Algebra 2 with Probability is a two-semester course that is 100% aligned to the South Carolina College- and Career-Ready Mathematics Standards. The course is designed to deepen a student's understanding of key ideas and solution strategies, as well as to extend their knowledge through a variety of problem-solving applications. Students will explore quadratic, polynomial, rational, radical, and exponential functions and their transformations. In addition, students will cover systems of linear and nonlinear equations, sequences and series, trigonometry, and probability. The course supports student learning through guided instruction, interactive tools, and modeling and journal activities that provide opportunities for students to analyze real-world scenarios, construct arguments, critique reasoning, and communicate precisely.

There are no required materials for this course.

Length: Two Semesters

Unit 1: Equations and Inequalities

- Algebraic Expressions
- Solving Linear Equations
- Solving Absolute Value Equations
- Solving Inequalities
- Equations and Inequalities Wrap-Up

Unit 2: Functions

- Functions
- Graphing Functions
- Transforming Functions
- Inverse Functions
- Functions Wrap-Up

Unit 3: Quadratic Functions

- Solving Quadratic Equations
- Completing the Square
- The Quadratic Formula
- Graphs of Quadratic Functions
- Imaginary Numbers
- Quadratic Functions Wrap-Up

Unit 4: Systems of Equations and Inequalities

- Linear Systems of Equations
- Nonlinear Systems of Equations
- Linear Systems of Inequalities
- Systems of Equations and Inequalities Wrap-Up

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Unit 5: Polynomial Functions

- Polynomial Basics
- Polynomial Functions
- Synthetic Division
- Factoring Polynomials Completely
- Solving Polynomial Equations
- Graphing Polynomial Functions
- Transformations of Polynomial Functions
- Polynomial Functions Wrap-Up

Unit 6: Patterns and Numerical Reasoning

- Arithmetic Sequences and Series
- Geometric Sequences and Series
- Matrix Addition and Scalar Multiplication
- Patterns and Numerical Reasoning Wrap-Up

Unit 7: Semester 1 Exam

- Semester 1 Exam

Unit 8: Rational Expressions and Functions

- Proportions
- Rational Expressions
- Simplifying Rational Expressions
- Multiplying and Dividing Rational Expressions
- Adding and Subtracting Rational Expressions
- Inverse Variation
- Rational Functions
- Solving Rational Equations
- Vertical Asymptotes
- Graphing Rational Functions
- Rational Expressions and Functions Wrap-Up

Unit 9: Radical Expressions and Functions

- Basics of Radicals
- Multiplying and Dividing Radicals
- Adding and Subtracting Radicals
- Rationalizing Denominators
- Solving Radical Equations
- Applications of Radical Equations
- Radical Expressions and Functions Wrap-Up

Unit 10: Exponential Functions

- Exponential Functions
- Examples and Applications of Exponential Functions
- Graphs of Exponential Functions

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- Comparing and Analyzing Function Types
- Exponential Functions Wrap-Up

Unit 11: Trigonometry

- Angles and Radians
- Trigonometric Ratios and the Unit Circle
- Graphs of Sine and Cosine
- Trigonometry Wrap-Up

Unit 12: Probability

- Random Outcomes, Sample Spaces, and Events
- Permutations and Combinations
- Independent and Dependent Events
- Conditional Probability
- Using Two-Way Frequency Tables
- Using Probability to Make Decisions
- Probability Wrap-Up

Unit 13: Semester 2 Review and Exam

- Semester 2 Review and Exam

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