Math: Algebra I

UNIT/Weeks (not consecutive)	Timeline/Topics	Essential Questions
2	**Foundation for Algebra** • Variables and Expressions • Order of Operations and Evaluating Expressions • The Distributive Property • An Introduction to Equations • Using Tables to Solve Equations • Patterns, Equations and Graphs	• How can you represent quantities, patterns, and relationships? • How are properties related to Algebra?
4.6	**Solving Inequalities** • Inequalities and their Graphs • Solving Inequalities Using Addition or Subtraction • Solving Inequalities Using Multiplication or Division • Solving Multi-Step Inequalities • Working with Sets • Compound Inequalities • Absolute Value Equations and Inequalities • Unions and Intersections of Sets	• How do you represent relationships between quantities that are not equal? • How can you solve inequalities? • Can inequalities that appear to be different be equivalent?
3.4	**An Introduction to Functions** • Relating Quantities • Patterns and Linear Functions • Patterns and Nonlinear Functions • Graphing a Function Rule • Writing a Function Rule • Formalizing Relations and Functions • Sequences and Functions	• How can you represent and describe functions? • Can functions describe real-world situations?
4.2	**Linear Functions** • Rate of Change and Slope • Direct Variation • Slope-Intercept Form • Point-Slope Form • Standard Form • Parallel and Perpendicular Lines • Scatter Plots and Trend Lines • Graphing Absolute Value Functions	• What information does the slope of a line give you? • How can you make predictions based on a scatter plot?

1.4	**Systems of Equations & Inequalities** • Solving Systems by Graphing • Substitution Method • Linear Combination Method • Application of Linear Systems • Linear Inequalities • System of Linear Inequalities	• How can you solve a system of equations or inequalities? • Can systems of equations model real-world situations?
2.2	**Exponents and Exponential Functions** • Zero and Negative Exponents • Scientific Notation • Multiplying Powers with the Same Base • More Multiplication Properties of Exponents • Division Properties of Exponents • Exponential Functions • Exponential Growth and Decay	• How can you represent very large and very small numbers? • How can you simplify expressions involving exponents? • What are the characteristics of exponential functions?
3.4	**Polynomials and Factoring** • Multiplying and Factoring • Multiplying Binomials • Special Cases • Factoring $x^2 + bx + c$ • Factoring $ax^2 + bx + c$ • Factoring Special Cases • Factoring by Grouping	• How are different algebraic equations equivalent? • How are the properties of real numbers related to polynomials?
3.8	**Quadratic Functions and Equations** • Quadratic Graphs and their Properties • Quadratic Functions • Solving Quadratic Equations • Factoring to Solve Quadratic Equations • Completing the Square • The Quadratic Formula and the Discriminant • Linear, Quadratic, and Exponential Models • Systems of Linear and Quadratic Equations	• What are the characteristics of quadratic functions? • How can you solve a quadratic equation? • How can you use functions to model real-world situations?
1.6	**Radical Expressions and Functions** • Pythagorean Theorem	

	• Simplifying Radicals • Operations with Radical Expressions • Solving Radical Equations • Graphing Square Root Functions • Trigonometric Ratios	• How are radical expressions represented? • What are the characteristics of square root functions? • How can you solve a radical equation?
1.6	**Rational Expressions and Functions** • Simplifying Rational Expressions • Multiplying and Dividing Rational Expressions • Dividing Polynomials • Adding and Subtracting Rational Expressions • Solving Rational Equations • Inverse Variation • Graphing Rational Functions	• How are rational expressions represented? • What are the characteristics of rational functions? • How can you solve a rational equation?
1.6	**Data Analysis and Probability** • Organizing Data Using Matrices • Frequency and Histograms • Measures of Central Tendency • Box and Whisker Plots • Samples and Surveys • Permutations and Combinations • Theoretical and Experimental Probability • Probability of Compound Events	• How can collecting and analyzing data help make decisions or predictions? • How can you make and interpret different representations of data? • How is probability related to real world events?
2.6	**Tools of Geometry** • Nets and Drawings for Visualizing Geometry • Points, Lines and Planes • Segments • Angles • Angle pairs • Basic Constructions • Midpoint and Distance in the Coordinate Plane	• How can you represent a three-dimensional figure with a two-dimensional drawing? • What are the building blocks of geometry? • How can you describe the attributes of a segment or angle?
2.2	**Parallel and Perpendicular Lines** • Lines and Angles	• How do you prove that two lines are parallel or perpendicular?

	• Properties of Parallel Lines • Proving Lines Parallel • Parallel and Perpendicular Lines • Parallel Lines and Triangles • Constructing Parallel and Perpendicular Lines • Equations of Lines in the Coordinate Plane • Slopes of Parallel and Perpendicular Lines	• What is the sum of the measures of the angles of a triangle? • How do you write an equation of a line in the coordinate plane?