Algebra I (MA.A) (2 terms in High School or in 8th Grade all year)

Focus Statement: Algebra students will evaluate, solve, and graph algebraic expressions, equations, and inequalities as well as apply algebraic concepts to solve real world problems.

Outcomes:

MA.A:1 Students will apply properties and perform operations of real numbers. (6A, 6B, 6C, 8A, 8B, 8D, 9C)

- MA.A:1-1 Model relationships with variables, equations and formulas.
- MA.A:1-2 Simplify and evaluate expressions and formulas.
- MA.A:1-3 Solve open sentence equations and inequalities.
- MA.A:1-4 Perform operations on real numbers and use those operations in applications.
- MA.A:1-5 Use distributive property to evaluate and simplify algebraic expressions.
- MA.A:1-6 Identify the properties of real numbers and use them to simplify expressions.

MA.A:2 Students will classify, graph and perform operations with real numbers. (6A, 6B, 10A)

- MA.A:2-1 Graph rational numbers on a number line.
- MA.A:2-2 Perform operations with real numbers and find absolute values of integers.
- MA.A:2-3 Draw and interpret graphs of functions.
- MA.A:2-4 Interpret and create line plots and stem and leaf plots.
- MA.A:2-5 Analyze data using graphs and tables.
- MA.A:2-6 Analyze data using mean, mode and median.
- MA.A:2-7 Find square roots.
- MA.A:2-8 Classify and order real numbers.

MA.A:3 Students will solve equations and proportions. (6D, 8A, 8C, 8D)

- MA.A:3-1 Translate words to equations and equations to words.
- MA.A:3-2 Solve one-step and two-step equations.
- MA.A:3-3 Solve equations with variables on both sides.
- MA.A:3-4 Identify proportions and solve them.
- MA.A:3-5 Find percent of change and apply to real life situations.
- MA.A:3-6 Transform literal equations and apply to real life situations.

MA.A:4 Students will write and graph linear equations and functions. (8A, 8B, 8D)

- MA.A:4-1 Locate and graph points on the coordinate plane.
- MA.A:4-2 Transform figures using reflections, translations, dilations and rotations.
- MA.A:4-3 Represent relations in different forms and find the inverse of a relation.

MA.A:4-4 Find the domain and range of an equation and a graph.
MA.A:4-5 Identify linear equations and graph them.
MA.A:4-6 Identify functions and find their values.

MA.A:5 Students will write linear equations, recognize their different forms, write the equations in different forms, and write equations to describe real world data. (8A, 8B, 10A)

MA.A:5-1 Find slope and relate it to the rate of change to solve problems.
MA.A:5-2 Write, graph and solve problems using direct variation.
MA.A:5-3 Write and graph linear equations in slope-intercept form, standard form and point-slope form.
MA.A:5-4 Write equations of parallel and perpendicular lines.
MA.A:5-5 Interpret points on a scatter plot and write the equation of a best-fitted line.

MA.A:6 Students will solve and graph inequalities. (8A, 8B, 8D)

MA.A:6-1 Solve linear and compound inequalities.
MA.A:6-2 Solve absolute value equations and inequalities.
MA.A:6-3 Graph inequalities on a coordinate plane.

MA.A:7 Students will solve systems of linear equations and inequalities. (8B, 8D)

MA.A:7-1 Solve systems of equations using graphing.
MA.A:7-2 Solve systems of equations using substitution and elimination.
MA.A:7-3 Solve systems of inequalities using graphing.

MA.A:8 Students will classify polynomials and perform operations with them. (8D)

MA.A:8-1 Perform operations with monomials.
MA.A:8-2 Classify polynomials, find their degree, and arrange them in ascending or descending order.
MA.A:8-3 Perform operations with polynomials.

MA.A:9 Students will factor integers, factor polynomials and apply the zero product property to solve quadratic equations. (6B, 8D)

MA.A:9-1 Find the greatest common factors of integers and monomials.
MA.A:9-2 Factor polynomials.
MA.A:9-3 Solve equations by factoring and using the zero product property.

MA.A:10 Students will graph and solve quadratic functions, graph exponential functions and solve problems involving exponential growth and decay. (8A, 8B, 8D)

- MA.A:10-1 Graph quadratic functions, find the axis of symmetry and the coordinates of the vertex.
- MA.A:10-2 Solve quadratic equations by finding the square root.
- MA.A:10-3 Solve quadratic equations by completing the square.
- MA.A:10-4 Solve quadratic equations using the quadratic formula.

MA.A:11 Students will simplify radical expressions, use the Pythagorean Theorem to find missing lengths, solve radical equations, find and use trigonometric ratios. (6C, 6D, 8D, 9A, 9D)

- MA.A:11-1 Simplify radical expressions.
- MA.A:11-2 Perform operations with radicals.
- MA.A:11-3 Solve radical equations.
- MA.A:11-4 Identify right triangles using the converse of the Pythagorean Theorem and solve problems using the Pythagorean Theorem.

MA.A:12 Students will simplify rational expressions, perform operations on them, and solve rational equations. (6D, 8A, 8B, 8C, 9A)

- MA.A:12-1 Graph inverse variation and solve problems using inverse variation.
- MA.A:12-2 Simplify rational expressions and find excluded domain values.
- MA.A:12-3 Perform multiplication, division, addition and subtraction with rational expressions.
- MA.A:12-4 Solve rational equations.

MA.A:13 Students will interpret, analyze and organize data. (6B, 10A, 10B)

- MA.A:13-1 Identify sampling techniques and recognize a biased sample.
- MA.A:13-2 Display data in histograms and box-and-whiskers; interpret data from these kinds of graphs.
- MA.A:13-3 Find the range, quartiles and interquartile range of a set of data.

MA.A:14 Students will find probabilities using the Fundamental Counting Principle, permutations, combinations and compound events.(10C)

- MA.A:14-1 Count outcomes using diagrams and the Fundamental Counting Principle.
- MA.A:14-2 Determine probabilities using permutations and combinations.
- MA.A:14-3 Determine probabilities of dependent, independent, mutually exclusive or inclusive events.