Course Title: Algebra II
Board Approval Date: January 17, 2019
Credit / Hours: 1.0

Course Description:

Students will review and extend previous algebraic and geometric concepts. Topics explored in this course will be investigated at a deeper, more conceptual level, and will consist of linear functions and systems, quadratic equations, quadratic functions and their applications, rational expressions and equations, radical expressions and equations, polynomial functions and factoring, exponential functions, logarithms, and complex numbers. Honors Algebra II also covers the topics of matrices, conics, parametric equations, and arithmetic and geometric sequences and series.

Learning Activities / Modes of Assessment:

Pre-Test Teacher Observation Kahoot, Quizizz and Quizlet Notability Bell Ringers Exit Tickets Collaborative Projects Small Group Whole Group Partner Work Whiteboard Practice Review Games Desmos Activities GeoGebra Think-Pair-Share	Stations Scavenger Hunts Nearpod Edpuzzles Flipgrid SAT practice Math Libs Task Cards Schoology Assignments Error Analysis Self-checking with answer key Word Problems- real world application Quizzes Unit Tests and Final

Instructional Resources:

Desmos SAS Online Practice Tools Khan Academy Teachers Pay Teachers	Teacher created resources Kuta Software Instructional Multimedia Tools Graphing Calculator Activities

Curriculum: Algebra II
Course: Algebra II

Know:	Understand:	Do:
Unit 1: Linear Representation and Inequalities A1.1.1.3 Use exponents, roots, and/or absolute values to solve problems. A1.1.1.5 Simplify expressions involving polynomials. A1.1.2.1 Write, solve, and/or graph linear equations using various methods.	**Unit 1** Apply properties of Real Numbers Evaluate and simplify algebraic expressions Solve linear equations Rewrite formulas and equations Use problem solving strategies and model Solve linear inequalities Solve absolute value equations and inequalities	**Unit 1** A1.1.2.1.1 Write, solve, and/or apply a linear equation (including problem situations). A1.1.2.1.2 Use and/or identify an algebraic property to justify any step in an equation-solving process. Note: Linear equations only. A1.1.2.1.3 Interpret solutions to problems in the context of the problem situation. Note: Linear equations only. A1.1.1.3.1 Simplify/evaluate expressions involving properties/laws of exponents, roots, and/or absolute values to solve problems. Note: Exponents shout be integers from -10 to 10. A1.1.1.5.3 Simplify/reduce a rational algebraic expression.
Unit 2: Linear Relations/Functions/Systems of Linear Equations & Inequalities A1.1.2.1 Write, solve, and/or graph linear equations using various methods.	**Unit 2:** Relations and functions Find slope and rate of change Graph equations of lines Write equations of lines	**Unit 2:** A1.1.2.2.1 Write and/or solve a system of linear equations (including problem situations) using graphing, substitution, and/or elimination. A1.1.2.2.2 Interpret solutions

A1.1.2.2 Write, solve, and/or graph systems of linear equations using various methods. A1.1.3.1 Write, solve, and/or graph linear inequalities using various methods. A1.1.3.2 Write, solve, and/or graph systems of linear inequalities using various inequalities. A2.2.1.1 Analyze and/or use patterns or relations. A2.2.3.1 Analyze and/or interpret data on a scatter plot and/or use a scatter plot to make predictions.	Direct variation Scatter plots and lines of best fit Absolute value functions and transformations Graph linear inequalities in two variables Solve linear systems by graphing Solve linear systems algebraically Graph systems of linear inequalities Solve system of linear equations in three variables	to problems in the context of the problem situation. A1.1.3.1.1 Write or solve compound inequalities and/or graph their solutions sets on a number line. A1.1.3.2.1 Write and/solve a system of linear inequalities using graphing. A1.1..3.2.2 Interpret solutions to problems in the context of the problem situation. A2.2.1.1.2 Identify and/or extend a pattern. A2.2.1.1.3 Determine the domain, range, or inverse of a relation. A2.2.1.1.4 Identify and/or determine the characteristics of an exponential, quadratic, or polynomial function. A2.2.3.1.1 Draw, identify, find, interpret, and/or write an equation for a regression model for a scatter plot. A2.2.3.1.2 Make a predictions using the equations or graphs of regression models of scatter plots.
Unit 3: Factoring/Quadratics A2.1.2.2 Simplify expressions involving polynomials. A2.1.3.1 Write and/or solve	**Unit 3:** Solving equations by factoring Graph quadratic functions in standard form	**Unit 3:** A2.1.2.2.1 Factor algebraic expressions, including difference of squares and trinomials. A2.1.3.1.1 Write and/or solve

non-linear equations using various methods. A2.2.2.1 Create, interpret, and/or use polynomial, exponential, and/or logarithmic functions and their equations, graphs, or tables.	Graph quadratic functions in vertex or intercept form Quadratic formula Complete the square Quadratic functions and models Factor by GCF/Factor by Grouping/Factor Sum/Perfect Squares/ Sum and Differences of Cubes	quadratic equations (including factoring and using the Quadratic Formula). A2.2.2.1.1 Create, interpret, and/or use the equation, graph, or table of a polynomial function (including quadratics).
Unit 4: Polynomials and Polynomial Functions A2.1.2.1 Use exponents, roots, and/or absolute values to represent equivalent forms or to solve problems. A2.1.2.2 Simplify expressions involving polynomials. A2.2.2.2 Describe and/or determine families of functions.	**Unit 4:** Use properties of exponents Evaluate and graph polynomial functions Add, subtract and multiply polynomials Factor and solve polynomials equations Apply the remainder and factor theorems Find rational zeros Apply the fundamental theorem of algebra Write polynomial functions and models	**Unit 4:** A2.1.2.1.2 Simplify/evaluate expressions involving positive and negative exponents and/or roots (may contain all types of real numbers-exponents should not exceed power of 10) A2.1.2.1.3 Simplify/evaluate expressions involving multiplying with exponents, powers of powers, and powers of products. A.2.1.2.2.2 Simplify rational algebraic expressions. A2.2.2.2.1 Identify of describe the effect of changing parameters within a family of functions.
Unit 5: Rational Exponents/Radical Functions/Rational Functions	**Unit 5:** Evaluate nth roots and use rational exponents	**Unit 5:** A2.1.2.1.1 Use exponential expressions to represent rational numbers.

A2.1.2.1 Use exponents, roots, and/or absolute values to represent equivalent forms or to solve problems. A2.1.1.1 Represent and/or use imaginary numbers in equivalent forms. A2.1.1.2 Apply the order of operations in computation and in problem-solving situations. A2.1.3.1 Solve equations involving rational and/or radical expressions. A2.1.3.1 Write and/or solve non-linear equations using various methods. A2.1.3.2 Describe and/or determine change.	Apply properties of rational exponents Perform function operations and composition Use inverse functions Graph square root and cube root functions Solving radical equations Multiply and divide rational expressions Add/subtract rational expressions Solve rational equations	A2.1.1.1.1 Simplify/Write square roots in terms of i. A2.1.1.1.2 Simplify/evaluate expression involving powers. A2.1.1.2.1 Add and subtract complex numbers. A2.1.1.2.2 Multiply and divide complex numbers. A2.1.3.1.2 Solve equations involving rational and/or radical expressions. A2.1.3.2.1 Determine how a change in one variable relates to a change in a second variable. A2.1.3.2.2 Use algebraic processes to solve a formula for a given variable.
Unit 6: Exponential and Logarithmic Functions A2.1.2.1 Use exponents, roots, and/or absolute values to represent equivalent forms or to solve problems. A2.1.3.1 Write and/or solve non-linear equations using various methods. A2.2.1.1 Analyze and/or use patterns or relations. A2.2.2.1 Create, interpret, and/or use polynomial, exponential, and/or logarithmic functions and their equations, graphs, or tables.	**Unit 6:** Exponential Growth and Decay Exponential Functions Write/Solve Logarithmic Form/Exponential Form Properties of Logarithmic Functions Applications of Common Logarithms The Natural Base, e Solving Equations and Modeling	**Unit 6:** A2.1.2.1.4 Simplify or evaluate expressions involving logarithms and exponents. A2.1.3.1.3 Write and/or solve a simple exponential or logarithmic equation. A2.1.3.1.4 Write, solve, and/or apply linear or exponential growth or decay. A2.2.1.1.4 Identify and/or determine the characteristics of an exponential, quadratic, or polynomial function. A2.2.2.1.2 Create, interpret,

		and/or use the equation, graph, or table of an exponential or logarithmic function (including common and natural logarithms) A2.2.2.1.3 Determine, use, and/or interpret minimum and maximum values over a specified interval or a graph of a polynomial, exponential, or logarithmic fuction. A2.2.2.1.4 Translate a polynomial, exponential, of logarithmic function from one representation of a function to another (graph, table, and equation).
Unit 7: Probability A2.2.3.2 Apply probability to practical situations.	**Unit 7:** How to find odds, the probability of compound events, permutations, and combinations.	**Unit 7:** A.2.2.3.2.1 Use combinations, permutations, and the fundamental counting principle to solve problems involving probability. A2.2.3.2.2 Use odds to find probability and/or use probability to find odds. A2.2.3.2.3 Use probability for independent, dependent, or compound events to predict outcomes.

Algebra II Pacing Guide

Course: Algebra II

Course Unit (Topic)	**Length of Instruction (Class Periods)**
Unit 1: Linear Representation and Inequalities	10 days
Unit 2: Linear Relations/Functions/Systems of Linear Equations and Inequalities	12 days
Unit 3: Factoring and Quadratics	17 days
Unit 4: Polynomials and Polynomial Functions	13 days
Unit 5: Rational Exponents/Rational Functions/Radical Functions	20 days
Unit 6: Exponential and Logarithmic Functions	10 days
Unit 7: Probability	4 days
TOTAL DAYS	**83 DAYS**

Note 4 days are left for the Mid-Term Review/Test and Final Review/Test