



Reavis High School

Algebra II/Trig Honors Curriculum Snapshot



Unit 1: The Language of Algebra

12
Days

Students will explore problem-solving skills that will be used throughout this course. Students will be able to simplify algebraic expressions. They will also be able to solve equations by using properties of equality. This will then lead to solving and graphing inequalities. They will then investigate all aspects of graphing and functions, including midpoint and distance formulas. Operations of matrices is next, followed by investigating probability. Finally, the students will work with exponents and radicals, in which they will review the rules of these two important concepts.



Unit 2: Linear Relationships

8
Days

Students will determine the slope of the line as well as review point-slope formula, slope-intercept formula, and standard formula of a line. Also, the students will determine if lines are parallel or perpendicular. Next, they will solve systems of linear equations graphically or algebraically. The students will also have to graph linear inequalities by finding unions or intersections of sets of inequalities. They will then have to recognize direct variation functions. This leads into having the students fit a line to data. Finally, the students will have to recognize and graph compound functions.



Unit 3: Quadratic Functions

12
Days

Students will have to recognize quadratic expressions and equations. This leads the students into factoring quadratic expressions. Then, they will have to recognize quadratic functions and use the quadratic formula to solve real zeros. The students will be familiar with whether they should solve quadratics by graphing, factoring, using the Quadratic Formula, or completing the square. Finally, the students will get the chance to analyze and solve real-life quadratic problems.



Unit 4: Functions

10
Days

Students will be able to recognize relations and functions. The students will then be exposed to restrictions on the domain of the function, identify inverse functions, and manipulate composite functions. Then they will develop concepts of inverse functions by actually proving the functions are inverses and be exposed to performing operations on inputs and outputs of a function. Using discrete functions will be the next task, where they will master permutation, combination, and factorial functions. Then, the students will interpret recursive functions. Finally, the measures of central tendency will be illustrated.



Unit 5: Graphing

10
Days

Students will begin this unit understanding how to construct different functions where stretching, shrinking, and reflecting will come into play. They will not just focus on parabolas but also absolute value graphs. Then, they will take construction a step farther by shifting graphs vertically and horizontally, while mastering reflections and symmetry of a graph. They will also identify other polynomial functions. The students will then be able to recognize asymptotes and holes with regard to functions. And finally, the students will compute measures of dispersions.



Unit 6: Conics

6
Days

Students will compare and contrast the four different conics (circle, ellipse, parabola, and hyperbola). They will put each conic into standard form (possibly using "Completing the Square"). They will find each conic's center and graph each conic. Finally, they will explore the different aspects of each conic.



Unit 7: Systems

8
Days

Students will learn how to solve systems of equations. This will include two unknowns and, eventually, three unknowns. They will also graph these three unknown systems. The students will then graph systems of inequalities. Then, the students will move on to inverse-variation problems, where they will have to solve and graph these inverse functions. The students will also have to solve systems that are nonlinear equations. Finally, the students will have to solve systems of equations involving rational expressions.



Unit 8: Extending the Real Number System

8
Days

Students will apply properties of exponents to expressions with fractional exponents. They will also learn how to deal with negative exponents. This will lead to the students learning how to solve equations that contain square roots and rational exponents. They will then identify imaginary numbers, perform operations on imaginary numbers, identify complex numbers, and determine the conjugate of complex numbers. Finally, the students will identify equal complex numbers and perform operations on complex numbers.



Unit 9: Polynomials and Polynomial Functions

11
Days

Students will be able to write polynomials in nested form and apply the Remainder Theorem as well as divide a polynomial by a binomial. Then, the students will come to appreciate synthetic division. The students will find zeros of functions by factoring and using the quadratic formula. Only then will the students apply the Rational Zero Theorem, while using graphing features on their calculator. Then, the students will identify upper and lower bounds. The students will determine the number of complex zeros of a polynomial function as well as finding the sum and product of the roots of a quadratic equation. The students will also apply the Conjugate Zero Theorem. Next, using the Binomial Theorem to expand the powers of binomials will be taught. Lastly, the students will calculate standard deviation and Chebyshev's Theorem.



Unit 10: Rational Expressions, Equations, and Fractions

8
Days

Students will recognize rational expressions, simplify rational expressions, and perform operations on rational expressions. Students will then find zeros of rational expressions. They will also solve rational equations and inequalities. Students will then learn how to add and subtract rational expressions with like denominators which will then lead to adding and subtracting rational expressions with unlike denominators. Lastly, students will learn how to simplify complex fractions.



Unit 11: Logarithmatics

10
Days

Students will have to graph exponential functions and logarithmic functions and also know how to use the definition of the logarithmic functions and manipulate it correctly. Students will solve problems involving exponential and logarithmic functions with Base 10 and also with Base e . Students will apply the seven properties of logarithms, including the base-change formula. They will also have to solve exponential and logarithmic equations. Lastly, students will have to use exponential and logarithmic functions and not only apply them as mathematical models but also analyze them.



Unit 12: Introduction to Trigonometry

23
Days

Students will learn how to measure angles as rotations. They will also have to determine points of intersections of rays and the unit circle. They will learn how to calculate the sine, cosine, tangent, cotangent, secant, and cosecant of an angle, while also learning how to use the Pythagorean identities. Then, the students will define the trigonometric functions in terms of coordinates while using special angles to compute trigonometric functions. Next, the students will learn how to compute the inverse trigonometric functions. Students will define trigonometric functions in terms of right triangles as well as using the cofunction identities. The students will then express angles in radians. Lastly, the students will recognize odd and even functions and identify relationships between trigonometric functions of special angles.



Unit 13: Trigonometric Graphs and Applications

10
Days

Students will learn how to apply the Law of Sines and the Law of Cosines. The students will learn how to graph the sine and cosine functions. They will also translate the sine graph vertically and horizontally. Next, the students will learn how to change the amplitude of the sine and cosine graph. Finally, the student will learn how to change the period of sine and cosine functions.



Unit 14: Trigonometric Identities and Equations

20
Days

Students will prove trigonometric identities and will use the sum and difference identities, while applying the double-angle identities and the half-angle identities. Students will use the product-to-sum and sum-to-product identities. Then, the students will apply all identities that they have learned to solve trigonometric equations.