Reavis High School
Honors Algebra 1 Curriculum Snapshot

Unit 1: Variables, Functions, Patterns, and Graphs

| 8 Days | The students model relationships using variables, expressions, and equations. They apply the order of operations to simplify and evaluate expressions with grouping symbols. Exploring real numbers, they classify and order numbers, use counterexamples, and find absolute values. They write function rules and identify independent and dependent quantities, as well as a reasonable domain and range for a function. Finally, students make scatter plots and find the mean, median, mode, and range for data sets. |

Unit 2: Rational Numbers

| 8 Days | Students combine rational numbers by adding, subtracting, multiplying, and dividing, by using identity and inverse properties. They also use matrices to add real numbers. Then, they combine the operations of addition and multiplication by using the Distributive Property. Finally, the properties of the real numbers are summarized and students identify which property they use as they simplify expressions. These skills are applied as students find theoretical and experimental probability as well as the probability of compound events. |

Unit 3: Solving Equations

| 10 Days | Students solve equations and problems involving equations using deductive reasoning, the Distributive Property, and variables on both sides. They find ratios and rates and solve and apply proportions to problems such as finding missing measures in similar figures. They define variables in terms of other variables, and model distance-rate-time problems. They also find percent of change, find and use square roots, and solve problems using the Pythagorean Theorem. |

Unit 4: Solving Inequalities

10 Days	Students extend the skills of the previous unit related to solving various kinds of equations, to the solving of inequalities. Many of the procedures used are the same, reflecting the fact that the properties for inequalities are very similiar to those for equations. Students solve and graph inequalities, progressing from one-step to multi-step inequalities, first with the variable on one side only, and then with variables on both sides. They also solve compound inequalities as well as equations and inequalities containing absolute values.

Unit 5: Graphs and Functions

9 Days	This unit helps students build on their knowledge of equations by relating a graph to the story it tells and to the equation whose solutions it pictures. Students read and use functional notation as they model function rules with tables and graphs. They also identify direct and inverse variations and find constants of variation. The vocabulary of sequences is introduced. Students find the common difference for an arithmetic sequence and write rules for arithmetic sequences.

Unit 6: Linear Equations and their Graphs

11 Days	This unit introduces rates of change and defines slope of a line as the ratio of the vertical change to the horizontal change. This leads to graphing a linear equation and writing the equation of a line in three different forms using the slope, intercepts, or points on the line. From there, the characteristics of parallel and perpendicular lines are examined. All of these topics are applied together to find trend lines and lines of best fit. Finally, the skills for graphing linear equations are extended to drawing the graph of an absolute value equation.

Unit 7: Systems of Equations and Inequalities

11 Days	In this unit, students find the solution of a system of linear equations by graphing. They learn the three possibilities for the solution of a system of two equations: parallel lines, lines that coincide, and lines that intersect. This leads to algebraic methods for solving a system of equations, and then to solving problems by writing a system of linear equations. Graphing linear equations is compared to graphing linear inequalities and solving systems of linear inequalities by graphing.

Unit 8: Exponents and Exponential Functions

16 Days	This unit introduces using zero and negative exponents and evaluating exponential equations. Scientific notation illustrates a common use for exponents. Problems using scientific notation and other exponential expressions illustrate multiplying and dividing powers, raising a power to a power, and raising products and quotients to a power. This leads to work with geometric sequences. Then, students evaluate and graph exponential functions and apply this to modeling exponential growth and decay.

Unit 9: Polynomials and Factoring

12 Days	The unit helps students build knowledge and skills relative to polynomials--the basic building blocks of algebraic expressions. These skills include combining monomials, binomials, and polynomials using the operations of addition, subtraction, and multiplication. Factoring, the inverse process for multiplying polynomials, is used to factor trinomials including recognizing certain special patterns and factoring by grouping.

Unit 10: Quadratic Equations and Functions

14 Days

Students extend their skills in graphing and solving linear equations and inequalities to quadratic equations and inequalities. Students apply the skills of the previous unit as they factor to solve quadratic equations. To prepare for the derivation of the general quadratic formula, students practice completing the square and then use the quadratic formula to solve any quadratic equation. The discriminant is used to characterize the roots of a quadratic equation. Finally, students use many skills to choose a model that best fits a set of data.

Unit 11: Radical Expressions and Equations

20 Days

This unit focuses on the various algebraic and geometric applications that involve using, simplifying, and combining radical expressions. The unit begins with various properties that are used to simplify radical expressions. These are then applied to problems using the Pythagorean Theorem as well as the Distance and Midpoint Formulas and solving special triangles. Then, students solve radical equations and graph square root functions, including translating the graphs. Then, the solving of the right triangles is generalized into the definitions of three trigonometric functions and applying them to solve triangles, including problems with angles of elevation and depression.

Unit 12: Rational Expressions and Functions

18 Days

The unit examines various aspects of working with rational expressions, or the ratio of two integers. First, inverse variation is discussed, where xy equals a constant. Then graphing, simplifying, and combining rational expressions are examined and applied to solving problems. This leads to dividing polynomials and then to solving rational equations. Finally, counting methods and permutations and combinations are applied to various kinds of problems.