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Algebra 2 & Trigonometry (non-Regents)

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
QUARTER 1: Units 1 -3				
	Unit 1 – The Real Numbers			
	Vocabulary – algebraically, equivalent, evaluate, explain numerically, equation, operation, absolute value, absolute value equation, absolute value function, absolute value inequality, coefficient equation, linear equation			
	1. Real Number System	2	• Houghton-Mifflin Book 3, Sections 1.1, 1.2 • McDougal Littell Algebra 2, Sections 1.1, 1.2 • Old 1.1, 1.2 • NYSED Sample Tasks & Test • NYSED Math Glossary & Math Vocabulary List • Classzone.com • Mathbits.org • JMAP.com • Regentsprep.org	
	Vocabulary – slope, y-intercept, table method, vertex			
	Define and identify subsets of the real numbers: N, W, Z, Q, irrationals, and R.			
	Define and **apply** the properties of real numbers: closure, commutative, associative, distributive, inverses, and identities.			
	Define the order of operation.			
	Apply the order of operations in the simplification of a numerical quantity.			
	Evaluate algebraic expressions given the values of the variables.			
A2.CN.8	Develop an appreciation for the historical development of mathematics.			
A2.PS.8	Determine information required to solve a problem, choose methods for obtaining the information, and			

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	define parameters for acceptable solutions.			
A2.PS.9	Interpret solutions within the given constraints of a problem.			
	2. Solving Linear Equations	2	• Houghton-Mifflin Book 3, Section 1.3 • McDougal Littell Algebra 2, Section 1.5 • Old 1.3 • NYSED Sample Tasks & Test • NYSED Math Glossary & Math Vocabulary List • Classzone.com • Mathbits.org • JMAP.com • Regentsprep.org	
	Solve linear equations containing one-step, two-step, variables on both sides, parentheses, and rational numbers.			
A2.RP.1	Support mathematical ideas using a variety of strategies.			
A2.CM.1	Communicate verbally and in writing a correct, complete, coherent, and clear design (outline) and explanation for the steps used in solving a problem.			
A2.A.1	Solve absolute value equations and inequalities involving linear expressions in one variable.			
	3. Solving Linear Inequalities	2	• Houghton-Mifflin Book 3, Section 1.5 • McDougal Littell Algebra 2, Section 1.6 • Old 1.6 • NYSED Sample Tasks & Test • NYSED Math Glossary & Math	
	Solve linear inequalities algebraically.			
	Apply set notation in writing the answer to a linear inequality.			
	Graphing solution set on a number line.			
A2.CM.1	Communicate verbally and in writing a correct,			

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	complete, coherent, and clear design (outline) and explanation for the steps used in solving a problem.		Vocabulary List • Classzone.com • Mathbits.org • JMAP.com • Regentsprep.org	
A2.CN.1	Understand and make connections among multiple representations of the same mathematical idea.			
A2.A.1	Solve absolute value equations and inequalities involving linear expressions in one variable.			
	4. Solving Compound Inequalities	2	• Houghton-Mifflin Book 3, Section 1.6 • McDougal Littell Algebra 2, Section 1.6 • Old 1.6 • NYSED Sample Tasks & Test • NYSED Math Glossary & Math Vocabulary List • Classzone.com • Mathbits.org • JMAP.com • Regentsprep.org	
	Determine the algebraic solution of a compound inequality.			
	Express the solution in set notation.			
	Graphing solution on a number line.			
A2.CM.1	Communicate verbally and in writing a correct, complete, coherent, and clear design (outline) and explanation for the steps used in solving a problem.			
A2.CN.1	Understand and make connections among multiple representations of the same mathematical idea.			
A2.A.1	Solve absolute value equations and inequalities involving linear expressions in one variable.			
	5. Absolute Value	2	• Houghton-Mifflin Book 3, Section 1.8	
	Define absolute value.			

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STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	Simplify absolute value expressions.		• McDougal Littell Algebra 2, Section 1.7 • Old 1.7 • NYSED Sample Tasks & Test • NYSED Math Glossary & Math Vocabulary List • Classzone.com • Mathbits.org • JMAP.com • Regentsprep.org	
	Solve absolute value linear equations.			
	Solve absolute value linear inequalities.			
	Express solution in set notation.			
A2.RP.9	Support an argument by using a systematic approach to test more than one case.			
A2.CM.1	Communicate verbally and in writing a correct, complete, coherent, and clear design (outline) and explanation for the steps used in solving a problem.			
A2.A.1	Solve absolute value equations and inequalities involving linear expressions in one variable.			
	6. Review & Test	2		
	Total	**12**		
	Unit 2 – Radicals			
	Vocabulary – alternate approach, algebraic expression, appropriate, center-radius equation of a circle, central angle, circle, circular functions, common factor, completing the square, degree of a polynomial, difference of two perfect squares, equivalent, expand a binomial, factor, greatest common factor (GCF), investigate, justify, equation, polynomial expression, principal square root, negative exponent, quadratic equation, quadratic formula, radical, radical form, radicand, rational number, quadratic trinomial, zero product property			
	1. Laws of Exponents	2	• Houghton-Mifflin Book 3, Section	

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STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	Simplify expressions containing: X^0, x^a, $(x^a)(x^b)$, $(x^a)^b$, x^{-a}, $(xy)^a$, $(x/y)^{-a}$, x^a/x^b, $(x^a/x^b)^c$		2.1 • McDougal Littell Algebra 2, Section 1.5 • Old 1.6 • NYSED Math Glossary & Math Vocabulary List • JMAP.com • Regentsprep.org	
	Rewrite expressions containing negative exponents as expressions with positive exponents.			
A2.P3.3	Observe and explain patterns to formulate generations and conjectures.			
A2.RP.2	Investigate and evaluate conjectures in mathematical terms, using mathematical strategies to reach a conclusion.			
A2.N.1	Evaluate numerical epxressions with negative exponents, without the aid of a calculator (when the answers are rational numbers).			
A2.A.8	Apply the rules of exponents to simplify expressions involving negative and/or fractional exponents.			
A2.A.9	Rewrite algebraic expressions that contain negative exponents using only positive exponents.			

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	2. Operations with Polynomials	3	• Houghton-Mifflin Book 3, Section 2.2 • McDougal Littell Algebra 2, Section 5.3 • Old 6.3 • NYSED Math Glossary & Math Vocabulary List • JMAP.com • Regentsprep.org	
	Simplify expressions involving polynomial addition.			
	Simplify expressions involving polynomial subtraction.			
	Simplify expressions involving polynomial multiplication: • monomial times monomial • monomial times polynomial • binomial times binomial • binomial times trinomial			
A2.RP.2	Investigate and evaluate conjectures in mathematical terms, using mathematical strategies to reach a conclusion.			
A2.CN.2	Understand the corresponding procedures for similar problems or mathematical concepts.			
A2.CN.4	Understand how concepts, procedures, and mathematical results in one area of mathematics can be used to solve problems in other areas of mathematics.			
A2.N.3	Perform arithmetic operations with polynomial expressions containing rational coefficients.			
	3. Factoring Polynomials Completely	3	• Houghton-Mifflin Book 3, Section 2.3	
	Define factoring by GCF, difference of two squares,			

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STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	and foil backwards.		• McDougal Littell Algebra 2, Sections 4.3, 4.4 and pg. 255 • Old 6.4 • NYSED Math Glossary & Math Vocabulary List • JMAP.com • Regentsprep.org • Mathbits.org	
	Apply factoring techniques to factor polynomials (binomials, trinomials and polynomials) by using: • GCF, difference of two squares, and foil backwards (a=1 and a≠ 1) • (One day GCF and difference, one day foil backwards and one day factor completely) • Factor a polynomial (4 terms) by grouping			
A2.PS.8	Determine information required to solve a problem, choose methods for obtaining the information, and define parameters for acceptable solutions.			
A2.RP.2	Investigate and evaluate conjectures in mathematical terms, using mathematical strategies to reach a conclusion.			
A2.RP.6	Construct logical arguments that verify claims or counterexamples that refute them.			
A2.CM.8	Reflect on strategies of others in relation to one's own strategy.			
A2.CN.4	Understand how concepts, procedures, and mathematical results in one area of mathematics can be used to solve problems in other areas of mathematics.			

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STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
A2.A.7	Factory polynomial expressions completely, using any combination of the following techniques: • common factor extraction • difference of two perfect squares • quadratic trinomials			
	4. Solving Quadratic Equations	3	• Houghton-Mifflin Book 3, Section 2.4 • McDougal Littell Algebra 2, Sections 4.3, 4.4, 4.7, 4.8 • Old 6.4 • NYSED Math Glossary & Math Vocabulary List • JMAP.com • Regentsprep.org • Mathbits.org • Graphing Calculator • SMART View	
	Define and convert a quadratic equation into standard form.			
	Solve a quadratic equation by factoring.			
	Solve a quadratic equation by quadratic formula.			
	Determine the best method for arriving at a solution for a specific equation. (Check all methods by graphically finding roots on a calculator)			
A2.RP.6	Construct logical arguments that verify claims or counterexamples that refute them.			
A2.CM.8	Reflect on strategies of others in relation to one's own strategy.			
A2.PS.5	Choose an effective approach to solve a problem from a variety of strategies.			
A2.PS.8	Determine information required to solve a problem, choose methods for obtaining the information, and			

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Algebra 2 & Trigonometry (non-Regents)

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	define parameters for acceptable solutions.			
A2.A.24	Know and apply the technique of completing the square.			
A2.A.25	Solve quadratic equations, using the quadratic formula.			
A2.R.1	Use physical objects, diagrams, charts, tables, graphs, symbols, equations, or objects created using technology as representations of mathematical concepts.			
A2.R.2	Recognize, compare, and use an array of representational forms.			
	5. Review & Test	2		
	Total	**13**		
	Unit 3 – Rational Expressions, Equations and Inequalities			
	Vocabulary – algebraic expression, coefficient, complex fraction, complex fractional expressions, conclusion, equation, equivalent, explain, extraneous root, evaluate, formula, graph, investigate, observe, rational, rational coefficient, rational equation, rational expression, rational number, real number			
	1. Simplifying, Multiplying and Dividing Rational Expressions	2	• Houghton-Mifflin Book 3, Section 2.6 • McDougal Littell Algebra 2, Section 8.4 • Old 9.4	
	Define rational expressions.			
	Simplifying rational expressions by factoring.			

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STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	Multiply and divide rational expressions and leave the result in simplest form.		• NYSED Math Glossary & Math Vocabulary List • JMAP.com • Regentsprep.org • Mathbits.org • Graphing Calculator	
A2.A.16	Perform arithmetic operations with rational expressions and rename to lowest terms.			
	2. Adding and Subtracting Rational Expressions	2	• Houghton-Mifflin Book 3, Section 2.6 • McDougal Littell Algebra 2, Section 8.5 • Old 9.5 • NYSED Math Glossary & Math Vocabulary List • JMAP.com • Regentsprep.org • Mathbits.org • Graphing Calculator	
	Add rational expressions that have common denominators.			
	Subtract rational expressions that have common denominators.			
	Add rational expressions without common denominators where the denominators are monomials or binomials.			
	Subtract rational expressions without common denominators where the denominators are monomials or binomials.			
	Add rational expressions without common denominators where the trinomial denominators have a common factor.			
	Subtract rational expressions without common			

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STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	denominators where the trinomial denominators have a common factor.			
A2.A.16	Perform arithmetic operations with rational expressions and rename to lowest terms.			
	3. Mixed Review Four Operations with Ration Expressions	1		
	4. Complex Fractions	2	• Houghton-Mifflin Book 3, Section 2.8 • McDougal Littell Algebra 2, Section 8.5 • Old 9.5 • NYSED Math Glossary & Math Vocabulary List • JMAP.com • Regentsprep.org • Mathbits.org	
	Define and identify complex numerical fractions.			
	Define and identify complex algebraic fractions.			
	Simplify both numerical and algebraic complex fractions.			
A2.PS.5	Choose an effective approach to solve a problem from a variety of strategies.			
A2.A.17	Simplify complex fractional expressions.			
	5. Solving Rational Equations	2	• Houghton-Mifflin Book 3, Section 3.3 • McDougal Littell Algebra 2, Section 6.6 • Old 9.6 • NYSED Math Glossary & Math Vocabulary List	
	Solve both linear and quadratic rational equations.			
	Check for extraneous roots.			
A2.A.23	Solve rational equations and inequalities.			

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STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
			• Regentsprep.org • Mathbits.org	
	6. Solving Linear – Quadratic Systems	1	• McDougal Littell Algebra 2, Section 9.7 • NYSED Math Glossary & Math Vocabulary List • JMAP.com • Regentsprep.org • Mathbits.org • Graphing Calculator • SMART View	
	Define and identify algebraic systems.			
	Solve Linear – Quadratic systems algebraically.			
	Solve Linear – Quadratic systems graphically only as a check. (Solve graphically on the graphing calculator) *Note: This includes rational equations that result in linear equations with extraneous roots.*			
A2.CN.2	Understand the corresponding procedures for similar problems or math concepts.			
A2.PS.5	Choose an effective approach to solve a problem from a variety of strategies (numeric, graphic, algebraic).			
A2.PS.8	Determine information required to solve a problem, choose methods for obtaining the information, and define parameters for acceptable solutions.			
A2.A.3	Solve systems of equations involving one linear equation and one quadratic equation algebraically. *Note: This includes rational equations that result in linear equations with extraneous roots.*			

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STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	6. Review & Test	2		
	Total	**12**		
	Unit 4 – Radicals and Complex Numbers			
	Vocabulary – absolute value, algebraic representation, a + *bi*, coefficient, complex fraction, complex number, conjugate, discriminant, double root, extraneous root, generalization, graphical representation, *i*, imaginary numbers, imaginary roots, irrational number, multiplicative inverse, nature of the roots, parabola, parameter, power of *I*, product of the roots, radical, radical form, radicand, rational number, rationalize a denominator, real number, real roots, solution set, sum of the roots			
	1. Radical Expressions	2	• Houghton-Mifflin Book 3, Section 3.1 • NYSED Math Glossary & Math Vocabulary List and Tool Kit • JMAP.com • Regentsprep.org • Mathbits.org • Graphing Calculator • SMART View	
	Simplifying numerical square roots, cube roots and *n*th roots.			
	Simplifying algebraic monomial square roots, cube roots and *n*th roots.			
	Evaluate the decimal approximations of radicals.			
	Add radical expressions and express answer in simplest radical form.			
	Subtract radical expressions and express answer in simplest radical form.			
A2.RP.4	Recognize when an approximation is more appropriate than an exact answer.			
A2.N.1	Evaluate numerical expressions with negative and/or			

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STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	fractional exponents, without the aid of a calculator (when the answers are rational numbers).			
A2.N.2	Perform arithmetic operations (addition, subtraction, multiplication, division) with expressions containing irrational numbers in radical form.			
A2.N.4	Perform arithmetic operations on irrational expressions.			
A2.A.13	Simplify radical expressions.			
A2.A.14	Perform addition, subtraction, multiplication, and division of radical expressions.			
	2. Multiplying and Dividing Radical Expressions	2	• Houghton-Mifflin Book 3, Section 3.2 • McDougal Littell Algebra 1 • NYSED Math Glossary, Math Vocabulary List and Tool Kit • JMAP.com • Regentsprep.org • Mathbits.org	
	Define rationalize the denominator of a radical expression.			
	Rationalize the denominator of both numerical and algebraic radical expression.			
	Multiply radical expressions with one term or two terms and simplify the answer.			
	Divide radical expressions with one term or two terms and simplify the answer.			
A2.N.1	Evaluate numerical expressions with negative and/or fractional exponents, without the aid of a calculator			

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STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	(when the answers are rational numbers).			
A2.N.2	Perform arithmetic operations (addition, subtraction, multiplication, division) with expressions containing irrational numbers in radical form.			
A2.N.4	Perform arithmetic operations on irrational expressions.			
A2.N.5	Rationalize a denominator containing a radical expression.			
A2.A.13	Simplify radical expressions.			
A2.A.14	Perform addition, subtraction, multiplication, and division of radical expressions.			
A2.A.15	Rationalize denominators involving algebraic radical expressions.			
	3. Solving Radical Equations	2	• Houghton-Mifflin Book 3, Section 3.3 • McDougal Littell Algebra 2, 6.6 • Old 7.6 • NYSED Math Glossary, Math Vocabulary List and Tool Kit • JMAP.com • Regentsprep.org • Mathbits.org	
	Define radical equations and extraneous roots.			
	Solve radical equations with one radical.			
	Solve radical equations with two radicals.			
	Determine whether or not a root is an extraneous root.			
A2.PS.8	Determine information required to solve a problem, choose methods for obtaining the information, and			

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STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	define parameters for acceptable solutions.			
A2.A.22	Solve radical equations.			
	4. The Number "*i*"	1	• Houghton-Mifflin Book 3, Section 3.3 • McDougal Littell Algebra 2, 6.6 • Old 5.4 • NYSED Math Glossary, Math Vocabulary List and Tool Kit • JMAP.com • Regentsprep.org • Mathbits.org	
	Define imaginary numbers.			
	Explore the Cyclic nature of the imaginary numbers.			
	Evaluate i^A for integral values of A.			
	Simplify radicals with negative radicand and express the answer in terms of *i*.			
	Multiply and divide radicands with negative radicands and express in simplest form.			
A2.N.6	Write square roots of negative numbers in terms of *i*.			
A2.N.7	Simplify powers of *i*.			
	5. Complex Numbers	3	• Houghton-Mifflin Book 3, Section 3.5 • McDougal Littell Algebra 2, 4.6 • Old 5.4 • NYSED Math Glossary, Math Vocabulary List and Tool Kit • JMAP.com • Regentsprep.org	
	Define the complex number system and a + bi form.			
	Find missing real or imaginary piece of a complex number given an equal complex number.			
	Add, subtract and multiply complex numbers.			
	Develop a Venn diagram for number systems to include the complex.			

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STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	Graph on the complex plane: complex numbers, sum of complex, and difference of complex numbers.		• Mathbits.org • Graphing Calculator • SMART View	
	Define and find the absolute value of complex numbers.			
	Explore imaginary numbers using the calculator.			
A2.N.6	Write square roots of negative numbers in terms of *i*.			
A2.N.7	Simplify powers of *i*.			
A2.N.9	Perform arithmetic operations on complex numbers and write the answer in the form a + b*i*. *Note: This includes simplifying expressions with complex denominators.*			
	6. Complex Conjugates	1	• Houghton-Mifflin Book 3, Section 3.6 • McDougal Littell Algebra 2, pg. 278 • Old 5.4 • NYSED Math Glossary, Math Vocabulary List and Tool Kit • JMAP.com • Regentsprep.org • Mathbits.org	
	Define and find the conjugate of a complex number.			
	Discover that the product of a complex number and its conjugate is a real number.			
	Find the multiplicative inverse of a complex number.			
	Apply complex conjugates to divide one complex number by another.			
	Simplify expression with complex denominators.			
A2.N.7	Simplify powers of *i*.			
A2.N.8	Determine the conjugate of a complex number.			

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STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
A2.N.9	Perform arithmetic operations on complex numbers and write the answer in the form a + b*i*. *Note: This includes simplifying expressions with complex denominators.*			
	7. Discriminant and the Quadratic Equation	3	• Houghton-Mifflin Book 3, Section 3.7 • McDougal Littell Algebra 2, pgs. 294, 296 • Old 5.6 • NYSED Math Glossary, Math Vocabulary List and Tool Kit • JMAP.com • Regentsprep.org • Mathbits.org • Graphing Calculator • SMART View	
	Define and find the discriminant of a quadratic equation.			
	Apply the discriminate to determine the nature of the roots of a quadratic.			
	Investigate and explore the relationship between the discriminant and x-intercepts of a parabola.			
	Solve a quadratic equation over the complex.			
A2.PS.8	Determine information required to solve a problem, choose methods for obtaining the information, and define parameters for acceptable solutions.			
A2.N.6	Write square roots of negative numbers in terms of *i*.			
A2.N.9	Perform arithmetic operations on complex numbers and write the answer in the form a + b*i*. *Note: This includes simplifying expressions with complex denominators.*			
A2.A.2	Use the discriminant to determine the nature of the roots of a quadratic equation.			

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STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
A2.A.25	Solve quadratic equations, using the quadratic formula.			
	8. Sum and Product of the Roots	1	• Houghton-Mifflin Book 3, Section 3.8 • NYSED Math Glossary, Math Vocabulary List and Tool Kit • JMAP.com • Regentsprep.org • Mathbits.org	
	Given quadratic equation find the sum and product of the roots.			
	Given the roots find the quadratic equation.			
A2.CM.7	Read and listen for logical understanding of mathematical thinking shared by other students.			
A2.A.20	Determine the sum and product of the roots of a quadratic equation by examining its coefficients.			
A2.A.21	Determine the quadratic equation, given the sum and product of its roots.			
	9. Review & Test	2		
	Total	**17**		
	Unit 5 – Functions			
	Vocabulary – abscissa, algebraic representation, chart, composition of functions, conjecture, constant function, counterexample, decoding, diagram, discover, domain, explore, extraneous root, formula, formulate, function, function notation, graph, graph of relation, graphical solution of equations, horizontal-line test, interpretation, investigate, justify, multiple representations, one-to-one function, onto, parameter, range (of a function), recognize, refute, restricted domain, standard notation, symbol, terminology, vertical line test, zero of a function			
	1. Introduction to Functions	2	• Houghton-Mifflin Book 3, Section	

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	Define relation, mapping function, 1-1 function, onto function, 2-1 and onto function, domain, range, pre-image, and image.		4.1 • McDougal Littell, Algebra 2.1 • Old 2.1 • NYSED Math Glossary, Math Vocabulary List and Tool Kit • JMAP.com • Regentsprep.org • Mathbits.org • Graphing Calculator • SMART View	
	Investigate relations algebraically and graphically.			
	Determine and justify when a relation is a function from its graph.			
	Determine and justify when a relation is a function from its equation.			
	Determine and justify when a relation is a 1-1 function, onto function, 1-1 and onto function.			
	Apply vertical line test to determine whether a relation is a function.			
A2.PS.8	Determine information required to solve a problem, choose methods for obtaining the information, and define parameters for acceptable solutions.			
A2.CM.2	Use mathematical representations to communicate with appropriate accuracy, including numerical tables, formulas, functions, equations, charts, graphs, and diagrams.			
A2.A.37	Define a relation and function.			
A2.A.38	Determine when a relation is a function.			

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STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
A2.A.43	Determine if a function is one-to-one, onto, or both.			
A2.A.52	Identify relations and functions, using graphs.			
	2. Domain and Range	2	• Houghton-Mifflin Book 3, Section 4.2 • McDougal Littell, Algebra 2.1 • NYSED Math Glossary, Math Vocabulary List and Tool Kit • JMAP.com • Regentsprep.org • Mathbits.org • Graphing Calculator • SMART View	
	Define the domain and range of a function.			
	Given the graph of a function, determine its domain and range.			
	Given the equation of a function, determine its domain and range.			
	Given a functions domain, determine its range.			
A2.PS.2	Recognize and understand equivalent representations of a problem situation or a mathematical concept.			
A2.PS.4	Use multiple representations to represent and explain problem situations (e.g., verbally, numerically, algebraically, and graphically).			
A2.A.39	Determine the domain and range of a function from its equation.			
A2.A.51	Determine the domain and range of a function from its graph.			
	3. f(x) Notation	1	• Houghton-Mifflin Book 3, Section	

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STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	Define f(x) notation.		4.3 • McDougal Littell, Algebra some of 2.1 • NYSED Math Glossary, Math Vocabulary List and Tool Kit • JMAP.com • Regentsprep.org • Mathbits.org • Graphing Calculator • SMART View	
	Evaluate f(c) when c is a number or an algebraic expression.			
	Given a function find the image of a number or variable expression.			
	Given a function find the pre-image of a number.			
A2.CM.2	Use mathematical representations to communicate with appropriate accuracy, including numerical tables, formulas, functions, equations, charts, graphs, and diagrams.			
A2.CM.11	Represent word problems using standard mathematical notation.			
A2.PS.2	Recognize and understand equivalent representations of a problem situation or a mathematical concept.			
A2.PS.4	Use multiple representations to represent and explain problem situations (e.g., verbally, numerically, algebraically, and graphically).			
A2.A.40	Write functions in functional notation.			
A2.A.41	Use functional notation to evaluate functions for given values in the domain.			

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STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	4. Combinations of Functions	1	• Houghton-Mifflin Book 3, Section 6.3 • Old 7.3	
	Determine the sum, difference, product and quotient of functions (f+g), (f-g), (fg) and (f/g).			
	Evaluate for any number or variable.			
	Find domain of quotient.			
	5. Compositions of Functions	1	• Houghton-Mifflin Book 3, Section 4.5 • McDougal Littell, Algebra some of 6.3 • NYSED Math Glossary, Math Vocabulary List and Tool Kit • JMAP.com • Regentsprep.org • Mathbits.org • Graphing Calculator • SMART View	
	Determine the composition of functions using both functional and compositional notation.			
	Evaluate a composition for any number or variable expression.			
A2.CM.2	Use mathematical representations to communicate with appropriate accuracy, including numerical tables, formulas, functions, equations, charts, graphs, and diagrams.			
A2.PS.2	Recognize and understand equivalent representations of a problem situation or a mathematical concept.			
A2.A.41	Use functional notation to evaluate functions for given values in the domain.			
A2.A.42	Find the composition of functions.			
	6. Mixed Combinations and Compositions of	1		

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STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	Functions			
	7. Inverse of a Function	2	• Houghton-Mifflin Book 3, Section 4.6 • McDougal Littell, Algebra some of pg. 437 and 6.4 • Old 7.4 • NYSED Math Glossary, Math Vocabulary List and Tool Kit • JMAP.com • Regentsprep.org • Mathbits.org • Graphing Calculator • SMART View	
	Define inverse of a function.			
	Find the inverse of a function.			
	Apply the horizontal line test to determine a 1-1 function.			
	Develop the concept that only 1-1 functions have inverses that are functions.			
	Determine if a function has an inverse and then find the inverse.			
	Apply compositions of functions to justify inverses.			
A2.CM.13	Draw conclusions about mathematical ideas through decoding, comprehension, and interpretation of mathematical visuals, symbols, and technical writing.			
A2.A.40	Write functions in functional notation.			
A2.A.43	Determine if a function is one-to-one, onto, or both.			
A2.A.44	Define the inverse of a function.			
A2.A.45	Determine the inverse of a function and use composition to justify the result.			

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STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	8. Transformations of Relations and Functions	2	• Houghton-Mifflin Book 3, Section 4.5 • McDougal Littell, Algebra some of 6.3 • NYSED Math Glossary, Math Vocabulary List and Tool Kit • JMAP.com • Regentsprep.org • Mathbits.org • Graphing Calculator • SMART View	
	Apply f(x + a), f(x) + a, f(-x), -f(x) and af(x) transformation with functions and relations where a is a constant.			
	Determine the equation of the function after the transformation has been applied.			
	Investigate and explore the effect of the parametric changes for each type of transformation.			
A2.A.40	Write functions in functional notation.			
A2.A.46	Perform transformations with functions and relations: f(x + a), f(x) + a, f(-x), -f(x) and af(x).			
	9. Review & Test	2		
	Total	**14**		
	Unit 6 – Direct & Inverse Variation and Binomial Expansion			
	Vocabulary – direct variation, inverse variation, binomial expansion, Pascal's Triangle			
	1. Direct and Inverse Variation	2	• McDougal Littell, Algebra 2, Sections 2.5, 8.1 • Old 2.5, 9.1 • NYSED Math Glossary, Math Vocabulary List and Tool Kit	
	Vocabulary – probability, empirical probability, theoretical probability, outcome, finite sample space, event, favorable event, independent event, dependent event, complement, certainty, impossibility			

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STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		**Pacing Days** (Plan #)	**RESOURCES** Print, Visual, Technology, Manipulatives	**ASSESSMENT** Evidence & Scoring Guides
	Define direct and inverse variation.		• JMAP.com • Regentsprep.org • Mathbits.org • Graphing Calculator	
	Identify when a situation is directly or indirectly proportional.			
	Set up an appropriate equation and solve for the unknown quantity.			
	Apply direct and indirect variations to real world problems.			
A2.CN.5	Understand how quantitative models connect to various physical models and representations.			
A2.CN.7	Recognize and apply mathematical ideas to problem situations that develop outside of mathematics.			
A2.A.5	Use direct and inverse variation to solve for unknown values.			
	2. Binomial Theorem	2		
	Review Pascal's Triangle.			
	Apply Pascal's Triangle to determine combinations.			
	Define and apply the binomial theorem to expand a binomial to a certain power.			
	Determine a specific term of a binomial expansion.			

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STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
A2.R.4	Select appropriate representations to solve problem situations.			
A2.R.8	Use mathematics to show and understand mathematical phenomena (e.g., use random number generator to simulate a coin toss).			
A2.CM.11	Represent word problems using standard mathematical notation.			
A2.A.36	Apply the binomial theorem to expand a binomial and determine a specific term of a binomial expansion.			
	3. Review & Test	2		
	Total	**6**		
	Unit 7 – Introduction to Trigonometry			
	Vocabulary – adjacent angle, adjacent side, angle, angle in standard position, apply, arc length, central angle, circular function, co-functions, co-terminal angles, cosecant, cosine, cotangent, degree, geometric representation of a circular function, initial side, inverse trig function, minute, pi, physical model, physical phenomena, quadrantal angle, radian, radian measure, reciprocal trig functions, reference angle, right triangle trigonometry, secant, second, sector of a circle, sine, standard position, tangent, terminal side, trig equation, trig functions, unit circle			
	1. Angles in Degree Measure	1	• Houghton-Mifflin, Book 3, 7.1 • McDougal Littell, Algebra 2, Section 13.2 • Old 13.2 • NYSED Math Glossary, Math	
	Define initial side, terminal side, quadrantal angles, co-terminal angles, positive and negative angles.			
	Given an angle name the quadrant where it terminates.			

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STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	Given an angle find positive and negative co-terminal angles.		Vocabulary List and Tool Kit • JMAP.com • Regentsprep.org • Mathbits.org • Graphing Calculator • SMART View	
	Sketch an angle in standard position.			
A2.PS.7	Work in collaboration with others to propose, critique, evaluate, and value alternative approaches to problem solving.			
A2.CN.1	Understand and make connections among multiple representations of the same mathematical idea.			
A2.CM.4	Explain relationships among different representations of a problem.			
A2.A.57	Sketch and use the reference angle for angles in standard position.			
	2. Angles in Radian Measure	1	• Houghton-Mifflin, Book 3, 7.2 • McDougal Littell, Algebra 2, Section 13.2 • Old 13.2 • NYSED Math Glossary, Math Vocabulary List and Tool Kit • JMAP.com • Regentsprep.org • Mathbits.org • Graphing Calculator	
	Define radian measure.			
	Given an angle determine the quadrant where it terminates.			
	Sketch an angle in standard position.			
A2.M.1	Define radian measure.			

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			• SMART View	
	3. Sector	1	• Houghton-Mifflin, Book 3, 7.2 • McDougal Littell, Algebra 2, Section 13.2 • Old 13.2 • NYSED Math Glossary, Math Vocabulary List and Tool Kit • JMAP.com • Regentsprep.org • Mathbits.org • Graphing Calculator • SMART View	
	Find length of intercepted arc, radius or central angle given other two.			
	$S = \theta r$.			
	Applications.			
A2.A.61	Determine the length of an arc of a circle, given its radius and the measure of its central angle.			
	4. Conversions of Angle Measurements	2	• Houghton-Mifflin, Book 3, 7.2 • McDougal Littell, Algebra 2, Section 13.2 • Old 13.2 • NYSED Math Glossary, Math Vocabulary List and Tool Kit • JMAP.com • Regentsprep.org • Mathbits.org • Graphing Calculator • SMART View	
	Convert from decimal degree to degrees minute seconds and vice versa.			
	Convert from radians to degrees and vice versa (express radian measure in terms of pi radians).			
	Apply $S = \theta r$ to find missing measurements when θ is in degrees.			
A2.PS.2	Recognize and understand equivalent representations of a problem situation or a mathematical concept.			

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STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
A2.CM.4	Explain relationships among different representations of a problem.			
A2.CN.1	Understand and make connections among multiple representations of the same mathematical idea.			
A2.M.2	Convert between radian and degree measures.			
	5. Trigonometric Functions	1	• McDougal Littell, Algebra 2, Section 13.1 • NYSED Math Glossary, Math Vocabulary List and Tool Kit • JMAP.com • Regentsprep.org • Mathbits.org • Graphing Calculator • SMART View	
	Define six trig functions in terms of right triangle trig.			
	Discover the reciprocal functions.			
	Apply co-functions to find the values of trig functions of an angle.			
	Use a calculator to find trig function of an angle in degrees or radians.			
	Determine the cotangent, cosecant, and secant of an angle using a calculator.			
A2.CN.5	Understand how quantitative models connect to various physical models and representations.			
A2.A.55	Express and apply the six trigonometric functions as ratios of the sides of a right triangle.			
A2.A.58	Know and apply the co-function and reciprocal relationships between trigonometric ratios.			

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STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	6. Reference Angles	2	• Houghton-Mifflin Book 3, 7.4 • McDougal Littell, Algebra 2, Section 13.3 • Old 13.3 • NYSED Math Glossary, Math Vocabulary List and Tool Kit • JMAP.com • Regentsprep.org • Mathbits.org • Graphing Calculator • SMART View	
	Define reference angle.			
	Find reference angle in degrees and radian.			
	Determine whether a function value is positive or negative depending upon quadrant (i.e., sin 310° is negative).			
	Apply reference angles to express as a function of a positive acute angle.			
A2.PS.2	Recognize and understand equivalent representations of a problem situation or a mathematical concept.			
A2.PS.6	Use a variety of strategies to extend solution methods to other problems.			
A2.CN.1	Understand and make connections among multiple representations of the same mathematical idea.			
A2.CM.4	Explain relationships among different representations of a problem.			
A2.A.57	Sketch and use the reference angle for angles in standard position.			
	7. Unit Circle	2	• Houghton-Mifflin Book 3, 7.3 • McDougal Littell, Algebra 2,	
	Define the unit circle and the 6 trig functions in relation			

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	to the circle.		Section 13.3 • Old 13.3 • NYSED Math Glossary, Math Vocabulary List and Tool Kit • JMAP.com • Regentsprep.org • Mathbits.org • Graphing Calculator • SMART View	
	Apply unit circle to find exact trig functions of quadrantal angles and angles whose references are 30°, 45°, 60°.			
	Given the exact trig function of an angle use the unit circle to find the angle.			
	Find all 6 functions given coordinates of point on the unit circle.			
A2.PS.6	Use a variety of strategies to extend solution methods to other problems.			
A2.A.56	Know the exact and approximate values of the sine, cosine, and tangent of 0°, 30°, 45°, 60°, 90°, 180°, and 270° angles.			
A2.A.58	Know and apply the co-function and reciprocal relationships between trigonometric ratios.			
A2.A.59	Use the reciprocal and co-function relationships to find the value of the secant, cosecant, and cotangent of 0°, 30°, 45°, 60°, 90°, 180°, and 270° angles.			
A2.A.60	Sketch the unit circle and represent angles in standard position.			

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STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	8. Finding Angle Measure	2	• Houghton-Mifflin Book 3, 7.5 • McDougal Littell, Algebra 2, Section 13.3 • NYSED Math Glossary, Math Vocabulary List and Tool Kit • JMAP.com • Regentsprep.org • Mathbits.org • Graphing Calculator • SMART View	
	Given a point on the unit circle find the trig functions of the angle whose terminal side passes through the point.			
	Given a point on the terminal side of an angle find the trig functions of the point.			
	Given trig function of an angle find the two angles in degrees or pi radians.			
	Given a trig function of an angle and other information find the one angle.			
	Determine the approximate angle measure to nearest degree, nearest minute, etc…			
A2.M.2	Convert between radian and degree measures.			
A2.A.62	Find the value of trigonometric functions, if given a point on the terminal side of an angle.			
A2.A.66	Determine the trigonometric functions of any angle, using technology.			
A2.A.68	Solve trigonometric equations for all values of the variable from 0° to 360°.			
	9. Right Triangle Trig	1	• Houghton-Mifflin Book 3, 10.1 • McDougal Littell, Algebra 2,	
	Given a trig function of an angle in fraction form find			

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	the quadrant in which the angle terminates.		Section 13.1 • NYSED Math Glossary, Math Vocabulary List and Tool Kit • JMAP.com • Regentsprep.org • Mathbits.org • Graphing Calculator • SMART View	
	Given a trig function of an angle find the other five trig functions.			
	Word problems.			
A2.A.55	Express and apply the six trigonometric functions as ratios of the sides of a right triangle.			
A2.A.58	Know and apply the co-function and reciprocal relationships between trigonometric ratios.			
A2.A.62	Find the value of trigonometric functions, if given a point on the terminal side of angle.			
	10. Review & Test	2		
	Total	**15**		
	Unit 8 – Trigonometric Graphs			
	Vocabulary – accuracy, amplitude, conjecture, compare, discover, domain, formulate, frequency, graphically, one cycle of a trig function, mathematical phenomena, numerical tables, organize, period of a function, periodic function, phase shift, physical object, procedure, quantitative model, range, restricted domain, strategy, transformation, transformations of functions and relations			
	1. Sine Curves	2	• Houghton-Mifflin Book 3, 7.7 • McDougal Littell, Algebra 2, Section 14.1 • Old 14.1, 14.2	
	Define sine curve, amplitude, frequency, and period.			
	Given the equation of a sine curve determine the			

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	amplitude, maximum value, minimum value, frequency, and period.		• NYSED Math Glossary, Math Vocabulary List and Tool Kit • JMAP.com • Regentsprep.org • Mathbits.org • Graphing Calculator • SMART View	
	Graph sine curves for different given domain.			
	Sketch and recognize one cycle of the function.			
A2.R.6	Use mathematics to show and understand physical phenomena (e.g., investigate sound waves using the sine and cosine functions).			
A2.A.69	Determine amplitude, period, frequency, and phase shift, given the graph or equation of a periodic function.			
A2.A.70	Sketch and recognize one cycle of a function of the form y = AsinBx and y = A cox BX.			
	2. Cosine Curves	2	• Houghton-Mifflin Book 3, 7.7 • McDougal Littell, Algebra 2, Section 14.1 • Old 14.1, 14.2 • NYSED Math Glossary, Math Vocabulary List and Tool Kit • JMAP.com • Regentsprep.org • Mathbits.org • Graphing Calculator • SMART View	
	Define cosine curve, amplitude, frequency, and period.			
	Given the equation of a cosine curve find the amplitude, maximum value, minimum value, frequency, and period.			
	Graph cosine curves for different domains.			
	Sketch and recognize one cycle of the function.			
A2.R.6	Use mathematics to show and understand physical phenomena (e.g., investigate sound waves using the			

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	sine and cosine functions).			
A2.A.69	Determine amplitude, period, frequency, and phase shift, given the graph or equation of a period function.			
A2.A.70	Sketch and recognize one cycle of a function of the form y = AsinBx and y = A cosBx.			
	3. Sine and Cosine Curves	3	• Houghton-Mifflin Book 3, 7.7 • McDougal Littell, Algebra 2, Section 14.1 • Old 14.1, 14.2 • NYSED Math Glossary, Math Vocabulary List and Tool Kit • JMAP.com • Regentsprep.org • Mathbits.org • Graphing Calculator • SMART View	
	Graph sine and cosine on same set of axes and determine window of graphs.			
	Sketch and recognize one cycle of the function.			
	Analyze and graph effects of phase shifts on graphs.			
	Determine points of intersection of sine and cosine curves.			
	Graph on graphing calculator and copy to graph paper.			
	Interpolate and extrapolate from the sine and cosine graphs.			
	Real word applications.			
A2.R.6	Use mathematics to show and understand physical phenomena (e.g., investigate sound waves using the sine and cosine functions).			

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STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
A2.A.46	Perform transformations with functions and relations: f(x + a), f(x) + a, f(-x), -f(x), -f(x) and a (x).			
A2.A.69	Determine amplitude, period, frequency, and phase shift, given the graph or equation of a period function.			
A2.A.70	Sketch and recognize one cycle of a function of the form y = AsinBx and y = A cosBx.			
A2.A.72	Write the trigonometric function that is represented by a given period graph.			
	4. Tangent Curves	2	• Houghton-Mifflin Book 3, 8.1 • McDougal Littell, Algebra 2, Section 14.1, 14.2 • Old 14.1 • NYSED Math Glossary, Math Vocabulary List and Tool Kit • JMAP.com • Regentsprep.org • Mathbits.org • Graphing Calculator • SMART View	
	Discuss and explore amplitude, frequency and period for the above curves.			
	Graph tangent curves with a and b = 1 by hand and calculators.			
	Determine the period of tangent curve.			
	Interpolate and extrapolate from graphs.			
	Apply tangent curve to real world applications.			
A2.R.6	Use mathematics to show and understand physical phenomena (e.g., investigate sound waves using the sine and cosine functions).			
A2.A.69	Determine amplitude, period, frequency, and phase			

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	shift, given the graph or equation of a period function.			
A2.A.71	Sketch and recognize the graphs of the functions y = sec x, y = cscx, y = tanx, y = cotx.			
A2.A.72	Write the trigonometric function that is represented by a given period graph.			
	5. Review & Test	2		
	Total	**11**		
	Unit 9 – Trigonometric Functions, Identities and Equations			
	Vocabulary – analyze, constraint, equations, exact answer, identities, justify, opposite sides, Pythagorean identities, simplify, solve, solution set, strategy, verbal explanation, written explanation			
	1. Trigonometric Equations in all Six Functions	4	• Houghton-Mifflin Book 3, 8.4 • McDougal Littell, Algebra 2, Section 14.4 • Old 13.3 • NYSED Math Glossary, Math Vocabulary List and Tool Kit • JMAP.com • Regentsprep.org • Mathbits.org • Graphing Calculator	
	Solve linear trigonometric equations for 0°< x < 360°.			
	Solve linear trigonometric equations for O < x < 2π.			
	Solve quadratic trigonometric equations for 0° < x < 360°.			
	Solve quadratic trigonometric equations for O < x < 2π (quadratics that factor and those which do not).			
	Solve to different approximations.			

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STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
A2.A.56	Know the exact and approximate values of the sine, cosine, and tangent of 0°, 30°, 45°, 60°, 90°, 180°, and 270° angles.		• SMART View	
A2.A.59	Use the reciprocal and co-function relationships to find the value of the secant, cosecant, and cotangent of 0°, 30°, 45°, 60°, 90°, 180°, and 270°.			
A2.A.66	Determine the trigonometric functions of any angle, using technology.			
A2.A.68	Solve trigonometric equations for all values of the variable from 0° to 360°.			
	2. Trigonometric Identities	2	• Houghton-Mifflin Book 3, 8.2, 8.3 • McDougal Littell, Algebra 2, Section 14.3 • Old 14.3 • NYSED Math Glossary, Math Vocabulary List and Tool Kit • JMAP.com • Regentsprep.org • Mathbits.org • Graphing Calculator • SMART View	
	Define and apply the reciprocal and Pythagorean identities.			
	Justify the Pythagorean identities.			
	Express any trig function in terms of another.			
	Simplify trigonometric expressions.			
A2.CN.8	Develop an appreciation for the historical development of mathematics.			
A2.RP.5	Develop, verify, and explain an argument, using appropriate mathematical ideas and language.			

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A2.RP.6	Construct logical arguments that verify claims or counterexamples that refute them.			
A2.A.58	Know and apply the co-function and reciprocal relationships between trigonometric ratios.			
A2.A.67	Justify the Pythagorean identities.			
	3. Solving Trigonometric Equations in Two Trigonometric Functions	3	• Houghton-Mifflin Book 3, 8.5 • McDougal Littell, Algebra 2, Section 14.4 • NYSED Math Glossary, Math Vocabulary List and Tool Kit • JMAP.com • Regentsprep.org • Mathbits.org • Graphing Calculator • SMART View	
	Solve linear trigonometric equations for $0° < x < 360°$.			
	Solve linear trigonometric equations for $O < x < 2\pi$.			
	Solve quadratic trigonometric equations for $0° < x < 360°$.			
	Solve quadratic trigonometric equations for $O < x < 2\pi$ (quadratics that factor and those which do not).			
	Solve to different approximations and forms (e.g., nearest degree, nearest minute, nearest second, nearest hundredth of a degree, in pi radians, etc…).			
A2.PS.8	Determine information required to solve a problem, choose methods for obtaining the information, and define parameters for acceptable solutions.			
A2.A.56	Know the exact and approximate values of the sine,			

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	cosine, and tangent of 0°, 30°, 45°, 60°, 90°, 180°, and 270° angles.			
A2.A.58	Know and apply the co-function and reciprocal relationships between trigonometric ratios.			
A2.A.59	Use the reciprocal and co-function relationships to find the value of the secant, cosecant, and cotangent of 0°, 30°, 45°, 60°, 90°, 180°, and 270°.			
A2.A.66	Determine the trigonometric functions of any angle, using technology.			
A2.A.68	Solve trigonometric equations for all values of the variable from 0° to 360°.			
	4. Trigonometric Representations of Real World Problems	2	• NYSED Math Glossary, Math Vocabulary List and Tool Kit • JMAP.com • Regentsprep.org • Mathbits.org • Graphing Calculator • SMART View	
	Apply trig equations to solving word problems.			
A2.CN.6	Recognize and apply mathematics to situations in the outside world.			
A2. PS.9	Interpret solutions within the given constraints of a problem.			
A2.A.56	Know the exact and approximate values of the sine, cosine, and tangent of 0°, 30°, 45°, 60°, 90°, 180°, and			

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	270° angles.			
A2.A.58	Know and apply the co-function and reciprocal relationships between trigonometric ratios.			
A2.A.59	Use the reciprocal and co-function relationships to find the value of the secant, cosecant, and cotangent of 0°, 30°, 45°, 60°, 90°, 180°, and 270°.			
A2.A.66	Determine the trigonometric functions of any angle, using technology.			
A2.A.68	Solve trigonometric equations for all values of the variable from 0° to 360°.			
	5. Review & Test	3		
	Total	**14**		
	Unit 10 – Trigonometric Formulas			
	Vocabulary – arccosine, arcsine, arctangent, derive, difference of two angles formula, double angle formulas, evaluate, justify, half angle formulas, principal values, restricted domain, simplify, solution set, solve, sum of two angles formula			
	1. Sum and Difference Formulas	2	• Houghton-Mifflin Book 3, 11.2 • McDougal Littell Algebra 2, 14.6 • Old 14.6 • NYSED Math Glossary, Math Vocabulary List and Tool Kit	
	Define sum and difference formulas.			
	Find the exact value of the sine, cosine and tangent of an angle using the formulas.			

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	Find the sine, cosine, and tangent of an angle using the formulas.		• JMAP.com • Regentsprep.org • Mathbits.org • Graphing Calculator • SMART View	
	Find the sine, cosine, and tangent of a quadrantal plus or minus a variable angle.			
	Given the sine, cosine or tangent of two angles find the exact values of the angle formed by their sum or difference.			
A2.RP.7	Present correct mathematical arguments in a variety of forms.			
A2.A.56	Know the exact and approximate values of the sine, cosine, and tangent of 0°, 30°, 45°, 60°, 90°, 180°, and 270° angles.			
A2.A.58	Know and apply the co-function and reciprocal relationships between trigonometric ratios.			
A2.A.76	Apply the angle sum and difference formulas for trigonometric functions.			
	2. Double Angle Formulas (sine, cosine, and tangents)	2	• Houghton-Mifflin Book 3, 11.3 • McDougal Littell Algebra 2, 14.7 • Old 14.7 • NYSED Math Glossary, Math Vocabulary List and Tool Kit	
	Derive the formulas for sum of two angles.			
	Given the trig function of an angle find the exact trig function of the double angle.			

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Algebra 2 & Trigonometry (non-Regents)

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
A2.RP.7	Present correct mathematical arguments in a variety of forms.		• JMAP.com • Regentsprep.org • Mathbits.org • Graphing Calculator • SMART View	
A2.A.55	Express and apply the six trigonometric functions as ratios of the sides of a right triangle.			
A2.A.56	Know the exact and approximate values of the sine, cosine, and tangent of 0°, 30°, 45°, 60°, 90°, 180°, and 270° angles.			
A2.A.77	Apply the double-angle and half-angle formulas for trigonometric functions.			
	3. Half Angle Formulas (sine, cosine, and tangents)	1	• Houghton-Mifflin Book 3, 11.4 • McDougal Littell Algebra 2, 14.7 • Old 14.7 • NYSED Math Glossary, Math Vocabulary List and Tool Kit • JMAP.com • Regentsprep.org • Mathbits.org • Graphing Calculator • SMART View	
	Given the trig function of an angle find the exact value of the half angle.			
A2.RP.7	Present correct mathematical arguments in a variety of forms.			
A2.A.55	Express and apply the six trigonometric functions as ratios of the sides of a right triangle.			
A2.A.56	Know the exact and approximate values of the sine, cosine, and tangent of 0°, 30°, 45°, 60°, 90°, 180°, and 270° angles.			
A2.A.77	Apply the double-angle and half-angle formulas for			

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Algebra 2 & Trigonometry (non-Regents)

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	trigonometric functions.			
	4. Trigonometric Equations with Double Angles	2	• Houghton-Mifflin Book 3, 11.5 • McDougal Littell Algebra 2, 14.7 • Old 14.7 • NYSED Math Glossary, Math Vocabulary List and Tool Kit • JMAP.com • Regentsprep.org • Mathbits.org • Graphing Calculator • SMART View	
	Solve trig equations with double angles applying the double angle formulas.			
	Solve trig equations with double angles by extending the domain.			
A2.A.56	Know the exact and approximate values of the sine, cosine, and tangent of 0°, 30°, 45°, 60°, 90°, 180°, and 270° angles.			
A2.A.59	Use the reciprocal and co-function relationships to find the value of the secant, cosecant, and cotangent of 0°, 30°, 45°, 60°, 90°, 180°, and 270° angles.			
A2.A.66	Determine the trigonometric functions of any angle, using technology.			
A2.A.68	Solve trigonometric equations for all values of the variable from 0° to 360°.			
A2.A.77	Apply the double-angle and half-angle formulas for trigonometric functions.			
	5. Review & Test	3		
	Total	**10**		

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Algebra 2 & Trigonometry (non-Regents)

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	Unit 11 – Special Segments in Triangles			
	Vocabulary – adjacent angles, adjacent sides, ambiguous case, angle of depression, angle of elevation, area of a parallelogram, area of a triangle, hypotenuse, law of coines, resultant, right triangle trig, law of sines, vector			
	1. Right Triangle Trigonometry	2	• Houghton-Mifflin Book 3, 10.1 • McDougal Littell Algebra 2, 13.1 • NYSED Math Glossary, Math Vocabulary List and Tool Kit • JMAP.com • Regentsprep.org • Mathbits.org • Graphing Calculator • SMART View	
	Solve the triangle.			
	Applications to word problems.			
A2.CN.6	Recognize and apply mathematics to situations in the outside world.			
A2.CN.7	Read and listen for logical understanding of mathematical thinking shared by other students.			
A2.A.55	Express and apply the six trigonometric functions as ratios of the sides of a right triangle.			
A2.A.64	Use inverse functions to find the measure of an angle, given its sine, cosine, or tangent.			
	2. Law of Sine's	2	• Houghton-Mifflin Book 3, 10.3, 10.4 • McDougal Littell Algebra 2, 13.5 • NYSED Math Glossary, Math Vocabulary List and Tool Kit • JMAP.com	
	Derive the Law of Sine's.			
	Given two angles and a side find the missing sides.			
	Given one angle and two sides find the missing angles.			
	Explore and discover the ambiguous case.			

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	Find how many distinct triangles can be formed.		• Regentsprep.org • Mathbits.org • Graphing Calculator • SMART View	
	Find if a triangle is obtuse, acute or right.			
	Determine the error of measure.			
A.RP.10	Devise ways to verify results, using counterexamples and informal indirect proof.			
A2.CN.6	Recognize and apply mathematics to situations in the outside world.			
A2.CN.7	Read and listen for logical understanding of mathematical thinking shared by other students.			
A2.A.56	Know the exact and approximate values of the sine, cosine, and tangent of 0°, 30°, 45°, 60°, 90°, 180°, and 270° angles.			
A2.A.59	Use the reciprocal and co-function relationships to find the value of the secant, cosecant, and cotangent of 0°, 30°, 45°, 60°, 90°, 180°, and 270° angles.			
A2.A.66	Determine the trigonometric functions of any angle, using technology.			
A2.A.68	Solve trigonometric equations for all values of the variable from 0° to 360°.			
A2.A.73	Solve for an unknown side or angle, using the Law of			

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Algebra 2 & Trigonometry (non-Regents)

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	Sine's or the Law of Cosines.			
A2.A.75	Determine the solution(s) from the SSA situation (ambiguous case).			
	3. Law of Cosines	3	• Houghton-Mifflin Book 3, 10.5 • McDougal Littell Algebra 2, 13.6 • Old 13.6 • NYSED Math Glossary, Math Vocabulary List and Tool Kit • JMAP.com • Regentsprep.org • Mathbits.org • Graphing Calculator • SMART View	
	Derive the law of cosines.			
	Given two sides and one angle find the missing side.			
	Given three sides find the missing angles.			
	Error of measure.			
A2.CN.6	Recognize and apply mathematics to situations in the outside world.			
A2.CN.7	Read and listen for logical understanding of mathematical thinking shared by other students.			
A2.A.56	Know the exact and approximate values of the sine, cosine, and tangent of 0°, 30°, 45°, 60°, 90°, 180°, and 270° angles.			
A2.A.59	Use the reciprocal and co-function relationships to find the value of the secant, cosecant, and cotangent of 0°, 30°, 45°, 60°, 90°, 180°, and 270° angles.			
A2.A.66	Determine the trigonometric functions of any angle, using technology.			

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Algebra 2 & Trigonometry (non-Regents)

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
A2.A.68	Solve trigonometric equations for all values of the variable from 0° to 360°.			
A2.A.73	Solve for an unknown side or angle, using the Law of Sine's or the Law of Cosines.			
	4. Area of a Triangle	2	• Houghton-Mifflin Book 3, 10.6 • McDougal Littell Algebra 2, 13.6 • Old 13.6 • NYSED Math Glossary, Math Vocabulary List and Tool Kit • JMAP.com • Regentsprep.org • Mathbits.org • Graphing Calculator • SMART View	
	Derive area of a right triangle formula using K = .5 a b sin C.			
	Apply Hero(n)s formula to find the area of a triangle or parallelogram.			
	Find the area of a triangle.			
	Find the area of a parallelogram.			
	Given the area of a triangle find the missing side.			
	Discover the error of measure that occurs when a rounded number is applied.			
A2.CN.6	Recognize and apply mathematics to situations in the outside world.			
A2.CN.7	Read and listen for logical understanding of mathematical thinking shared by other students.			
A2.A.56	Know the exact and approximate values of the sine, cosine, and tangent of 0°, 30°, 45°, 60°, 90°, 180°, and			

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Algebra 2 & Trigonometry (non-Regents)

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
	270° angles.			
A2.A.59	Use the reciprocal and co-function relationships to find the value of the secant, cosecant, and cotangent of 0°, 30°, 45°, 60°, 90°, 180°, and 270° angles.			
A2.A.66	Determine the trigonometric functions of any angle, using technology.			
A2.A.74	Determine the area of a triangle or a parallelogram, given the measure of two sides and the included angle.			
	5. Word Problems	3	• Houghton-Mifflin Book 3, 10.7 • McDougal Littell Algebra 2, 13.5, 13.6 • Old 13.5, 13.6 • NYSED Math Glossary, Math Vocabulary List and Tool Kit • JMAP.com • Regentsprep.org • Mathbits.org • Graphing Calculator • SMART View	
	Applying law of sine and cosines and area formula to word problems.			
	Solving word problems involving vectors.			
	Error of measure.			
A2.CN.6	Recognize and apply mathematics to situations in the outside world.			
A2.CN.7	Read and listen for logical understanding of mathematical thinking shared by other students.			
A2.A.56	Know the exact and approximate values of the sine, cosine, and tangent of 0°, 30°, 45°, 60°, 90°, 180°, and 270° angles.			

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Algebra 2 & Trigonometry (non-Regents)

STANDARDS Key Ideas, Major Understandings, Performance Indicators, Competencies		Pacing Days (Plan #)	RESOURCES Print, Visual, Technology, Manipulatives	ASSESSMENT Evidence & Scoring Guides
A2.A.59	Use the reciprocal and co-function relationships to find the value of the secant, cosecant, and cotangent of 0°, 30°, 45°, 60°, 90°, 180°, and 270° angles.			
A2.A.66	Determine the trigonometric functions of any angle, using technology.			
A2.A.68	Solve trigonometric equations for all values of the variable from 0° to 360°.			
A2.A.73	Solve for an unknown side or angle, using the Law of Sine's or the Law of Cosines.			
A2.A.74	Determine the area of a triangle or a parallelogram, given the measure of two sides and the included angle.			
A2.A.75	Determine the solution(s) from the SSA situation (ambiguous case).			
	6. Review & Test	3		
	Total	**15**		