Scope and Sequence
Mathematics
Algebra 2 400

Description: Students will study real numbers, complex numbers, functions, exponents, logarithms, graphs, variation, systems of equations and inequalities, linear and quadratic equations, absolute values. In Algebra 2-Honors, emphasis will be placed upon mathematical modeling to real-life situations. This approach requires a facility in conceptual manipulation, as well as proficiency in skill manipulation. Honors students will engage in more in-depth study of the topics. A Texas Instruments graphing calculator is required.

Unit Name/Description	Content and/or Skills
Unit 1: Preliminary Information	Sets of Numbers Classifications of Polynomials by Degree and Number of Terms Order of Operations Linear Equations Solving Linear Inequalities Solving Compound Inequalities Absolute Value Equations Absolute Value Inequalities
Unit 2: Functions & relations	Graphs of functions and relations Types of Graphs Real-world graphs

	Domain & Range Proper Notation (Functions, domain and range)
Unit 3: Linear Functions	Equations of Linear Functions Slope of a Line Point Slope / Slope Intercept / Standard Form of a Line Graphing Linear Functions Parallel & Perpendicular Lines Linear Applications Linear Models Scatterplots Line of Best Fit / Data Analysis Linear Regression with the Graphing Calculator
Unit 4: Systems of Linear Equations and Inequalities	Systems of equations vocabulary Solving systems of 2 linear equations Solving systems of 3 or more equations Solving systems using matrices (TI-83/84) Systems as Models Solving systems of linear inequalities Linear Programming
Unit 5 - Quadratic Functions	Three forms of a quadratic function ● Vertex form ● Standard form ● Intercept form

	Parts of a quadratic function ● Axis of Symmetry ● Vertex ● X - intercepts ● Y - intercepts Basic factoring skills Completing the square Discriminant Solving Quadratic Equations by Factoring / Square Rooting / Quadratic Formula Quadratic math models (Real life application problem)
Unit 6: Exponential & Logarithmic Functions	Exponentiation of Positive Integer Exponents Properties of Exponents Negative Exponents & the Zero Exponent Exponentiation of Fractional Exponents Solving Exponential Equations With The Same Base Introduction to Logarithms Properties of Logarithms Logarithms with Other Bases Change of Base with Logarithms Solving Exponential Equations with Logarithms Solving Logarithmic Equations Inverse Functions
MIDTERM	

Unit 7: Rational Algebraic Functions	More Inverse functions (including domain & Range) Rational Function vocabulary Graphing rational functions using x-y chart Factoring using a GCF Factoring polynomials using quadratic techniques Factoring difference of 2 squares Factoring the sum and difference of 2 cubes Multiplying & Dividing rational expressions Adding & Subtracting rational expressions Graphing rational functions including asymptotes, intercepts, and discontinuities Solving rational equations and identifying extraneous solutions
Unit 8 - Irrational Algebraic Functions	Simplifying radicals with all indexes Rationalize radical functions Using the conjugate to rationalize denominators containing binomials or trinomials Solving radical equations with all indexes Solving radical equations that contain fraction
Unit 7 / 8: Variation Functions	Identifying Types of Functions From a Set of Data Direct and Inverse Variation Functions Variation Functions with Non - Integer Exponents
Unit 10 - Higher Degree Functions	Graphing of higher degree functions ● Intercepts ● Bends

	● End behavior ● Max/min points Creating higher degree functions - Sum product rule Polynomial division ● Long Division ● Synthetic Division Higher degree function math models (Real life application problem) Imaginary Numbers and complex solutions
Unit 11: Sequences and Series	Sequence and series vocabulary Arithmetic and geometric Sequences Arithmetic and Geometric Means Arithmetic and Geometric Series Convergent geometric series
Unit 12: Probability	Counting Rule Combinations & Permutations Simple Probability Compound Probability
FINAL EXAM	