Math: Algebra I

UNIT/Weeks (not consecutive)	Timeline/Topics	Essential Questions
1	**Solving Equations and Inequalities** • Operations on Real Numbers • Solving Linear Equations • Solving Equations with a Variable on Both Sides • Literal Equations and Formulas • Solving Inequalities in One Variable • Compound Inequalities • Absolute Value Equations and Inequalities	• What general strategies can you use to solve simple equations? • Can equations that appear to be different be equivalent? • How do you represent relationships between quantities that are not equal?
2	**Solving Linear Equations** • Slope-Intercept Form • Point-Slope Form • Standard Form • Parallel and Perpendicular Lines	• What does the slope of a line indicate about the line? • What information does the slope of a line give you? • What is it useful to have different forms of linear equations?
3	**Linear Functions** • Relations and Functions • Linear Functions • Transforming Linear Functions • Arithmetic Sequences • Scatter Plots and Lines of Fit	• How can linear functions be used to model situations and solve problems? • How can you make predictions based on a scatter plot?
4	**Systems of Linear Equations and Inequalities** • Solving Systems of Equations by Graphing • Solving Systems of Equations by Substitution • Solving Systems of Equations by Elimination • Linear Inequalities in Two Variables • Systems of Linear Inequalities	• How can you solve a system of equations or inequalities? • How can systems of equations model real-world situations? • How does solving a system of linear equations compare to solving a system of linear inequalities?

5	**Exponents and Exponential Functions** • Rational Exponents and Properties of Exponents • Exponential Functions • Exponential Growth and Decay • Transformations of Exponential Functions	• How do you use exponential functions to model situations and solve problems? • What are characteristics of an exponential function? • How can you simplify expressions involving exponents?
6	**Polynomials and Factoring** • Adding and Subtracting Polynomials • Multiplying Polynomials • Multiplying Special Cases • Factoring Polynomials • Factoring $x^2 + bx + c$ • Factoring $ax^2 + bx + c$ • Factoring Special Cases	• How do you work with polynomials to rewrite expressions and solve problems? • How are the properties of real numbers related to polynomials? • exponential functions?
7	**Polynomials and Factoring** • Key features of a quadratic function • Quadratic function in vertex form • Quadratic functions in standard form • Modeling with quadratic functions • Linear, Exponential, and Quadratic Models	• How can you use sketches and equations of quadratic functions to model situations and make predictions? • What are the characteristics of a quadratic function? • How can you use functions to model real-world situations? • to polynomials?
8	**Solving Quadratic Equations** • Solving Quadratic Equations Using Graphs and Tables • Solving Quadratic Equations by Factoring • Rewriting Radical Expression • Solving Quadratic Equations Using Square Roots • Completing the Square • The Quadratic Formula and the Discriminant • Solving Systems of Linear and Quadratic Equations	• How do you use quadratic equations to model situations and solve problems? • How can you solve a quadratic function? • How do you determine which method to use to solve a quadratic function?

9	**<u>Working with Functions</u>** • The Square Root Function • The Cube Root Function • Analyzing Functions Graphically • Translations of Functions • Compressions and Stretches of Functions • Operations with Functions • Inverse Functions	• What approach could you use to fund the inverse of a function? • How can you check that you graphed a transformation correctly? • What mathematical notation is important when writing an inverse function?
10	**<u>Statistics</u>** • Analyzing Data Displays • Comparing Data Sets • Interpreting the Shapes of Data Displays • Standard Deviation • Two-Way Frequency Tables	• How do you use statistics to model situations and solve problems? • How can you use measures of center and spread to compare data sets? • How does the shape of a data set help you understand the data? • How can you use two-way frequency tables to analyze data?