sample surveys, experiments, and observational studies. Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.	10.6, 10.7
	AII.DSP.2	Use technology to find a linear, quadratic, or exponential function that models a relationship for a bivariate data set to make predictions; compute (using technology) and interpret the correlation coefficient.	1.2, 2.7, 6.2, 7.5
	AII.DSP.3	Organize, graph (e.g., line plots and box plots), and compare univariate data of two or more different data sets using measures of center (mean and median) and spread (range, inter-quartile range, standard deviation, percentiles, and variance). Understand the effects of outliers on the statistical summary of the data.	Algebra 1 Lesson 10.2 and 10.3
	AII.DSP.4	Record multiple observations (or simulated samples) of random events and construct empirical models of the probability distributions. Construct a theoretical model and apply the law of large numbers to show the relationship between the two models.	10.1
	AII.DSP.5	Understand dependent and independent events, and conditional probability; apply these concepts to calculate probabilities.	10.2
	AII.DSP.6	Understand the multiplication counting principle, permutations, and combinations; apply these concepts to calculate probabilities.	Geometry Lesson 12.2