	UNIT 1 Foundations for Functions (12 DAYS)	UNIT 2 Quadratic Functions (27 DAYS)	UNIT 3 Polynomial Functions (20 DAYS)	UNIT 4 Exponential and Logarithmic Functions (18 DAYS)	UNIT 5 Probability (14 DAYS)	UNIT 6 Rational and Radical Functions (23 DAYS)	UNIT 7 Properties and Attributes of Functions (15 DAYS)	UNIT 8 Sets of Numbers and 3 variable (6 DAYS)	Unit 9 Sequences and Series (6 DAYS)	UNIT 10 Trigonometric Functions (15 DAYS)
ACT Course Standards--ALGEBRA II	FUSE 1	FUSE 2	FUSE 3	FUSE 4	FUSE 7/8	FUSE 5	FUSE 6	iBook	FUSE 9	FUSE 10
A. PREREQUISITES										
1. Skills Acquired by Students in a Previous Course and Refined in This Course										
a. Identify properties of real numbers and use them and the correct order of operations to simplify expressions										
b. Multiply monomials and binomials										
c. Factor trinomials in the form ax2 + bx + c										
d. Solve single-step and multistep equations and inequalities in one variable										
e. Solve systems of two linear equations using various methods, including elimination, substitution, and graphing										
f. Write linear equations in standard form and slope-intercept form when given two points, a point and the slope, or the graph of the equation										
g. Graph a linear equation using a table of values, x- and y-intercepts, or slope-intercept form										
h. Find the distance and midpoint between two points in the coordinate plane										
i. Use sine, cosine, and tangent ratios to find the sides or angles of right triangles										
j. Use inductive reasoning to make conjectures and deductive reasoning to arrive at valid conclusions										
B. EXPLORING THE SKILLS AND STRATEGIES UNDERLYING MATHEMATICS										
1. Mathematical Processes Learned in the Context of Increasingly Complex Mathematical and Real-World Problems (Note: These mathematical processes are the same for Algebra I, Geometry, Algebra II, and Precalculus.)										

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a. Apply problem-solving skills (e.g., identifying irrelevant or missing information, making conjectures, extracting mathematical meaning, recognizing and performing multiple steps when needed, verifying results in the context of the problem) to the solution of real-world problems	x	x	x	x	x	x	x	x	x	x
b. Use a variety of strategies to set up and solve increasingly complex problems	x	x	x	x	x	x	x	x	x	x
c. Represent data, real-world situations, and solutions in increasingly complex contexts (e.g., expressions, formulas, tables, charts, graphs, relations, functions) and understand the relationships	x	x	x	x	x	x	x	x	x	x
d. Use the language of mathematics to communicate increasingly complex ideas orally and in writing, using symbols and notations correctly	x	x	x	x	x	x	x	x	x	x
e. Make appropriate use of estimation and mental mathematics in computations and to determine the reasonableness of solutions to increasingly complex problems	x	x	x	x	x	x	x	x	x	x
f. Make mathematical connections among concepts, across disciplines, and in everyday experiences	x	x	x	x	x	x	x	x	x	x
g. Demonstrate the appropriate role of technology (e.g., calculators, software programs) in mathematics (e.g., organize data, develop concepts, explore relationships, decrease time spent on computations after a skill has been established)	x	x	x	x	x	x	x	x	x	x
h. Apply previously learned algebraic concepts in geometric contexts	x	x	x	x	x	x	x	x	x	x
C. Establishing Number Sense and Operation Skills										
1. Foundations										
a. Identify complex numbers and write their conjugates		x								
b. Add, subtract, and multiply complex numbers		x								
c. Simplify quotients of complex numbers		x								
d. Perform operations on functions, including function composition, and determine domain and range for each of the given functions	x	x	x	x	x	x	x			
D. Exploring Expressions, Equations, and Functions in the First Degree										

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1. Expressions, Equations, and Inequalities										
a. Solve linear inequalities containing absolute value (Mastered in Algebra I)										
b. Solve compound inequalities containing “and” and “or” and graph the solution set (Mastered in Algebra I)		x								
c. Solve algebraically a system containing three variables								x		
2. Graphs, Relations, and Functions										
a. Graph a system of linear inequalities in two variables with and without technology to find the solution set to the system (Mastered in Algebra I)										
b. Solve linear programming problems by finding maximum and minimum values of a function over a region defined by linear inequalities(Done in Adv Math)										
E. Exploring Quadratic Equations and Functions										
1. Equations and Inequalities										
a. Solve quadratic equations and inequalities using various techniques, including completing the square and using the quadratic formula		x								
b. Use the discriminant to determine the number and type of roots for a given quadratic equation		x								
c. Solve quadratic equations with complex number solutions d. Solve quadratic systems graphically and algebraically with and without technology		x								
2. Graphs, Relations, and Functions										
a. Determine the domain and range of a quadratic function; graph the function with and without technology		x								
b. Use transformations (e.g., translation, reflection) to draw the graph of a relation and determine a relation that fits a graph	x	x					x			
c. Graph a system of quadratic inequalities with and without technology to find the solution set to the system		x								

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3. Conic Sections										
a. Identify conic sections (e.g., parabola, circle, ellipse, hyperbola) from their equations in standard form										
b. Graph circles and parabolas and their translations from given equations or characteristics with and without technology		x								
c. Determine characteristics of circles and parabolas from their equations and graphs		x								
d. Identify and write equations for circles and parabolas from given characteristics and graphs		x								
F. Exploring Polynomial Expressions, Equations, and Functions										
1. Expressions and Equations										
a. Evaluate and simplify polynomial expressions and equations			x							
b. Factor polynomials using a variety of methods (e.g., factor theorem, synthetic division, long division, sums and differences of cubes, grouping)		x	x							
2. Functions										
a. Determine the number and type of rational zeros for a polynomial function			x							
b. Find all rational zeros of a polynomial function			x							
c. Recognize the connection among zeros of a polynomial function, x-intercepts, factors of polynomials, and solutions of polynomial equations			x							
d. Use technology to graph a polynomial function and approximate the zeros, minimum, and maximum; determine domain and range of the polynomial function			x							
G. Exploring Advanced Functions										
1. Rational and Radical Expressions, Equations, and Functions										
a. Solve mathematical and real-world rational equation problems (e.g., work or rate problems)						x				
b. Simplify radicals that have various indices						x				

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c. Use properties of roots and rational exponents to evaluate and simplify expressions						x				
d. Add, subtract, multiply, and divide expressions containing radicals						x				
e. Rationalize denominators containing radicals and find the simplest common denominator						x				
f. Evaluate expressions and solve equations containing nth roots or rational exponents						x				
g. Evaluate and solve radical equations given a formula for a real-world situation						x				
2. Exponential and Logarithmic Functions										
a. Graph exponential and logarithmic functions with and without technology				x						
b. Convert exponential equations to logarithmic form and logarithmic equations to exponential form				x						
3. Trigonometric and Periodic Functions										
a. Use the law of cosines and the law of sines to find the lengths of sides and measures of angles of triangles in mathematical and real-world problems										x
b. Use the unit-circle definition of the trigonometric functions and trigonometric relationships to find trigonometric values for general angles										x
c. Measure angles in standard position using degree or radian measure and convert a measure from one unit to the other										x
d. Graph the sine and cosine functions with and without technology - (Leave to ADV)										
e. Determine the domain and range of the sine and cosine functions, given a graph - (Leave to ADV)										
f. Find the period and amplitude of the sine and cosine functions, given a graph - (Leave to ADV)										

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g. Use sine, cosine, and tangent functions, including their domains and ranges, periodic nature, and graphs, to interpret and analyze relations - (Leave to ADV)										
H. Organizing and Analyzing Data and Applying Probability										
1. Data Relations, Probability, and Statistics										
a. Use the fundamental counting principle to count the number of ways an event can happen					x					
b. Use counting techniques, like combinations and permutations, to solve problems (e.g., to calculate probabilities)					x					
c. Find the probability of mutually exclusive and nonmutually exclusive events					x					
d. Find the probability of independent and dependent events					x					
e. Use unions, intersections, and complements to find probabilities					x					
f. Solve problems involving conditional probability					x					
2. Sequences and Series (Chapter 9 Sections 1, 3, 4)										
a. Find the nth term of an arithmetic or geometric sequence									x	
b. Find the position of a given term of an arithmetic or geometric sequence									x	
c. Find sums of a finite arithmetic or geometric series									x	
d. Use sequences and series to solve real-world problems									x	
e. Use sigma notation to express sums - (leave to ADV)										
I. Using Matrices to Organize Data and Solve Problems										
1. Matrices										
a. Add, subtract, and multiply matrices										
b. Use addition, subtraction, and multiplication of matrices to solve real-world problems										

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c. Calculate the determinant of 2 × 2 and 3 × 3 matrices										
d. Find the inverse of a 2 × 2 matrix										
e. Solve systems of equations by using inverses of matrices and determinants										
f. Use technology to perform operations on matrices, find determinants, and find inverses										