

## Algebra 2 Scope and Sequence

### UNIT 1 EQUATIONS, INEQUALITIES, FUNCTIONS

- Lesson 1-1 Writing and Solving One-Variable Equations
- Lesson 1-2 Writing and Solving Two-Variable Equations
- Lesson 1-3 Solving and Graphing Absolute Value Equations and Inequalities
- Lesson 2-1 Graphing Two-Variable Equations
- Lesson 2-2 Graphing Systems of Inequalities
- Lesson 3-1 Solving Systems of Two Equations in Two Variables by Graphing, Substitution and Elimination
- Lesson 3-2 Solving Systems of Three Equations in Three Variables
- Lesson 3-3 Matrix Operations
- Lesson 3-4 Solving Matrix Equations
- Lesson 4-1 Introduction to Piecewise-Defined Functions (graphing & evaluating)
- Lesson 4-2 Graphing Absolute Value Functions
- Lesson 4-3 Transforming the Absolute Value Parent Function
- Lesson 5-1 Operations with Functions
- Lesson 5-2 Function Compositions
- Lesson 5-3 More Function Composition
- Lesson 6-1 Finding Inverse Functions
- Lesson 6-2 Graphs of Inverse Functions

### UNIT 2 QUADRATIC FUNCTIONS

- Lesson 7-1 Analyzing a Quadratic Function
- Lesson 7-2 Factoring Quadratic Expressions
- Lesson 7-3 Solving Quadratic Equations by Factoring
- Lesson 8-1 The Imaginary Unit,  $i$
- Lesson 8-2 Operations with Complex Numbers
- Lesson 9-1 Solving Quadratics by Completing the Square and Taking Square Roots
- Lesson 9-2 Solving Quadratics Using The Quadratic Formula
- Lesson 9-3 Classifying Solutions of Quadratic Equations
- Lesson 11-1 Translations of Parabolas
- Lesson 11-2 Shrinking, Stretching, and Reflecting Parabolas
- Lesson 11-3 Graphing Parabolas from Vertex Form
- Lesson 12-1 Identifying Key Features of Quadratic Functions (vertex,  $x$  and  $y$  intercepts, axis of symmetry)
- Lesson 12-3 Graphing Quadratic Functions
- Lesson 12-4 The Discriminant & Classifying Solutions
- Lesson 12-5 Graphing Quadratic Inequalities
- Lesson 13-1 Solving a System of Non-Linear Equations Graphically
- Lesson 13-2 Solving a System of Non-Linear Equations Algebraically

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### UNIT 3 POLYNOMIALS

- Lesson 14-1 Introduction to Polynomials
- Lesson 14-2 Some Attributes of Polynomial Functions
- Lesson 14-3 Even and Odd Functions
- Lesson 15-1 Adding and Subtracting Polynomials
- Lesson 15-2 Multiplying Polynomials
- Lesson 15-3 Dividing Polynomials
- Lesson 17-1 Solving Polynomials Algebraically
- Lesson 17-2 The Fundamental Theorem of Algebra
- Lesson 18-1 Graphing Polynomial Functions
- Lesson 18-2 Finding the Roots of a Polynomial Function

### UNIT 4 SERIES, EXPONENTIAL AND LOGARITHMIC FUNCTIONS

- Lesson 19-1 Arithmetic Sequences
- Lesson 19-2 Arithmetic Series
- Lesson 19-3 Sigma Notation
- Lesson 20-1 Geometric Sequences
- Lesson 20-2 Geometric Series
- Lesson 20-3 Convergence of Series
- Lesson 21-2 Exponential Functions
- Lesson 21-3 Exponential Graphs and Asymptotes
- Lesson 21-4 Transforming Exponential Functions
- Lesson 21-5 Natural Base Exponential Functions
- Lesson 22-1 Exponential Data
- Lesson 22-2 The Common Logarithm Function
- Lesson 22-3 Properties of Logarithms
- Lesson 23-1 Logarithms in Other Bases
- Lesson 23-2 Properties of Logarithms and the Change of Base Formula
- Lesson 23-3 Graphs of Logarithmic Functions
- Lesson 24-1 Exponential Equations
- Lesson 24-2 Solving Equations by Using Logarithms
- Lesson 24-3 Logarithmic Equations

### UNIT 5 RADICAL AND RATIONAL FUNCTIONS

- Lesson 25-1 Square Root Functions
- Lesson 25-2 Solving Square Root Equations
- Lesson 25-3 Cube Root Functions
- Lesson 25-4 Solving Cube Root Equations
- Lesson 26-1 Square Root Functions and Regressions
- Lesson 26-2 Square Root and Quadratic Functions
- Lesson 26-3 Cube Root and Cubic Functions
- Lesson 27-1 Formulating and Graphing a Rational Function
- Lesson 27-2 Formulating and Graphing More Rational Functions
- Lesson 27-3 Identifying Asymptotes
- Lesson 28-1 Inverse Variation and Combined Variation
- Lesson 28-2 Transformations of the Parent Rational Function

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Lesson 29-1 Multiplying and Dividing Rational Expressions  
Lesson 29-2 Adding and Subtracting Rational Expressions  
Lesson 29-3 Finding Horizontal and Vertical Asymptotes  
Lesson 29-4 Graphing Rational Functions  
Lesson 30-1 Solving Rational Equations  
Lesson 30-2 Solving Rational Inequalities

## UNIT 7 PROBABILITY AND STATISTICS

Lesson 36-1 Shapes of Distributions  
Lesson 36-2 Characteristics of the Normal Distribution  
Lesson 36-3 z-Scores and their Probabilities  
Lesson 36-4 Modeling with the Normal Distribution  
Lesson 37-2 Experiments  
Lesson 37-3 Observational Studies  
Lesson 38-1 Devising Simulations  
Lesson 38-2 Confirming Data with Simulations  
Lesson 39-1 Introduction to Margin of Error  
Lesson 39-2 Computing Margin of Error  
Lesson 40-1 Random Chance  
Lesson 40-2 Testing Statistical Significance

\*\* Topics covered may be changed at the discretion of the teacher. Honors Algebra 2 classes will cover more material than regular Algebra 2