Integrated Algebra Curriculum Map

Month	Content	NYSED Performance Indicators/Skills	Assessment
September	Number Systems	S.E. Identify subsets of the real numbers (counting/natural, whole, integers, rational, irrational). S.E. Compare and order numbers.	Common Assessment 1 (All units may also include homework assignments, quizzes, in-class questions, and review questions.)
	Operations and Properties	S.E. Evaluate a numerical expression using the correct order of operations. A.N.1 Identify and apply the properties of real numbers (commutative, associative, distributive, identity, inverse, closure). *Note: Students do not need to identify groups and fields, but students should be engaged in the ideas.* S.E. Add, subtract, multiply and divide signed numbers. A.N.6 Evaluate expressions involving factorials, absolute values, and exponents. A.A.29 Use set-builder notation and/or interval notation to illustrate the elements of a set, given the elements in roster form. A.A.30 Find the complement of a subset of a given set, within a given universe. A.A.31 Find the intersection of sets (no more than three sets) and/or union of sets (no more than three sets).	Common Assessment 2
	Algebraic Expressions	S.E. Use letters to represent numbers. A.A.1 Translate a quantitative verbal phrase into an algebraic expression. A.A.2 Write a verbal expression that matches a given mathematical expression. A.A.3 Distinguish the difference between an algebraic expression and an algebraic equation. S.E. Given a domain of real numbers, find the solution set of an open sentence.	Common Assessment 3

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Month	Content	NYSED Performance Indicators/Skills	Assessment
October	Equations and Inequalities	A.A.3 Distinguish the difference between an algebraic expression and an algebraic equation. A.A.4 Translate verbal sentences into mathematical equations or inequalities. A.A.5 Write algebraic equations or inequalities that represent a situation. A.A.6 Analyze and solve verbal problems whose solution requires solving a linear equation in one variable or linear inequality in one variable. A.A.21 Determine whether a given value is a solution to a given linear equation in one variable or linear inequality in one variable. A.A.22 Solve all types of linear equations in one variable. A.A.23 Solve literal equations for a given variable. A.A.24 Solve and graph linear inequalities in one variable.	Common Assessment 4
	Operations with Algebraic Expressions	A.A.13 Add, subtract, and multiply monomials and polynomials. A.A.12 Multiply and divide monomial expressions with a common base, using the properties of exponents. *Note: Use integral exponents only (including zero and negative exponents).* A.A.14 Divide a polynomial by a monomial or binomial, where the quotient has no remainder. A.N.4 Understand and use scientific notation to compute products and quotients of numbers.	Common Assessment 5
November/December	Ratio and Proportion	A.N.5 Solve algebraic problems arising from situations that involve fractions, decimals, percents (decrease/increase and discount), and proportionality/direct variation. A.A.26 Solve algebraic proportions in one variable that result in linear or quadratic equations. A.M.1 Calculate rates using appropriate units (e.g., rate of a space ship versus the rate of a snail). A.M.2 Solve problems involving conversions within	Common Assessment 6

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Month	Content	NYSED Performance Indicators/Skills	Assessment
		measurement systems, given the relationship between the units. A.M.3 Calculate the relative error in measuring square and cubic units, when there is an error in the linear measure.	
December	Geometric Figures, Areas, and Volumes	A.G.1 Find the area and/or perimeter of figures composed of polygons and circles or sectors of a circle. *Note: Figures may include triangles, rectangles, squares, parallelograms, rhombuses, trapezoids, circles, semi-circles, quarter-circles, and regular polygons (perimeter only)*. A.G.2 Use formulas to calculate volume and surface area of rectangular solids and cylinders.	Common Assessment 7
January	Trigonometry of the Right Triangle and the Pythagorean Theorem	A.A.42 Find the sine, cosine, and tangent ratios of an angle of a right triangle, given the lengths of the sides. A.A.43 Determine the measure of an angle of a right triangle, given the length of any two sides of the triangle. A.A.44 Find the measure of a side of a right triangle, given an acute angle and the length of another side. A.A.45 Determine the measure of a third side of a right triangle using the Pythagorean theorem, given the lengths of any two sides.	Common Assessment 8
January/February	Graphing Linear Functions and Relations	A.A.32 Explain slope as a rate of change between dependent and independent variables. A.A.33 Determine the slope of a line, given the coordinates of two points on the line. A.A.36 Write the equation of a line parallel to the x- or y-axis. A.A.37 Determine the slope of a line, given its equation in any form. A.A.38 Determine if two lines are parallel or perpendicular, given their equations in any form. A.A.39 Determine whether a given point is on a line, given the	Common Assessment 9

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Month	Content	NYSED Performance Indicators/Skills	Assessment
		equation of the line. A.G.3 Determine when a relation is a function, by examining ordered pairs and inspecting graphs of relations. A.G.4 Identify and graph linear functions. *Note: Exclude quadratic, absolute value, and exponential functions until Quadratic Relations and Functions*. A.G.5 Investigate and generalize how changing the coefficients of a function affects its graph. A.G.6 Graph linear inequalities. A.A.9 Analyze and solve verbal problems that involve exponential growth and decay.	
February/March	Writing and Solving Systems of Linear Functions	A.A.34 Write the equation of a line, given its slope and the coordinates of a point on the line. A.A.35 Write the equation of a line, given the coordinates of two points on the line. A.G.7 Graph and solve systems of linear equations and inequalities with rational coefficients in two variables. A.A.10 Solve systems of two linear equations in two variables algebraically (addition and substitution methods). A.A.7 Analyze and solve verbal problems whose solution requires solving systems of linear equations in two variables. A.A.40 Determine whether a given point is in the solution set of a system of linear inequalities.	Common Assessment 10
	Special Products and Factors	A.A.19 Identify and factor the difference of two perfect squares. A.A.20 Factor algebraic expressions completely, including trinomials with a lead coefficient of one (after factoring a GCF).	Common Assessment 11

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March	Operations with Radicals	A.N.2 Simplify radical terms (no variable in the radicand). A.N.3 Perform the four arithmetic operations using like and unlike radical terms and express the result in simplest form.	Common Assessment 12
March/April	Quadratic Relations and Functions	A.A.26 Solve algebraic proportions in one variable that result in linear or quadratic equations. A.A.27 Understand and apply the multiplication property of zero to solve quadratic equations with integral coefficients and integral roots. A.A.28 Understand the difference and connection between roots of a quadratic equation and factors of a quadratic expression. A.G.8 Find the roots of a parabolic function graphically. *Note: Only use quadratic equations with integral solutions.* A.A.41 Determine the vertex and axis of symmetry of a parabola, given its equation. A.G.10 Determine the vertex and axis of symmetry of a parabola, given its graph. *Note: The vertex will have an ordered pair of integers and the axis of symmetry will have an integral value.* A.A.8 Analyze and solve verbal problems that involve quadratic equations. A.G.4 Identify and graph quadratic, absolute value, and exponential functions. A.G.5 Investigate and generalize how changing the coefficients of a function affects its graph. A.G.9 Solve systems of linear and quadratic equations graphically. *Note: Only use systems of linear and quadratic equations that lead to solutions whose coordinates are integers.* A.A.11 Solve a system of one linear and one quadratic equation in two variables, where only factoring is required. *Note: The quadratic equation should represent a parabola and*	Common Assessment 13

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		the solution(s) should be integers.	

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April	Algebraic Fractions, and Equations and Inequalities Involving Fractions	A.A.15 Find values of a variable for which an algebraic fraction is undefined. A.A.16 Simplify fractions with polynomials in the numerator and denominator by factoring both and renaming them to lowest terms. A.A.17 Add or subtract fractional expressions with monomial or like binomial denominators. A.A.18 Multiply and divide algebraic fractions and express the product or quotient in simplest form. A.A.25 Solve equations (and inequalities) involving fractional expressions. *Note: Use only expressions that result in linear equations in one variable.* A.A.26 Solve algebraic proportions in one variable that result in linear or quadratic equations.	Common Assessment 14
May	Probability	A.N.7 Determine the number of possible events, using counting techniques or the Fundamental Principle of Counting. A.N.8 Determine the number of possible arrangements (permutations) of a list of items. A.S.18 Know the definition of conditional probability and use it to solve for probabilities in finite sample spaces. A.S.19 Determine the number of elements in a sample space and the number of favorable events. A.S.20 Calculate the probability of an event and its complement. A.S.21 Determine empirical probabilities based on specific sample data. A.S.22 Based on calculated probability of a set of events, determine: ▪ if some or all are equally likely to occur. ▪ if one is more likely to occur than another. ▪ whether or not an event is certain to happen or not to happen. A.S.23 Calculate the probability of: ▪ a series of independent events.	Common Assessment 15

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		▪ a series of dependent events. ▪ two mutually exclusive events. ▪ two events that are not mutually exclusive.	

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Month	Content	NYSED Performance Indicators/Skills	Assessment
May	Statistics	A.S.1 Categorize data as qualitative or quantitative. A.S.2 Determine whether the data to be analyzed is univariate or bivariate. A.S.3 Determine when collected data or display of data may be biased. A.S.4 Compare and contrast the appropriateness of different measures of central tendency for a given data set. A.S.5 Construct a histogram, cumulative frequency histogram, and a box-and-whisker plot, given a set of data. A.S.6 Understand how the five statistical summary (minimum, maximum, and the three quartiles) are used to construct a box-and-whisker plot. A.S.7 Create a scatter plot of bivariate data. A.S.12 Identify the relationship (positive, negative, or none) between the independent and dependent variables from a scatter plot. A.S.8 Construct manually a reasonable line of best fit for a scatter plot and determine the equation of that line. A.S.17 Use a reasonable line of best fit to make a prediction involving interpolation or extrapolation. A.S.9 Analyze and interpret a frequency distribution table or histogram, a cumulative frequency distribution table or histogram, or a box-and-whisker plot. A.S.10 Evaluate published reports and graphs that are based on data by considering: experimental design, appropriateness of the data analysis, and the soundness of the conclusions. A.S.15 Identify and describe sources of bias and its effect, drawing conclusions from data. A.S.11 Find the percentile rank of an item in a data set and identify the point values for first, second, and third quartiles.	Common Assessment 16

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Month	Content	NYSED Performance Indicators/Skills	Assessment
May (cont.)		A.S.13 Understand the difference between correlation and causation. A.S.14 Identify variables that might have a correlation but not a causal relationship. A.S.16 Recognize how linear transformations of one-variable data affect the data's mean, median, mode, and range.	
June		Review for Regents Exam.	Regents Exam