# Algebra 1 Curriculum map

**Bold is for Honors only***

**Review Unit and Unit One: (4-5 Weeks)**

Big Idea: **Solving Equations**

Students will be able to use the correct order of operations when evaluating expressions
Students will be able to differentiate between rational and irrational numbers.
Students will be able to solve linear equations with one variable.
Students will be able to solve and graph linear inequalities and compound inequalities on a number line.
Students will be able to solve formulas for variables.
***Students will be able to solve absolute value equations and inequalities.**
***Students will be able to graph absolute value inequalities on a number line.**
***With and without a calculator including use of fractions**

| Texts | Assessments | Week | Standards |
|---|---|---|---|
| Algebra 1- Pearson<br><br>Topic 1<br><br>Kuta Software<br><br>MathXL by Pearson | Homework<br><br>Quiz /Tests<br><br>Classwork<br><br>Concept Checks<br><br>Informal questioning strategies during class | 1-1 Operations on real Numbers<br>1-2 Solving Linear Equations<br>1-3 Solving Equations with Variables on Both Sides<br>1-4 Literal Equations and Formulas<br>1-5 Solving Inequalities in one variable<br>1-6 Compound Inequalities<br>1-7 Absolute Value Equations and Inequalities | **CREATING EQUATIONS* A-CED**<br>1. Create equations and inequalities in one variable and use them to solve problems.<br>2.Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.<br>**REASONING WITH EQUATIONS AND INEQUALITIES A-REI**<br>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.<br>3. Solve linear equations in one variable, including equations with coefficients represented by letters.<br>N.Q.1 Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas |

# Algebra 1 Curriculum map

**Unit Two: (2-3 Weeks)**

Big Ideas: Graphing Equations – **focus mostly on linear**

Students will be able to graph using a T-table.
Students will define variables in word problems.
Students will be able to write and graph equations in two variables using Slope-Intercept Form.
Students will be able to graph from standard form using x and y intercepts.
Students will find domain and range and state using inequalities. **Use interval notation.**

| Texts | Assessments | Week | Standards |
|---|---|---|---|
| Algebra 1- Pearson<br><br>Topic 2<br><br>Kuta Software<br><br>MathXL by Pearson | Homework<br><br>Quiz<br><br>Tests<br><br>Classwork<br><br>Concept Checks<br><br>Informal questioning strategies during class | 2-1 Slope Intercept Form<br>2-2 Point-Slope Form<br>2-3 Standard Form<br>2-4 Parallel and Perpendicular Lines<br><br>Marketing Project Using Forms of a line | **REASONING WITH EQUATIONS AND INEQUALITIES A-REI**<br>Represent and solve equations and graphically<br>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).<br>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<br><br>**N.Q.2 Define appropriate quantities for the purpose of descriptive modeling.**<br>**N.Q.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.** |

# Algebra 1 Curriculum map

**Unit Three: (3 Weeks)**

Big Ideas: Functions

Students will be able to determine if a relation is a function.
Students will be able to use function notation.
Students will be able to determine if a sequence is arithmetic and write in function form.
Students will be able to draw scatter plots, line of best fit, and analyze the line of fit.
Students will find domain and range and state using inequalities.
Students will be able to write linear equations using function notation and transform linear functions vertically, **horizontally, and a value** (vertical compression or stretch).

| Texts | Assessments | Week | Standards |
|---|---|---|---|
| Algebra 1- Pearson<br><br>Topic 3<br><br>Kuta Software<br><br>MathXL by Pearson | Homework<br><br>Quizzes<br>-Midtopic Quiz<br>-Vocabulary quiz<br><br>Tests<br><br>Classwork<br><br>Concept Checks<br><br>Informal questioning strategies during class | Vocabulary Chart<br><br>3-1 Relations and Functions<br>3-2 Linear Fictions<br>3-3 Transforming Linear Functions (skip)<br>3-4 Arithmetic Sequences<br>3-5 Scatter Plots and Lines of Fit<br>3-6 Analyzing Lines of Fit | . **INTERPRETING FUNCTIONS** F.IF Understand the concept of a function, and use function notation. F.IF.1 Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then f(x) denotes the output of f corresponding to the input x. The graph of f is the graph of the equation y = f(x). F.IF.2 Use function notation, evaluate functions for inputs in<br><br>F.IF.3 Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. For example, the Fibonacci sequence is defined recursively by f(0) = f(1) = 1, f(n + 1) = f(n) + f(n − 1) for n ≥ 1. |

# Algebra 1 Curriculum map

**Unit Four: (2-3 Weeks)**

Big Ideas: Systems

Students will be able to solve a system of equations by graphing, substitution and elimination.
Students will be able to graph a linear inequalities on a coordinate plane.
Students will be able to solve a system of inequalities in two variables.
Students will be able to solve word problems, define the variables, and state the reasonable domain and range using words and inequalities.
**Interval Notation.**
***With and without a calculator**

| Texts | Assessments | Week | Standards |
|---|---|---|---|
| Algebra 1-Pearson<br><br>Topic 4<br><br>Kuta Software<br><br>MathXL by Pearson | Homework<br><br>Quiz<br><br>Tests<br><br>Classwork<br>-Walk Around Clue Activity<br><br>Concept Checks<br><br>Informal questioning strategies during class | 4-1 Solving Systems of Equations by Graphing<br>4-2 Solving Systems of Equations by Substitution<br>4-3 Solving Systems of Equations by Elimination<br>4-4 Linear Inequalities in Two Variables<br>4-5 Systems of Inequalities | **REASONING WITH EQUATIONS AND INEQUALITIES A-REI**<br>Solve systems of equations<br>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.<br>6. Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.<br>7. Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically.<br>**REASONING WITH EQUATIONS AND INEQUALITIES A-REI**<br>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.<br>Solve equations and inequalities in one variable<br>3. Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters |

**Unit Five: (3 Weeks)**

# Algebra 1 Curriculum map

Big Ideas: Exponential Functions

Students will be able to write and graph exponential functions. **With translations.**
Students will be able to use exponential growth and decay functions to model real world examples.
Students will be able to determine if a sequence is geometric and write in function form.
*** Students will be able to solve problems with rational exponents.**

| Texts | Assessments | Week | Standards |
|---|---|---|---|
| Algebra 1- Pearson<br><br>Topic 6<br><br>Kuta Software<br><br>MathXL by Pearson | Homework<br><br>Quiz<br><br>Tests<br><br>Midterm Exam<br><br>Classwork<br><br>Concept Checks<br><br>Informal questioning strategies during class | Create Foldable with Laws of Exponents<br><br>6-1 Rational Exponents and Properties of Exponents<br>6-2 Exponential Functions<br>6-3 Exponential Growth and Decay<br>6-4 Geometric Sequences<br>6-5 Transformations of Exponential Functions (skip)<br><br>Create individual study guide for Midterm | **THE REAL NUMBER SYSTEM N -RN**<br>Extend the properties of exponents to rational exponents.<br>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.<br>2. Rewrite expressions involving radicals and rational exponents using the properties of exponents. |

# Algebra 1 Curriculum map

**Unit Six: (3 Weeks)**

Big Ideas: Polynomials

Students will be able to classify polynomials by degree, term numbers, leading coefficients, and write in standard form.
Students will be able to add, subtract, and multiply polynomials.
Students will be able to factor polynomials using various methods and special cases.
***With and without a calculator**

| Texts | Assessments | Week | Standards |
|---|---|---|---|
| Algebra 1- Pearson<br><br>Topic 7<br><br>Kuta Software<br><br>MathXL by Pearson | Homework<br><br>Quiz<br><br>Tests<br><br>Classwork<br><br>Concept Checks<br><br>Informal questioning strategies during class | 7-1 Adding and subtracting Polynomials<br>7-2 Multiplying Polynomials<br>7-3 Multiplying Special Cases<br>7-4 Factoring Polynomials<br>7-5 Factoring $x^2 + bx + c$<br>7-6 Factoring $ax^2 + bx + c$<br>7-7 Factoring Special Cases | **ARITHMETIC WITH POLYNOMIALS AND RATIONAL A-APR EXPRESSIONS**<br>Perform arithmetic operations on polynomials<br>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 Rewrite rational expressions<br>6. Rewrite simple rational expressions in different forms; write a(x)/b(x) in the form q(x) + r(x)/b(x), where a(x), b(x), q(x), and r(x) are polynomials with the degree of r(x) less than the degree of b(x), using inspection, long division, or, for the more complicated examples, a computer algebra system.<br>7. (+) Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions. |

# Algebra 1 Curriculum map

**Unit Seven: (2-4 Weeks)**

Big Ideas: Graphing and Solving Quadratic Equations (Non-Factoring)

Students will be able to describe transformations from the parent function $y = x^2$.
Students will be able to write and graph quadratic functions in vertex and standard form.
Students will be able to use quadratic functions to model situations, including the vertical motion model.
Students will be able to compare linear, exponential and quadratic models.

| Texts | Assessments | Week | Standards |
|---|---|---|---|
| Algebra 1- Pearson<br><br>Topic 8<br><br>Kuta Software<br><br>MathXL by Pearson | Homework<br><br>Quiz<br><br>Tests<br><br>Classwork<br><br>Concept Checks<br><br>Informal questioning strategies during class | 8-1 Key Features of a Quadratic Function<br>8-2 Quadratic Functions in Vertex Form<br>8-3 Quadratic Functions in Standard Form<br>8-4 Modeling with Quadratic Equations<br>8-5 Linear, Exponential, and Quadratic Functions | **INTERPRETING FUNCTIONS F-IF**<br>Analyze functions using different representations<br>7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.*<br>a. Graph linear and quadratic functions and show intercepts, maxima, and minima.<br>**REASONING WITH EQUATIONS AND INEQUALITIES A-RE**<br>4. Solve quadratic equations in one variable.<br>b. Solve quadratic equations by inspection (e.g., for x2 = 49), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as a ± bi for real numbers a and b. |

# Algebra 1 Curriculum map

**Unit Eight: (4 Weeks)**

Big Ideas: Factoring and Solving Quadratics

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| Students will be able to solve quadratic equations using graphs, tables, quadratic formula, by factoring, and **completing the square**,<br>Students rewrite quadratic equations in equivalent forms (from standard to vertex and vice versa)<br>Students will be able to rewrite radical expressions and solve quadratic equations using square roots.<br>**Students will be able to solve nonlinear systems of equations.** |

| Texts | Assessments | Week | Standards |
|---|---|---|---|
| Algebra 1-Pearson<br><br>Topic 9<br><br>Kuta Software<br><br>MathXL by Pearson | Homework<br><br>Quiz<br><br>Tests<br><br>Classwork<br><br>Concept Checks<br><br>Informal questioning strategies during class | 9-1 Solving Quadratic Equations Using Graphs and Tables<br>9-2 Solving Quadratic Equations by Factoring<br>9-3 Rewriting Radical Expressions<br>9-4 Solving Quadratic Equations Using Square Roots<br>9-5 Completing the Square<br>9-6 The Quadratic Formula and the Discriminant<br>9-7 Solving Systems of Linear and Quadratic Equations | **REASONING WITH EQUATIONS AND INEQUALITIES A-REI**<br>4. Solve quadratic equations in one variable. Write expressions in equivalent forms to solve problems<br>3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.<br>* a. Factor a quadratic expression to reveal the zeros of the function it defines. |

# Algebra 1 Curriculum map

**Unit Five: (2-3Weeks)**

Big Ideas: Statistics

Students will be able to analyze data using mean, median, mode, range, and compare data sets (skewed or symmetrical)
Students will be able to interpret data displays using dot plots, histograms, and box and whisker plots, mean absolute deviation, standard deviation.
Students will be able to use two-way frequency tables.

| Texts | Assessments | Week | Standards |
|---|---|---|---|
| Algebra 1-Pearson<br><br>Topic 11<br><br>Kuta Software<br><br>MathXL by Pearson | Homework<br><br>Quiz<br><br>Tests<br><br>Classwork<br><br>Concept Checks<br><br>Informal questioning strategies during class | 11-1 Analyzing data displays | **INTERPRETING CATEGORICAL AND QUANTITATIVE DATA S-ID** Summarize, represent, and interpret data on a single count or measurement variable<br>1. Represent data with plots on the real number line (dot plots, histograms, and box plots).<br>2. Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.<br>3. Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).<br>4. Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages.<br>6. Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.<br>a. Fit a function to the data; |