

Algebra II Pacing Guide

First Nine Weeks

SOL	Topic	Blocks	
1.4	Place the following sets of numbers in a hierarchy of subsets: complex, pure imaginary, real, rational, irrational, integers, whole and natural.	1	
17.1	Recognize that the square root of -1 is represented by i .		
17.2	Define and identify a complex number.		
17.4	Simplify powers of i .		
1.1	Identify examples of field properties: commutative, associative, identity, inverse, and distributive.	1	
1.2	Identify examples of axioms of equality: reflexive, symmetric, transitive, substitution, addition, and multiplication.		
1.3	Identify examples of axioms of inequality and order trichotomy, transitive, addition and multiplication.		
9.1	Identify the domain and range of a function presented algebraically and graphically.	1	
9.2	Distinguish between relations and functions that are expressed algebraically and graphically.		
9.7	Find the value of a function for a given element from the domain.		
	Algebra of Functions: +, -, *, /, Composition.	1	
9.3	Recognize restricted/ discontinuous domains and ranges.		
9.6	Find the composition of two functions.		
9.1	Identify the inverse of a function presented algebraically or graphically.	1	
9.4	Use interchange of variables to find the inverse of a function.		
9.1	Identify the zeros of a function presented algebraically.		
10.1	Identify the x-intercept of a linear graph.		
10.2	Identify the zero of a linear $f(x)$ given its graph.		
Review	Solve multistep equations in one variable.	1	
4.1	Solve absolute value equations in one variable algebraically & graphically.		
4.3	Express solutions to absolute value equations in one variable graphically.		
Review	Solve compound inequalities.	1	
4.2	Solve absolute value inequalities in one variable algebraically and graphically.		
4.3	Express solutions to absolute value inequalities in one variable graphically and as an algebraic inequality.		
19.1	Collect and analyze data.	1	
19.2	Investigate scatterplots.		
19.3	Find an equation for the curve of best fit for data using a graphing calculator. Models will include linear, quadratic, exponential and logarithmic functions.		
19.4	Make predictions using data, scatterplots or curve of best fit.		

Review	Matrix vocabulary: Dimension, Scalar		
11.1	Recognize matrices that can be multiplied.	1	
1.5	Add and multiply matrices and determine which field properties hold true.		
11.2	Perform matrix multiplication w/ calculator or computer program.	1	
11.3	Use matrix multiplication to solve practical problems.		
Review	Solving systems of linear equations by graphing, substitution, and elimination.	1	
Review	Solve systems of linear equations in 3 variables by elimination.		
12.4	Find the inverse of a matrix with graphing calculator.		
	Find the identity matrix for any square matrix.		
12.2	Represent a system of no more than 3 linear equations in matrix form.	1	
12.5	Express a system of linear equations as a matrix equation.		
12.3	Solve a matrix equation using a graphing calculator or computer program with matrix capability.		
	Determinants, Cramer's Rule		
12.1	Model problems with a system of no more than three linear equations.	1	
4.5	Verify solutions to absolute value equations and inequalities in 2 variables using a calculator.		
4.4	Graph absolute value equations and inequalities in 2 variables.	1	
13.2	Solve systems of linear inequalities.		
13.3	Identify the feasibility region of a system of linear inequalities with no more than 5 constraints.		
13.4	Identify the coordinates of the corner points of a feasibility region.	1	
13.5	Find the maximum or minimum value for the function defined over the feasibility region.		
13.6	Describe the meaning of the maximum or minimum value.		
13.1	Model practical problems with systems of linear inequalities.	2	

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Second Nine Weeks

SOL	Topic	Blocks	
3.2	Convert from radical notation to exponential notation and vice versa	1	
Review	Properties of exponents.		
17.3	Apply the definition of i to simplify square roots of negative numbers.		
Review	Simplifying radicals	1	
3.1	Simplify radical expressions containing positive rational numbers and variables.		
3.4	Multiply and divide radical expressions not requiring rationalizing the denominator.		
	Multiply and divide radical expressions requiring rationalizing the denominator.	1	
Review	Operations with polynomials		
17.5	Add, subtract, multiply complex numbers.		
3.3	Add and subtract radical expressions with like radicands.	1	
	Add and subtract radical expressions with radicands requiring simplification.		
5.1	Determine the greatest monomial factor as a first step in complete factorization.	4	
5.2	Recognize squares and cubes of positive integers.		
5.4	Factor polynomials by applying general patterns.		
5.3	Recognize examples of general patterns: difference of squares, sum & difference of cubes, perfect square trinomials.		
6.1	Recognize a quadratic equation	2	
6.2a	Select an appropriate strategy for solving a quadratic equation: factoring.		
6.2b	Select an appropriate strategy for solving a quadratic equation: Completing the square and graphing.	2	
6.3	Solve a quadratic equation over the set of complex numbers.		
	Discuss the discriminant and the nature of the roots.		
6.4	Identify from a graph the real solutions to a quadratic equation.	1	
6.5	Find the real roots of a quadratic equation using a graphing calculator.		
10.1	Identify the x-intercepts of a quadratic graph.	1	
10.2	Identify the zeros of a quadratic function, given a graph.		
10.3	Determine the linear factors of a quadratic expression when the zeros of the corresponding quadratic function are displayed on a graph.		

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Third Nine Weeks

SOL	Topic	Block	
	Polynomial long division	1	
	Synthetic division	1	
15.1	Investigate the shape and behavior of linear, quadratic and cubic functions. Behaviors will include intercepts, number of turning points and end behavior.	1	
	Descartes Rule of signs, Depressing the equation, rational root theorem.	2	
10.1	Identify the x-intercepts of a graph.	1	
10.2	Identify the zeros of a function, given a graph.		
10.3	Determine the linear factors of a polynomial expression when the zeros of the corresponding polynomial function are displayed on a graph.		
15.3	Using the general shape of a function, identify the odd or even family of graphs to which a particular graph belongs. Characteristics of a graph may include the intercepts, number and location of turning points and end behavior.	1	
8.1	Recognize the graphs of parent functions for linear, quadratic, absolute value, step and exponential functions.		
8.4	Given an equation, graph a linear, quadratic, absolute value, step or exponential function with the aid of a calculator.		
8.2	Given an equation of a function, identify the function as linear, quadratic, absolute value, step or exponential.	1	
8.3	Write the equation of a linear, quadratic, absolute value, step or exponential function, given the graph of a parent function or an integral translation.		
15.2	Investigate the shape and behavior of exponential and logarithmic functions, including intercepts and end behavior.	1	
9.8	Investigate exponential and logarithmic functions, using the graphing calculators.		
9.5	Given the graph, recognize that exponential and logarithmic functions are inverses of each other.		
19.1	Collect and analyze data.	1	
19.2	Investigate scatterplots (nonlinear) to determine if patterns exist and then identify patterns.		
19.3	Find an equation for the curve of best fit for data, using a graphing calculator. Models will include quadratic, exponential and logarithmic functions.		
19.4	Make predictions using data, scatterplots or curve of best fit.		
19.5	Given a set of data, determine the model that would best describe the data.		

20.1	Translate "y is directly proportional to x" as $y=kx$.	1	
20.2	Translate "y is inversely proportional to x" as $y=k/x$.		
20.3	Translate "y varies x" as $y=kxz$.		
20.4	Determine the value of the constant of proportionality, k, given initial conditions for x & y.		
20.5	Set up and solve practical problems, using combinations of direct and inverse variation.		
16.2	Recognize patterns in a sequence.	1	
16.4	Use and interpret the notations: n, nth term, Σ and a_{-n} .		
16.3	Distinguish between arithmetic and geometric sequences.		
16.5	Write the first n-terms in an arithmetic or geometric sequence.	1	
16.6	Given the formula, find a_{-n} for an arithmetic or geometric sequence.		
16.1	Distinguish between a sequence and a series.		
16.7	Given the formulas, find the sum, S_{-n} of the first n terms of an arithmetic or geometric series include infinite series.	1	
16.4	Use and interpret the sigma notation.		

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Fourth Nine Weeks

SOL	Topic	Block	
7.2	Solve equations containing a radical expressions algebraically and graphically. The equation will contain a linear expression under the radical and all terms outside the radical will be constants.	1	
7.3	Identify from a graph the solutions to an equation containing radical expressions.	1	
7.4	Solve an equation containing radical expressions using a graphic calculator.		
7.5	Check possible solutions to an equation containing radical expressions using graphing calculator.		
2.2	Simplify a rational expression with common monomial or binomial factors.	1	
2.1	Add, subtract, multiply and divide rational expressions whose denominators are monomials or polynomial expressions in completely factored form.	2	
2.3	Recognize a complex fraction and simplify it as a quotient or product of simple fractions.		
7.3	Identify, from a graph, the solutions to an equation containing rational expressions.	1	
7.5	Check possible solutions to an equation containing rational expressions using graphing calculator.		
7.1	Solve equations containing rational expressions with monomial denominators algebraically and graphically.		
7.4	Solve an equation containing rational expressions using a graphing calculator.	1	
14.1	Identify nonlinear systems of equations as linear-quadratic or quadratic-quadratic.	1	
14.2	Visualize a nonlinear system of two equations, and predict the number of solutions, using the graphing calculator.		
14.3	Solve a linear-quadratic system of equations algebraically and graphically.		
14.4	Solve a quadratic-quadratic system of two equations algebraically and graphically.	1	
18.2	Identify types of conic sections from a graph.	1	
18.1	Identify types of conic sections, given (h,k) form of an equation.		
18.3	Sketch the graph of a conic section in (h,k) form, using knowledge of transformations.		
	Given the graph of a conic section, write the equation.	1	