

Winchester Public Schools

Algebra I Pacing Guide

First Quarter

SOL	Topic	Blocks	
2.1	Translate verbal expressions into algebraic expressions with three or fewer terms.	1	
2.2	Relate a polynomial expression with three or fewer terms to a verbal expression.		
10.1	Identify the base, exponent, and coefficient in a monomial expression.		
1.1	Translate verbal sentences to algebraic equations and inequalities in one variable.	1	
2.4	Apply appropriate computational techniques to evaluate an algebraic expression.		
4.1	Represent data from practical problems in matrix form.	1	
4.2	Calculate the sum or difference of two given matrices that are no larger than 4 x 4.		
4.3	Calculate the product of a scalar and a matrix that is no larger than 4 X 4.		
4.4	Solve practical problems involving matrix addition, subtraction, and scalar multiplication, using matrices that are no longer than 4 x 4.	1	
4.5	Read and interpret the data in a matrix representing the solution to a practical problem.		
2.3	Evaluate algebraic expressions for a given replacement set to include integers and rational numbers.	1	
3.1	Simplify expressions and solve equations and inequalities using the commutative, associative, and distributive properties.	1	
3.2	Simplify expressions and solve equations and inequalities using the order of operations.	1	
3.4	Solve equations, using the reflexive, symmetric, transitive, and substitution properties of equality.	1	
3.3	Solve equations, using the addition, multiplication, closure, identity and inverse properties.	1	
3.5b	Create and interpret pictorial representations for simplifying expressions and solving equations and inequalities.	3	
1.4	Solve multistep equations and inequalities in one variable with rational coefficients and constants.		
1.2	Solve multistep linear equations and noncompound inequalities in one variable with the variable in both sides of the equation or inequality.	3	
1.3	Solve multistep linear equations and noncompound inequalities in one variable with grouping symbols in one or both sides of the equation or inequality.		
1.5	Solve a literal equation (formula) for a specified variable.	1	
1.6	Apply skills for solving linear equations to practical situation.	2	
1.7	Confirm algebraic solutions to linear equations and inequalities, using a graphing calculator.	1	

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Second Quarter

SOL	Topic	Blocks	
Review	Coordinate plane		
5.1	Analyze a table of ordered pairs for the existence of a pattern that defines the change relating input and output values.	1	
5.4	Identify the domain and range for a relation, given a set of ordered pairs, a graph, a table or a mapping design.	1	
5.3	Determine from a set of ordered pairs, a table, a mapping design or a graph whether a relation is a function.	1	
15. 1	For each x in the domain of f , find $f(x)$.		
7.5	Recognize and describe a line with a slope that is positive, negative, zero, or undefined.		
7.3	Calculate the slope of line, given the coordinates of two points on a line.	2	
7.2	Find the slope of the line, given the equation of a linear function.		
7.6	Describe slope as a constant rate of change between two variables.		
6.2	Use the line $x = y$ as a reference, and apply transformations defined by changes in the slope or y-intercept.	1	
7.7	Compare the slopes of graphs of linear functions, using the graphing calculator.		
1.5	Solve a literal equation (formula) for a specified variable.		
7.1	Recognize that m represents the slope in the equation of the form $y = mx + b$.	1	
7.4	Find the slope of a line, given the graph of a line.		
Review	Graph equations by t-charts including non-linear equations.	1	
6.4	Explain why a technique is appropriate for graphing a linear function.		
	Graph linear equations using slope and y-intercept.	2	
	Graph a linear function using the x and y-intercept.		
6.3a	Express linear functions in slope-intercept form, and use the graphing calculator to display the relationship.	1	
8.1	Recognize that equations of the form $y = mx + b$ and $Ax + By = C$ are equations of lines.		
8.2	Write an equation of a line when given the graph of a line.	1	

8.4	Write an equation of a line when given the slope and a point on the line whose coordinates are integers.	1	
8.3	Write equations of a line when given two points on the line whose coordinates are integers.	1	
	Write equations of parallel and perpendicular lines to a line		
8.5	Write an equation of a vertical line as $x = c$.	1	
8.6	Write an equation of a horizontal line as $y = c$.		
15.2	Identify the zeros of the function algebraically and confirm them, using the graphing calculator.	1	
6.1a	Graph linear equations in two variables that arise from a variety of practical situations.	2	
6.4	Explain why a given technique is appropriate for graphing a linear function.	1/2	
18.1	Given a table of values, determine whether a direct variation exists.		
18.2	Write an equation for a direct variation, given a set of data.	1	
18.3	Graph a direct variation from a table of values or a practical situation.		
5.2	Write a linear equation to represent a pattern in which there is a constant rate of change between variables.		
16.1	Write an equation for the line of a best fit, given a set of six to ten data points in a table, on a graph, or from a practical situation.	2	
16.2	Make a prediction about unknown outcomes, using the equation of a line of best fit.		

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Third Quarter

SOL	Topic	Blocks	
9.2	Given a system of two linear equations in two variables that has a unique solution, solve the system graphically to find the point of intersection.	1/2	
9.1	Given a system of two linear equations in two variables that has a unique solution, solve the system by substitution or elimination to find the ordered pair which satisfies both equations.	2 1/2	
9.3	Determine whether a system of two linear equations has one solution, no solution, or infinite solutions.	1/2	
9.4	Write a system of two linear equations that describes a practical situation.	1	
9.5	Interpret and determine the reasonableness of the algebraic or graphical solution of a system of two linear equations that describes a practical situation.	1/2	
4.4b	Solve practical problems using matrices.		
6.3b	Express linear inequalities in slope-intercept form, and use the graphing calculator to display the relationship.	1 1/2	
6.1b	Graph linear inequalities in two variables that arise from a variety of practical situations.		
3.5a	Create and interpret pictorial representations for simplifying expressions.		
11.2	Relate concrete and pictorial representations for polynomial operations to their corresponding algebraic manipulations.	1	
2.2	Relate a polynomial expression with three or fewer terms to a verbal expression.		
11.1a	Model sums and difference, of polynomials with concrete objects and their related pictorial representations.	1	
11.3	Find the sums and differences of polynomials.		
10.2	Simplify monomial expressions and ratios of monomial expressions in which the exponents are integers, using the laws of exponents.	2	
11.1b	Model products of polynomials with concrete objects and their related pictorial representations.		
11.4	Multiply polynomials by monomials and binomials by binomials symbolically.	2	
11.1c	Model quotients of polynomials with concrete objects and their related pictorial representations.	1	
11.5	Find the quotient of polynomials, using a monomial divisor.		

5.5	Use physical representations, such as algebra manipulatives, to represent quantitative data.	1/2	
10.3	Express numbers, using scientific notation, and perform operations, using the laws of exponents.	1	
12.1	Use the distributive property to "factor out" all common monomial factors.	1	
12.2	Factor second-degree polynomials and binomials with integral coefficients and a positive leading coefficient less than four.	4	
12.3	Identify polynomials that cannot be factored over the set of real numbers.		

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Fourth Quarter

SOL	Topic	Blocks	
12.4	Use the x-intercepts from the graphical representation of the polynomial to determine and confirm its factors.	1	
13.1	Estimate the square root of a non-perfect square to the nearest tenth by <ul style="list-style-type: none"> - identifying the two perfect squares it lies between; - finding the square root of those two perfect squares and - using those values to estimate the square root of the non-perfect square 	1	
13.2	Find the square root of a number, and make a reasonable interpretation of the displayed value for a given situation, using a calculator.		
13.3	Express the square root of a whole number less than 1,000 in simplest radical form.	1	
14.1	Solve quadratic equations algebraically by factoring, quadratic formula or by using the graphing calculator. When solutions are represented in radical form, the decimal approximation will also be given.	4	
14.3	Identify the x-intercepts of the quadratic function as the solutions to the quadratic equation that is formed by setting the given quadratic expression equal to zero.		
14.2	Verify algebraic solutions, using the graphing calculator.	1	
15.2	Identify the zeros of the function algebraically and confirm them, using the graphing calculator.		
17.1	Calculate the measures of central tendency and range of a set of data with no more than 20 data points.	2	
17.2	Compare measures of central tendency using numerical data from a table with no more than 20 data points.		
17.3	Compare and contrast two sets of data, each set having no more than 20 data points, using measures of central tendency and the range.		
17.4	Compare and analyze two sets of data, each set having no more than 20 data points, using box-and-whisker plots.	1	