Course Syllabus

Description:
This course allows students to learn while having fun. Interactive examples help guide students' journey through customized feedback and praise. Mathematical concepts are applied to everyday occurrences such as earthquakes, stadium seating, and purchasing movie tickets. Students investigate the effects of an equation on its graph through the use of technology. Students have opportunities to work with their peers on specific lessons.

Algebra 2 is an advanced course using hands-on activities, applications, group interactions, and the latest technology.

Estimated Completion Time:2 segments / 32-36 weeks

Major Topics and Concepts:

Segment I
Module 1: Review of Algebra

- 01.00 Introduction and Pretest
- 01.01 Algebra 1 Review
- 01.02 Introduction to Functions
- 01.03 Module One Quiz
- 01.04 Graphing Linear Equalities and Inequalities
- 01.05 Writing the Equation of a Line
- 01.06 Comparing Functions
- 01.07 Module One Review and Practice Test
- 01.08 Discussion-Based Assessment
- 01.09 Module One Test

Module 2: Rational, Complex, and Polynomials

- 02.00 Module Two Pretest
- 02.01 Rational Exponents
- 02.02 Properties of Rational Exponents
- 02.03 Solving Radical Equations
- 02.04 Module Two Quiz
- 02.05 Complex Numbers
- 02.06 Operations of Complex Numbers
- 02.07 Review of Polynomials
- 02.08 Polynomial Operations
- 02.09 Module Two Review and Practice Test
- 02.10 Discussion-Based Assessment
- 02.11 Module Two Test

Module 3: Factoring and Quadratics

- 03.00 Module Three Pretest
- 03.01 Greatest Common Factors and Special Products
- 03.02 Factoring by Grouping

- 03.03 Sum and Difference of Cubes
- 03.04 Graphing Quadratics
- 03.05 Module Three Quiz
- 03.06 Completing the Square
- 03.07 Solving Quadratic Equations
- 03.08 Solving Quadratic Equations with Complex Solutions
- 03.09 Investigating Quadratics
- 03.10 Module Three Review and Practice Test
- 03.11 Discussion-Based Assessment
- 03.12 Module Three Test

Module 4: Multiplying and Dividing Polynomials

- 04.00 Module Four Pretest
- 04.01 Polynomial Long Division
- 04.02 Polynomial Synthetic Division
- 04.03 Theorems of Algebra
- 04.04 Rational Root Theorem and Descartes' Rule of Signs
- 04.05 Solving Polynomial Equations
- 04.06 Module Four Quiz
- 04.07 Graphing Polynomial Functions
- 04.08 Polynomial Identities and Proofs
- 04.09 Module Four Review and Practice Test
- 04.10 Discussion-Based Assessment
- 04.11 Module Four Test

Module 5: Rational Expressions

- 05.00 Module Five Pretest
- 05.01 Simplifying Rational Expressions
- 05.02 Multiplying and Dividing Rational Expressions
- 05.03 Adding and Subtracting Rational Expressions
- 05.04 Simplifying Complex Fractions
- 05.05 Module Five Quiz
- 05.06 Discontinuities of Rational Expressions
- 05.07 Asymptotes of Rational Functions
- 05.08 Solving Rational Equations
- 05.09 Applications of Rational Equations
- 05.10 Segment One Honors Project
- 05.11 Module Five Review and Practice Test
- 05.12 Discussion-Based Assessment
- 05.13 Module Five Test
- 05.14 Segment One Collaboration Component
- 05.15 Segment One Exam Review
- 05.16 Segment One Exam

Segment II

Module 6: Systems of Equations and Inequalities

- 06.00 Module Six Pretest
- 06.01 Solving Systems of Equations Algebraically

- 06.02 Solving Systems of Nonlinear Equations
- 06.03 Graphing Systems of Linear Equations
- 06.04 Module Six Quiz
- 06.05 Graphing Systems of Nonlinear Equations
- 06.06 Module Six Review and Practice Test
- 06.07 Discussion-Based Assessment
- 06.08 Module Six Test

Module 7: Exponential and Logarithmic Functions

- 07.00 Module Seven Pretest
- 07.01 Exponential Functions
- 07.02 Logarithmic Functions
- 07.03 Properties of Logarithms
- 07.04 Solving Exponential Equations with Unequal Bases
- 07.05 Module Seven Quiz
- 07.06 Graphing Exponential Functions
- 07.07 Graphing Logarithmic Functions
- 07.08 Exponential and Logarithmic Functions
- 07.09 Module Seven Review and Practice Test
- 07.10 Discussion-Based Assessment
- 07.11 Module Seven Test

Module 8: Sequence and Series

- 08.00 Module Eight Pretest
- 08.01 Arithmetic Sequences
- 08.02 Arithmetic Series
- 08.03 Geometric Sequences
- 08.04 Geometric Series
- 08.05 Module Eight Quiz
- 08.06 Sigma Notation
- 08.07 Infinite, Convergent, and Divergent Series
- 08.08 Graphing Sequences and Series
- 08.09 Module Eight Review and Practice Test
- 08.10 Discussion-Based Assessment
- 08.11 Module Eight Test

Module 9: Statistics

- 09.00 Module Nine Pretest
- 09.01 Events and Outcomes in a Sample Space
- 09.02 Independent Probability
- 09.03 Conditional Probability
- 09.04 Module Nine Quiz
- 09.05 Normal Distribution
- 09.06 Models of Populations
- 09.07 Using Surveys
- 09.08 Using Experiments
- 09.09 Module Nine Review and Practice Test
- 09.10 Discussion-Based Assessment

- 09.11 Module Nine Test

Module 10: Trigonometry

- 10.00 Module Ten Pretest
- 10.01 Introduction to the Unit Circle
- 10.02 Unit Circle and the Coordinate Plane
- 10.03 Module Ten Quiz
- 10.04 Trigonometric Functions with Periodic Phenomena
- 10.05 Pythagoras, Trigonometry, and Quadrants
- 10.06 Functions of all Types
- 10.07 Segment Two Honors Project
- 10.08 Module Ten Review and Practice Test
- 10.09 Discussion-Based Assessment
- 10.10 Module Ten Test
- 10.11 Segment Two Collaboration Component
- 10.12 Segment Two Exam Review
- 10.13 Segment Two Exam

Course Assessment and Participation Requirements:
To achieve success, students are expected to submit work in each course weekly. Students can learn at their own pace; however, “any pace” still means that students must make progress in the course every week. To measure learning, students complete self-checks, practice lessons, multiple choice questions, projects, discussion-based assessments, and discussions. Students are expected to maintain regular contact with teachers; the minimum requirement is monthly. When teachers, students, and parents work together, students are successful.

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