

Algebra I – Grade 9

Units		Common Core Standards	Vocabulary	Pacing
Unit 1 – Linear Equations and Inequalities	<p>Chapter 3, Section 1 Chapter 3, Section 2 Chapter 3, Section 3 Chapter 3, Section 4 Chapter 3, Section 5 Chapter 6, Section 1 Chapter 6, Section 2 Chapter 6, Section 3 Chapter 6, Section 4</p>	<p>A-CED.1. Create equations and inequalities in one variable and use them to solve problems.</p> <p>A-CED.3. Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context.</p> <p>A-REI.1. Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.</p> <p>A-REI.3. Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.</p>	<p>Equivalent Inverse operations Solution step Linear equations Properties of equality Ratio of a to b Similar triangles Identity Graph Equivalent inequalities Compound inequality</p>	20 days
		<p>Assessments: Multiple Quizzes Final Test</p>		

Algebra I – Grade 9

Units		Common Core Standards	Vocabulary	Pacing
Unit 2 – Equations of Lines	<p>Chapter 4, Section 4 Chapter 5, Section 1 Chapter 5, Section 2 Chapter 5, Section 3 Chapter 5, Section 5 Chapter 5, Section 6 Chapter 5, Section 7</p>	<p>A-CED.1. Create equations and inequalities in one variable and use them to solve problems.</p> <p>A-CED.2. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.</p> <p>A-CED.3. Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context.</p> <p>A-REI.3. Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.</p> <p>G-GPE.5. Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems.</p> <p>S-ID.7. Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.</p>	<p>Slope Rate of change Slope-intercept form Point-slope form Standard form</p>	<p>16 days</p>
		<p>Assessments: Multiple Quizzes Final Test</p>		

Algebra I – Grade 9

Units		Common Core Standards	Vocabulary	Pacing
Unit 3 – Introduction to Tables and Graphs	Chapter 1, Section 6 Chapter 2, Section 1 Chapter 4, Section 1 Chapter 4, Section 5 Chapter 5, Section 4 Chapter 11, Section 3 Chapter 6, Section 6 Chapter 6, Section 7	<p>A-CED.1. Create equations and inequalities in one variable and use them to solve problems.</p> <p>A-CED.2. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.</p> <p>A-CED.3. Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context.</p> <p>S-ID.1. Represent data with plots on the real number line (dot plots, histograms, and box plots).</p> <p>S-ID.6. Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.</p> <p>S-ID.7. Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.</p> <p>S-ID.9. Distinguish between correlation and causation.</p> <p>F-BF.4. Find inverse functions.</p>	Data Bar graph Line graph Real numbers Real number line Origin Integers Graph Plotting Opposites Absolute value Coordinate plane Ordered pair x-coordinate y-coordinate Graph Scatter plot Constant of variation Direct variation Inverse variation Stem-and-leaf plot Measure of central tendency Mean Median Mode Box-and-whisker plot Quartiles Best-fitting line Positive correlation Negative correlation Relatively no correlation	16 days
		<p>Assessments: Multiple Quizzes Final Test</p>		

Algebra I – Grade 9

Units		Common Core Standards	Vocabulary	Pacing
Unit 4 – Graphing Linear Equations and Inequalities	<p>Chapter 4, Section 2 Chapter 4, Section 3 Chapter 4, Section 4 Chapter 4, Section 6 Chapter 4, Section 7 Chapter 6, Section 5 Chapter 9, Section 7</p>	<p>A-CED.1. Create equations and inequalities in one variable and use them to solve problems.</p> <p>A-CED.2. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.</p> <p>A-CED.3. Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context.</p> <p>A-REI.4. Solve quadratic equations in one variable.</p> <p>A-REI.10. Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).</p> <p>A-REI.12. Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.</p> <p>F-IF.7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.</p> <p>G-GPE.5. Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).</p> <p>S-ID.7. Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.</p>	<p>Solution of an equation Graph of an equation x-intercept y-intercept Slope Rate of change Slope-intercept form Parallel Perpendicular Linear inequality Solution Half-planes Quadratic inequalities</p>	17 days
		<p>Assessments: Multiple Quizzes Final Test</p>		

Algebra I – Grade 9

Units		Common Core Standards	Vocabulary	Pacing
Unit 5 – Introduction to Functions	<p>Chapter 1, Section 7 Chapter 3, Section 7 Chapter 4, Section 8 Chapter 8, Section 5 Chapter 8, Section 6 Chapter 9, Section 3 Chapter 11, Section 8 Chapter 12, Section 1</p>	<p>A-SSE.3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.</p> <p>A-CED.1. Create equations and inequalities in one variable and use them to solve problems.</p> <p>A-CED.3. Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context.</p> <p>A-CED.4. Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.</p> <p>A-REL.10. Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve.</p> <p>F-IF.1. Understand that a function from one set to another set assigns to each element of the domain exactly one element of the range.</p> <p>F-IF.2. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.</p> <p>F-IF.4. For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.</p> <p>F-IF.5. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.</p> <p>F-IF.6. Calculate and interpret the average rate of change of a function over a specified interval. Estimate the rate of change from a graph.</p> <p>F-IF.7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.</p> <p>F-IF.8. Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.</p> <p>F-IF.9. Compare properties of two functions each represented in a different way.</p> <p>F-BF.3. Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs.</p> <p>F-LE.1. Distinguish between situations that can be modeled with linear functions and with exponential functions.</p> <p>F-LE.2. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs.</p> <p>F-LE.3. Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or as a polynomial function.</p> <p>F-LE.5. Interpret the parameters in a linear or exponential function in terms of a context.</p>	<p>Function Input Output Input-output table Domain Range Formula Relation Function notation Graph of a function Exponential growth Exponential decay Quadratic function Standard form Parabola Vertex Axis of symmetry Rational equation Rational function Hyperbola Center Asymptote Square root function</p>	18 days
		<p>Assessments: Multiple Quizzes Final Test</p>		

Algebra I – Grade 9

Units		Common Core Standards	Vocabulary	Pacing
Unit 6 – Systems of Equations	<p>Chapter 7, Section 1 Chapter 7, Section 2 Chapter 7, Section 3 Chapter 7, Section 4 Chapter 7, Section 5 Chapter 7, Section 6</p>	<p>A-CED.2. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.</p> <p>A-CED.3. Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context.</p> <p>A-REI.5. Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.</p> <p>A-REI.6. Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.</p> <p>A-REI.11. Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.</p> <p>A-REI.12. Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.</p>	<p>System of linear equations Linear system. Solution of a system of linear equations Linear combination System of linear inequalities Solution Graph</p>	19 days
	<p>Assessments: Multiple Quizzes Final Test</p>			

Algebra I – Grade 9

Algebra I – Grade 9			
Units	Common Core Standards	Vocabulary	Pacing
Unit 7 – Exponents and Polynomials	<p>Chapter 8, Section 1 Chapter 8, Section 2 Chapter 8, Section 3 Chapter 10, Section 1 Chapter 10, Section 2 Chapter 10, Section 3 Chapter 10, Section 4 Chapter 11, Section 7</p> <p>A-SSE.1. Interpret expressions that represent a quantity in terms of its context. A-SSE.2. Use the structure of an expression to identify ways to rewrite it. A-SSE.3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. A-APR.1. Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials. A-APR.3. Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial. A-APR.4. Prove polynomial identities and use them to describe numerical relationships. F-IF.8. Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.</p>	<p>Exponential function Polynomial Standard form Degree Degree of a polynomial Leading coefficient Monomial Binomial Trinomial FOIL Factored form Zero-product property Polynomial long division</p>	19 days
	<p>Assessments: Multiple Quizzes Final Test</p>		

Algebra I – Grade 9

Units		Common Core Standards	Vocabulary	Pacing
Unit 8 – Quadratic Equations	<p>Chapter 9, Section 1 Chapter 9, Section 4 Chapter 9, Section 5 Chapter 10, Section 5 Chapter 10, Section 6 Chapter 10, Section 7 Chapter 10, Section 8 Chapter 12, Section 4</p>	<p>N-CN.7. Solve quadratic equations with real coefficients that have complex solutions. N-CN.8. (+) Extend polynomial identities to the complex numbers. N-CN.9. (+) Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials. A-SSE.2. Use the structure of an expression to identify ways to rewrite it. A-SSE.3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. A-APR.4. Prove polynomial identities and use them to describe numerical relationships. A-CED.1. Create equations and inequalities in one variable and use them to solve problems. A-CED.2. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. A-REI.4. Solve quadratic equations in one variable. A-CED.1. Create equations and inequalities in one variable and use them to solve problems. A-CED.2. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. A-REI.4. Solve quadratic equations in one variable. F-IF.8. Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.</p> <p>Assessments: Multiple Quizzes Final Test</p>	<p>Square root Positive square root Negative square root Radicand Perfect squares Irrational number Radical expression Quadratic equation Standard form Leading coefficient Roots Quadratic formula Factor Prime Factor completely</p>	24 days

Algebra I – Grade 9

Algebra I – Grade 9				
	Units	Common Core Standards	Vocabulary	Pacing
Unit 9 – Radicals and Rational Numbers	Chapter 9, Section 2 Chapter 12, Section 2 Chapter 12, Section 3 Chapter 11, Section 4 Chapter 11, Section 5 Chapter 11, Section 6	<p>N-RN.1. Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents.</p> <p>N-RN.2. Rewrite expressions involving radicals and rational exponents using the properties of exponents.</p> <p>N-RN.3. Explain why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational.</p> <p>A-REI.2. Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.</p> <p>F-BF.4. Find inverse functions.</p>	Simplest form Conjugates Rational number Rational expression Simplified Geometric probability Least common denominator	14 days
		<p>Assessments: Multiple Quizzes Final Test</p>		

Algebra I – Grade 9

Units	Common Core Standards	Vocabulary	Pacing
	Assessments: Multiple Quizzes Final Test		

