PLEASANT HOPE R-6
ALGEBRA II CURRICULUM MAPPING PACING GUIDE

Timing	**August**	**September**	**September**
Unit Titles	**Equations and Inequalities**	**Linear Equations and Functions**	**Systems of Linear Equations and Inequalities**
Essential Questions	1.1 Can you make change from a transaction? 1.2 Determine the population of a state? 1.3 Determine the distance to a town if you know two of three missing variables. 1.4 Can you find the number of products that need to be sold to determine a profit. 1.5 How should you spend your money most wisely at the grocery store? 1.6 Describe how you could analyze record high temperatures? 1.7 Can you rewrite the same problem in a different way to help you solve it.	2.1 Determine if the radius of a tree is a function of its age 2.2 Find the average rate of change in temperature over time. 2.3 Model the throwing of a ball into the air and determine its general path 2.4 Predict the population of America in 2050. 2.5 Model the the amount of gasoline burned in a car that travels 4 hours. 2.6 Determine the cost of ordering Banners for your gymnasium? 2.7 Estimate your yearly salary based upon your hourly wage?	3.1 Determine the amount of two mixtures that need to be mixed together to obtain a desired mixture in the end? 3.2 Plan a meal that minimizes cost but yet maximizes your needed nutrients 3.3 Find the volume of a three dimensional figure placed on the 3-d coordinate system 3.4 Find the speed a bus would have to go to catch another bus that left earlier to arrive at a destination at the same time. 3.5 Find the break even point for a particular product that you are selling in a business. 3.6 Determine how many deer licenses should be issued to each hunter based on deer population
Content	Real Numbers and Operations, Algebraic Expressions, Solving Linear Equations, Rewriting Formulas, Algebraic Models, Linear Inequalities, Absolute Value Equations and Inequalities	Functions – Linear, Direct, Absolute Value, Piecewise and Constant. Inequalities, Scatter Plots	Linear Systems, Linear Combiantions, Substitution, Graphing, 3-dimensional systems and their graphs
Skills	1.1 Use number lines to graph and order real numbers 1.2 Identify properties of operation 1.3 Solve Linear Equations 1.4 Rewrite Common Formulas 1.5 Develop Problem Solving Strategies 1.6 Solve simple and compound Inequalities 1.7 Solve Absolute Value Equations and Inequalities	2.1 Represent Relations and determine if they are functions or not. 2.2 Classify Lines as parallel or perpendicular 2.3 Write Linear Equations 2.4 Write Direct Variation Equations 2.5 Sketch a scatter plot to examine data 2.6 Graph Linear Inequalities 2.7 Analyze Piecewise Functions and Absolute Value Functions	3.1 Graph and Solve a Linear System of Equations in two variables 3.2 Use different methods to solve linear systems 3.3 Graph a system of linear inequalities 3.4 Find the Feasible Region based on the given constraints 3.5 Graph a 3 variable linear equation on a three-dimensional axis 3.6 Solve Linear Systems in Three Variables
Assessments	Daily Homework Checks, Quizzes, and Chapter Tests	Daily Homework Checks, Quizzes, and Chapter Tests	Daily Homework Checks, Quizzes, and Chapter Tests
Activities/Resources	Textbook, Notes, Powerpoints, Graphing Utility, Class Discussion	Textbook, Notes, Powerpoints, Graphing Utility, Class Discussion	Textbook, Notes, Powerpoints, Graphing Utility, Class Discussion

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Timing	**October**	**October/November**	**November/December**
Unit Titles	**Matrices and Determinants**	**Quadratic Functions**	**Polynomials and Polynomial Functions**
Essential Questions	4.1 Determine how to organize inventory so that it can be counted and categorized quickly? 4.2 Calculate the total cost of multiple items of inventory? 4.3 Determine what the Golden Triangle is? 4.4 Determine the cost for coats and gloves based on your budget that you can spend 4.5 Calculate a budget 4.6 Determine how to invest your money the wisest based on current market values. 4.7 Separate Missouri's Population by race and gender	5.1 Model the throwing of a ball and determine its parabolic quadratic equation. 5.2 Find the dimensions of a box that maximize volume given a piece of plywood. 5.3 Determine the price an author should charge for their new book to make a profit. 5.4 Relate a driver's age to their reaction time. 5.5 Identify the number and types of solutions to quadratic equations. 5.6 Calculate the weight that a rope can hold?	6.1 Use scientific notation to estimate the ratio of land to water on earth. 6.2 Find the maximum price and minimum price that can be charged to still make money 6.3 Find the dimensions of a the pyramids of Egypt 6.4 Write a polynomial function that models the speed of a bike over the course of an hour. 6.5 Find the maximum volume of a box that can be made from one piece of cardboard. 6.6 Write a model that explains the average annual amount of money spent on groceries per family in the past year.
Content	Matrices, Cramer's Rule, Linear Systems	Quadratic Functions, Factoring Quadratics, Square Roots, Perfect Squares, Complex Numbers, Quadratic Inequalities, Completing the Square, Solve Quadratic Equation(s)	Properties of Exponents, Polynomials, Rational Zeros, Fundamental Theorem of Algebra, Graphs of Polynomial Functions
Skills	4.1 Add and Subtract Matrices 4.2 Multiply a matrix by a scalar 4.3 Multiply Two Matrices together 4.4 Find the Inverse of a Matrix 4.5 Solve Systems of Linear Equations using Matrices 4.6 Use Cramer's Rule to solve systems of linear equations 4.7 Find the determinant of a matrix	5.1 Graph a quadratic function 5.2 Find the zeros of a quadratic function by factoring it. 5.3 Simplify Complex Numbers into lowest form. 5.4 Solve quadratics by completing the square. 5.5 Solve quadratics using the quadratic formula 5.6 Graph quadratic Inequalities and find the region that is true for the given inequality.	6.1 Use properties of exponents to evaluate and simplify expressions. 6.2 Evaluate polynomial functions 6.3 Add, subtract and multiply polynomials 6.4 Factor polynomial expressions 6.5 Find the rational zeros of a polynomial function 6.6 Solve a polynomial function through factoring 6.7 Use the fundamental theorem of algebra to find the number of zeros in a polynomial 6.8 Analyze the graph of a polynomial function 6.9 Use finite differences to determine the degree of a polynomial.
Assessments	Daily Homework Checks, Quizzes, and Chapter Tests	Daily Homework Checks, Quizzes, and Chapter Tests	Daily Homework Checks, Quizzes, and Chapter Tests
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Timing	**December/January**	**January**	**January/February**
Unit Titles	**Powers, Roots, and Radicals**	**Exponential and Logarithmic Functions**	**Rational Equations and Functions**
Essential Questions	7.1 Find the total deer population that Polk County can support 7.2 Find the surface area of sculpture 7.3 Determine your bowling average 7.4 Model frequencies in the pitch range of a whistle 7.5 Find the age of an elephant based on its dimensions 7.6 Analyze the free throw percentages of NBA players. 7.7 Sketch a box and whisker plot of the ages of teachers at Pleasant Hope	8.1 Compare the loudness of sounds. 8.2 Use Newton's law of cooling to illustrate knowledge of logarithmic scales 8.3 Estimate the wind energy generated by one turbine 8.4 Find the depreciated value of a car. 8.5 find the appreciated value of an annuity that you bought 5 years ago. 8.6 Find the number of endangered species in North America 8.7 Determine the half-life of 20 grams of uranium.	9.1 Determine the energy expenditure of an athlete in one basketball game 9.2 Describe the frequency of an approaching fire engine siren 9.3 Compare the velocities of two skydivers 9.4 Determine the heat loss through a window 9.5 Find the speed of a whirlpool's current 9.6 Write a simplified model for the focal length of a camera lens. 9.7 Find the amount of water needed to add to an acid solution to dilute it to a lower percentage solution
Content	Powers, nth Roots, Rational Exponents, Inverse Functions, Square Root Functions, Cube Root Functions, Central Tendency Measure, Box and Whisker Plots	Exponential Growth and Decay, Logarithmic Functions, Logarithmic Properties, Exponential and Logarithmic Equations, Model Data with Exponential Functions. The Number e	Inverse Variation, Direct Variation, Simple Rational Functions, Rational Expressions, Complex Fractions, Rational Equations
Skills	7.1 Evaluate nth roots of real numbers using radical and rational exponent notation 7.2 Use properties of rational exponents to evaluate and simplify expressions 7.3 Find inverses of linear functions 7.4 Find inverses of non-linear functions 7.5 Graph Square-Root and Cube-Root Functions 7.6 Describe data sets using measures of central tendency. 7.7 Use box-and-whisker plots to represent data graphically	8.1 Graph Exponential Growth and Decay Functions. 8.2 Use the number e as the base of exponential functions. 8.3 Evaluate logarithms and logarithmic functions 8.4 Solve exponential equations and logarithmic equations 8.5 Evaluate and graph logistic growth functions 8.6 Model data with exponential functions	9.1 Write and use inverse and joint variation models 9.2 Graph Simple Rational Functions 9.3 Multipy and Divide Rational Expressions 9.4 Add and Subtract Rational Expressions 9.5 Simplify Complex Fractions 9.6 Solve Rational Equations
Assessments	Daily Homework Checks, Quizzes, and Chapter Tests	Daily Homework Checks, Quizzes, and Chapter Tests	Daily Homework Checks, Quizzes, and Chapter Tests
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PLEASANT HOPE R-6
ALGEBRA II CURRICULUM MAPPING PACING GUIDE

Timing	**March**	**March/April**	**April/May**
Unit Titles	**Quadratic Relations and Conic Sections**	**Sequences and Series**	**Probability and Statistics**
Essential Questions	10.1 Model a solar energy collector 10.2 Design a city playground 10.3 Find the diameter of a broken dish. 10.4 Model the region lit by the lighthouse 10.5 Model the curved sides of a football 10.6 Find the epicenter of an earthquake 10.7 Find the area of the ellipse at the White House	11.1 Express the number of seats in a theater 11.2 Find angle measures at the tips of a star 11.3 Find the number of fish is a stocked lake 11.4 Compare the revenues of two companies 11.5 Model the number of games in the NCAA tournament. 11.6 Find the number of cells in a honeycomb 11.7 Determine the cost of a cellular phone service. 11.8 Model the number of trees on a tree farm	12.1 Find the probability that it will rain on Thursday or Friday? 12.2 Find the probability that it will rain on Thursday and Friday? 12.3 Find the number of possible license plates that can be made with 6 digits of letters or numbers 12.4 Find the probability that an shooter hits the center of the target. 12.5 Find the probability that you draw an ace and then a ten value card for blackjack on your first two cards? 12.6 Find the probability of winning the lottery 12.7 Find the probability that an NFL team wins 3 games in a row?
Content	Quadratic Relations, Conic Sections, Equations of all Conic Sections, Distance Formula, Midpoint Formula, Systems of Quadratic Equations	Sequences, Arithmetic and Geometric, infinite series, Explicit and Recursive Rules, Mathematical Induction	Probability, Fundamental Counting Principle, Permutations, Independent and Dependent Events, Normal and Binomial Distributions
Skills	10.1 Find the distance between two points and find the midpoint of a line joining two points 10.2 Graph and write the equations of parabolas 10.3 Graph and write the equations of circles 10.4 Graph and write the equations of ellipses 10.5 Graph and write the equations of hyperbolas 10.6 Write conic sections equations in vertex form and center form. 10.7 Solve systems of quadratic equations 10.8 Find the eccentricity of a conic section	11.1 Use and Write Sequences 11.2 Use summation notation to write series and find the sum of series 11.3 Evaluate and write recursive rules for sequences 11.4 Develop explicit formulas for sequences 11.5 Use mathematical induction to prove statements about all positive integers.	12.1 Use the fundamental counting principle to find the number of ways an event can happen. 12.2 Use permutations and combinations to count the number of ways an event can happen 12.3 Find theoretical and experimental probability 12.4 Find Geometric probabilities 12.5 Find probabilities of unions and intersections of two events 12.6 Find probabilities of independent and dependent events 12.7 Calculate probabilities using normal distributions. 12.8 Find expected values of collections of outcomes
Assessments	Daily Homework Checks, Quizzes, and Chapter Tests	Daily Homework Checks, Quizzes, and Chapter Tests	Daily Homework Checks, Quizzes, and Chapter Tests
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PLEASANT HOPE R-6
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Timing	**May**	**May**	
Unit Titles	**Trig Ratios and Functions**	**Trigonometric Graphs, Identities, and Equations**	
Essential Questions	13.1 Find the altitude of a kite 13.2 Find the horizontal distance traveled by a golf ball 13.3 Find the distance between two buildings 13.4 Find the area irrigated by a rotating sprinkler 13.5 Find the amount of paint needed for the side of a house. 13.6 Model the path of a leaping dolphin 13.7 Find distances for a marching band on a football field	14.1 Graph the height of a boat moving over waves. 14.2 Simplify the parametric equations that describe a carousel's motion 14.3 Solve the equation that models the position of the sun at sunrise 14.4 Write models for temperatures inside and outside of an igloo. 14.5 Find the angle at which you should kick a football to make it travel a certain distance 14.6 Model real-life patterns, such as the vibrations of a tuning fork	
Content	Trig Functions, Degree Measure, Radian Measure, Arc Length, Sector Area, Inverse Trig Functions, Law of Sines, Law of Cosines, Heron's Formula, Parametric Equations	Sine , Cosine, and Tangent Functions, Translations, Trig Identities,	
Skills	13.1 Evaluate the trig functions of acute angles. 13.2 Measure angles in standard position using degree and radian measure 13.3 Evaluate trig functions of any angle 13.4 Evaluate inverse trig functions 13.5 Use law of sines to find the sides and angles of any triangle 13.6 Use law of cosines to find the sides of any angle 13.7 Use parametric equations to represent motion.	14.1 Graph Sine, Cosine and Tangent Functions 14.2 Graph translations and reflections of trigonometric graphs 14.3 Use trig identities to simplify trig expressions and to verify other identities 14.4 Solve a trigonometric equation 14.5 Model data with a sine or cosine function 14.6 Evaluate trig functions of the sum or difference of two angles 14.7 Evaluate expressions using double and half angle formulas	
Assessments	Daily Homework Checks, Quizzes, and Chapter Tests	Daily Homework Checks, Quizzes, and Chapter Tests	
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