



GREAT NECK PUBLIC SCHOOLS

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Curriculum Profile Algebra 1

<u>Department</u>	Mathematics	
<u>Course Name</u>	Algebra 1	
<u>Course Length</u>	1 Year	
<u>High School Credits</u>	1	
<u>Description</u>	Algebra 1 is the first year in the NYS "Story of Functions" curriculum. The focus of this course is to deepen and extend understanding of linear, exponential and quadratic expressions, equations, and functions. A descriptive statistics unit is included and there is emphasis on modeling and use of equations to solve real world problems. Regents exam required.	
<u>Target/eligible students</u>	Completion of Math 8 or Pre-Algebra course.	
<u>State Learning Standards Link(s)</u>	New York State Next Generation Mathematics Learning Standards - Mathematical Practices 1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning. - Categories - Number and Quantity - Seeing Structure in Expressions - Arithmetic with Polynomial and Rational Expressions - Reasoning with Equations and Inequalities - Functions - Statistics and Probability	p. 7 p. 109 p. 110 p. 111 p. 113 p. 118 p. 113
<u>Primary texts and materials</u>	N-Gen Algebra I (Emathinstruction), Glencoe Algebra, https://www.engageny.org/resource/algebra-1	
<u>Scope/Sequence</u>	● Overview /Standards	Algebra I is the first mathematics course in high school and the focal point is functions; specifically linear, quadratic, and exponential functions. In Algebra I, students analyze and explain precisely the process of solving an equation. Students, through reasoning, develop fluency writing, interpreting, and translating between various forms of algebraic expressions.
<u>Unit 1: Graphing Stories</u>	AI-A	Students will relate graphs and their shape to real-world situations. They will explore average rate of change over specified intervals and relate to real-world contexts. They will use the rate of change to understand the behavior of a function and determine an appropriate domain.
<u>Unit 2: Number System and Expressions</u>	AI-A	Students will review the properties of mathematics. They will review operations with algebraic expressions, including factoring. Students will review translating English to algebra, and will also use structure to simplify expressions with exponents.
<u>Unit 3: Solving Equations in One Variable</u>	AI-A	Students will recognize that a solution to an equation or inequality is a value or values that make the equation or inequality true. They will solve multistep equations

		and multistep inequalities. Finally, they will model equations and inequalities in word problems.
<u>Unit 4: Inequalities and Absolute Value Equations</u>	AI-A	Students will explore how an inequality can be used to represent a given situation. They will compare the concepts of having an infinite number of solutions to an equation versus an inequality. They will use vocabulary to help determine the solution set. They will explore absolute value and why absolute value equations often have more than one solution.
<u>Unit 5: Linear Functions and Arithmetic Sequences</u>	AI-A	Students will recognize that all linear functions have a constant rate of change. They will calculate that rate of change in a variety of methods. Once they calculate the rate of change, they will be able to determine equations of linear functions. They will also relate linear functions to arithmetic sequences.
<u>Unit 6: Systems of Linear Equations</u>	AI-A	Students will solve systems of equations graphically, using substitution, and using elimination. They will recognize when to use each method appropriately. Finally, they will model real world situations using systems of equations.
<u>Unit 7: Polynomials</u>	AI-A AI-F	Students will add, subtract, multiply, divide, and factor polynomial expressions.
<u>Unit 8: Exponential Functions and Geometric Sequences</u>	AI-A AI-F	Students will recognize that exponential functions produce outputs that are the result of repeated multiplication, and do not have a constant rate of change. They will learn how to write equations of exponential functions using the y-intercept and base. They will compare exponential growth with linear growth. Students will make connections between geometric sequences and exponential functions.
<u>Unit 9: Transformations of Functions</u>	AI-F	Students will stretch and shift functions. They will learn how manipulation of parameters in functions affect the behaviors of functions.
<u>Unit 10: Quadratics</u>	AI-F AI-A	Students will graph quadratic functions, both with and without a calculator. They will learn a variety of ways to calculate the vertex, the y- intercept, and the zeros of a quadratic function.
<u>Unit 11: Statistics</u>	AI-S	Students will run a variety of univariate and bivariate statistical analyses to draw conclusions on sets of given data.
<u>Additional Notes</u>	*Sequencing of topics may vary.	