

Teacher: Core Algebra 1

Year: 2008-2009

Course: Algebra 1

AUGUST	Probability and Statistics		
	Content	Skills	Standards
	Probability and odds Mean, median, and mode Stem-and-leaf and box-and-whisker plots	Find the probability and odds of an event Determine mean, median, and mode of a data set Organize data in stem and leaf, and box and whisker plots	

SEPTEMBER	Connections to Algebra		
	Content	Skills	Standards
	Variables in Algebra Exponents and Powers Order of Operations Equations and Inequalities Tables and Graphs Introduction to Functions	Write and evaluate expressions using exponents and the order of operations Check solutions to equations and inequalities Use verbal and algebraic models to represent real-life situations Use tables and graphs to organize data and to represent functions	9-12.A.1.1. ~ write equivalent forms of algebraic expressions using properties of the set of real numbers. 9-12.A.4.1. ~ use graphs, tables, and equations to represent linear functions. 9-12.N.1.0. ~ Analyze the structural characteristics of the real number system and its various subsystems. Analyze the concept of value, magnitude, and relative magnitude of real numbers. 9-12.N.1.1. ~ identify multiple representations of a real number. 9-12.N.2.0. ~ Apply number operations with real numbers and other number systems.

		<p>9-12.N.2.1. ~ add, subtract, multiply, and divide real numbers including integral exponents.</p> <p>9-12.N.3.0. ~ Develop conjectures, predictions, or estimations to solve problems and verify or justify the results.</p> <p>9-12.N.3.1. ~ use estimation strategies in problem situations to predict results and to check the reasonableness of results.</p> <p>9-12.N.3.2. ~ select alternative computational strategies and explain the chosen strategy.</p>
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OCTOBER	Properties of Real Numbers		
	Content	Skills	Standards
	The Real Number Line	Graph and compare real numbers using a number line	9-12.A.1.0. ~ Use procedures to transform algebraic expressions.
	Addition and Subtraction of Real Numbers	Find the opposite and absolute value of a number	9-12.A.1.1. ~ write equivalent forms of algebraic expressions using properties of the set of real numbers.
	Multiplication and Division of Real Numbers	Add, subtract, multiply, and divide real numbers	9-12.A.3.0. ~ Interpret and develop mathematical models.
The Distributive Property	Use the distributive property and simplify expressions by combining like terms	<p>9-12.N.1.0. ~ Analyze the structural characteristics of the real number system and its various subsystems. Analyze the concept of value, magnitude, and relative magnitude of real numbers.</p> <p>9-12.N.1.1. ~ identify multiple representations of a real number.</p> <p>9-12.N.1.2. ~ apply the concept of place value, magnitude, and relative magnitude of real numbers.</p> <p>9-12.N.2.0. ~ Apply number operations with real numbers and other number systems.</p>	

		<p>9-12.N.2.1. ~ add, subtract, multiply, and divide real numbers including integral exponents.</p> <p>9-12.N.3.0. ~ Develop conjectures, predictions, or estimations to solve problems and verify or justify the results.</p> <p>9-12.N.3.1. ~ use estimation strategies in problem situations to predict results and to check the reasonableness of results.</p> <p>9-12.N.3.2. ~ select alternative computational strategies and explain the chosen strategy.</p>
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Solving Linear Equations

Content	Skills	Standards
Solving equations using addition and subtraction	Solve linear equations using one, two, or more transformations	9-12.A.1.0. ~ Use procedures to transform algebraic expressions.
Solving equations using multiplication and division	Find exact solutions of equations that contain decimals and fractions	9-12.A.2.0. ~ Use a variety of algebraic concepts and methods to solve equations and inequalities.
Solving multi-step equations	Use linear equations to solve real-life problems	9-12.A.2.1. ~ use algebraic properties to transform multi-step, single-variable, first-degree equations.
Solving equations with variables on both sides	Solve a formula or equation for one of its variables (function form)	9-12.A.2.2. ~ use algebraic properties to transform multi-step, single-variable, first-degree inequalities and represent solutions using a number line.
Solving decimal equations		9-12.A.3.0. ~ Interpret and develop mathematical models.
Formulas and functions		9-12.A.3.1. ~ create linear models to represent problem situations.
		9-12.A.4.1. ~ use graphs, tables, and equations to represent linear functions.
		9-12.A.4.1A. ~ determine the domain, range, and intercepts of a

		<p>function.</p> <p>9-12.N.1.1. ~ identify multiple representations of a real number.</p> <p>9-12.N.2.0. ~ Apply number operations with real numbers and other number systems.</p> <p>9-12.N.2.1. ~ add, subtract, multiply, and divide real numbers including integral exponents.</p> <p>9-12.N.3.0. ~ Develop conjectures, predictions, or estimations to solve problems and verify or justify the results.</p> <p>9-12.N.3.1. ~ use estimation strategies in problem situations to predict results and to check the reasonableness of results.</p> <p>9-12.N.3.2. ~ select alternative computational strategies and explain the chosen strategy.</p>
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NOVEMBER **Graphing Linear Equations and Functions**

NOVEMBER	Content	Skills	Standards
	Coordinates and scatter plots	Use linear equations and graphs to model and solve real-life problems	9-12.A.2.0. ~ Use a variety of algebraic concepts and methods to solve equations and inequalities.
	Graphing linear equations	Draw and make predictions from scatter plots	9-12.A.2.1. ~ use algebraic properties to transform multi-step, single-variable, first-degree equations.
	Quick graphs using intercepts	Graph linear equations using a variety of techniques, including table of values, two points, and a point and slope of the line	9-12.A.3.0. ~ Interpret and develop mathematical models.
	The slope of a line	Identify equations of vertical,	9-12.A.3.1. ~ create linear models to represent problem situations.
	Quick graphs using slope and intercept		9-12.A.4.0 ~ Describe and use properties and behaviors of relations, functions, and inverses.
	Solving equations using graphs		

Functions and relations	horizontal, and parallel lines Identify and evaluate functions	<p>9-12.A.4.1. ~ use graphs, tables, and equations to represent linear functions.</p> <p>9-12.A.4.1A. ~ determine the domain, range, and intercepts of a function.</p> <p>9-12.A.4.5A. ~ describe characteristics of nonlinear functions and relations.</p> <p>9-12.N.1.1. ~ identify multiple representations of a real number.</p> <p>9-12.N.3.0. ~ Develop conjectures, predictions, or estimations to solve problems and verify or justify the results.</p> <p>9-12.N.3.1. ~ use estimation strategies in problem situations to predict results and to check the reasonableness of results.</p>
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Writing Linear Equations

Content	Skills	Standards
Writing linear equations in slope-intercept form	Write equations of lines in slope-intercept, point-slope, and standard forms when given a graph, a point and slope of the line, or two points on the line	9-12.A.1.0. ~ Use procedures to transform algebraic expressions.
Writing linear equations given the slope and a point		9-12.A.1.1. ~ write equivalent forms of algebraic expressions using properties of the set of real numbers.
Writing linear equations given two points	Use linear equations in various forms to model real-life problems	9-12.A.2.0. ~ Use a variety of algebraic concepts and methods to solve equations and inequalities.
Point-slope form of a linear equation		9-12.A.2.1. ~ use algebraic properties to transform multi-step, single-variable, first-degree equations.
Standard form of a linear equation		9-12.A.3.0. ~ Interpret and develop mathematical models.

		<p>9-12.A.3.1. ~ create linear models to represent problem situations.</p> <p>9-12.A.4.0 ~ Describe and use properties and behaviors of relations, functions, and inverses.</p> <p>9-12.N.2.0. ~ Apply number operations with real numbers and other number systems.</p> <p>9-12.N.2.1. ~ add, subtract, multiply, and divide real numbers including integral exponents.</p> <p>9-12.N.3.0. ~ Develop conjectures, predictions, or estimations to solve problems and verify or justify the results.</p> <p>9-12.N.3.1. ~ use estimation strategies in problem situations to predict results and to check the reasonableness of results.</p>
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D E C E M B E R	Solving and Graphing Linear Inequalities		
	Content	Skills	Standards
	Solving one-step linear inequalities	Write, solve, and graph linear inequalities in one variable, including compound inequalities	9-12.A.1.0. ~ Use procedures to transform algebraic expressions.
	Solving multi-step linear inequalities		9-12.A.1.1. ~ write equivalent forms of algebraic expressions using properties of the set of real numbers.
	Solving compound inequalities	Solve and graph absolute value equations and inequalities	9-12.A.2.0. ~ Use a variety of algebraic concepts and methods to solve equations and inequalities.
	Solving absolute value equations and inequalities	Graph linear inequalities in two variables	9-12.A.2.2. ~ use algebraic properties to transform multi-step, single-variable, first-degree inequalities and represent solutions using a number line.
Graphing linear inequalities in two variables	9-12.A.2.3A. ~ determine solutions to absolute value statements.		

		<p>9-12.A.3.0. ~ Interpret and develop mathematical models.</p> <p>9-12.A.3.1. ~ create linear models to represent problem situations.</p> <p>9-12.A.4.1. ~ use graphs, tables, and equations to represent linear functions.</p> <p>9-12.A.4.6A. ~ graph solutions to linear inequalities.</p> <p>9-12.N.1.0. ~ Analyze the structural characteristics of the real number system and its various subsystems. Analyze the concept of value, magnitude, and relative magnitude of real numbers.</p> <p>9-12.N.1.1. ~ identify multiple representations of a real number.</p> <p>9-12.N.1.2. ~ apply the concept of place value, magnitude, and relative magnitude of real numbers.</p> <p>9-12.N.2.0. ~ Apply number operations with real numbers and other number systems.</p> <p>9-12.N.2.1. ~ add, subtract, multiply, and divide real numbers including integral exponents.</p> <p>9-12.N.3.0. ~ Develop conjectures, predictions, or estimations to solve problems and verify or justify the results.</p> <p>9-12.N.3.1. ~ use estimation strategies in problem situations to predict results and to check the reasonableness of results.</p>
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J A N U	Systems of Linear Equations and Inequalities		
	Content	Skills	Standards
	Solving linear systems by	Solve a system of two linear	9-12.A.1.0. ~ Use procedures to transform algebraic expressions.

A R Y	graphing, substitution, and linear combinations	equations by graphing, substitution, and linear combinations	9-12.A.1.1. ~ write equivalent forms of algebraic expressions using properties of the set of real numbers.
	Applications of linear systems	Identify linear systems that have one solution, infinitely many solutions, or no solutions	9-12.A.2.0. ~ Use a variety of algebraic concepts and methods to solve equations and inequalities.
	Special types of linear systems	Model and solve real-life problems using linear systems	9-12.A.2.1. ~ use algebraic properties to transform multi-step, single-variable, first-degree equations. 9-12.A.2.2. ~ use algebraic properties to transform multi-step, single-variable, first-degree inequalities and represent solutions using a number line. 9-12.A.2.2A. ~ determine the solution of systems of equations and systems of inequalities. 9-12.A.3.0. ~ Interpret and develop mathematical models. 9-12.A.3.1. ~ create linear models to represent problem situations. 9-12.A.4.1. ~ use graphs, tables, and equations to represent linear functions. 9-12.A.4.6A. ~ graph solutions to linear inequalities. 9-12.N.2.1. ~ add, subtract, multiply, and divide real numbers including integral exponents. 9-12.N.3.0. ~ Develop conjectures, predictions, or estimations to solve problems and verify or justify the results. 9-12.N.3.1. ~ use estimation strategies in problem situations to predict results and to check the reasonableness of results.

F E B R U A R Y	Exponents and Exponential Functions		
	Content	Skills	Standards
Multiplication properties of exponents Zero and negative exponents Division properties of exponents Scientific notation	Multiply and divide expressions with exponents, including zero and negative exponents Use scientific notation to represent numbers and solve problems	9-12.A.1.0. ~ Use procedures to transform algebraic expressions. 9-12.A.1.1. ~ write equivalent forms of algebraic expressions using properties of the set of real numbers. 9-12.A.3.2. ~ distinguish between linear and nonlinear models. 9-12.N.1.0. ~ Analyze the structural characteristics of the real number system and its various subsystems. Analyze the concept of value, magnitude, and relative magnitude of real numbers. 9-12.N.1.1. ~ identify multiple representations of a real number. 9-12.N.2.0. ~ Apply number operations with real numbers and other number systems. 9-12.N.2.1. ~ add, subtract, multiply, and divide real numbers including integral exponents.	

M A R C H	Quadratic Equations and Functions		
	Content	Skills	Standards
Solving quadratic equations by finding square roots Simplifying radicals Graphing quadratic functions Solving quadratic functions by	Approximate and evaluate square roots and simple radicals Solve quadratic equations by finding square roots and using the quadratic formula Graph quadratic equations and use x-intercepts of graphs to solve	9-12.A.2.0. ~ Use a variety of algebraic concepts and methods to solve equations and inequalities. 9-12.A.2.1. ~ use algebraic properties to transform multi-step, single-variable, first-degree equations. 9-12.A.2.1A. ~ determine solutions of quadratic equations. 9-12.A.3.2. ~ distinguish between linear and nonlinear models.	

<p>graphing</p> <p>Solving quadratic functions by the quadratic formula</p> <p>Applications of the discriminant</p>	<p>equations</p> <p>Examine how the discriminant relates to the solutions of a quadratic equation</p>	<p>9-12.N.2.1. ~ add, subtract, multiply, and divide real numbers including integral exponents.</p> <p>9-12.N.3.0. ~ Develop conjectures, predictions, or estimations to solve problems and verify or justify the results.</p> <p>9-12.N.3.1. ~ use estimation strategies in problem situations to predict results and to check the reasonableness of results.</p> <p>9-12.N.3.2. ~ select alternative computational strategies and explain the chosen strategy.</p>
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APRIL Polynomials and Factoring		
Content	Skills	Standards
<p>Adding and subtracting polynomials</p> <p>Multiplying polynomials</p> <p>Special products of polynomials</p> <p>Solving polynomial equations in factored form</p> <p>Factoring trinomials</p> <p>Factoring special products</p> <p>Factoring using the distributive property</p>	<p>Identify polynomial expressions</p> <p>Add, subtract, and multiply polynomials</p> <p>Factor quadratic expressions</p> <p>Solve polynomial equations by factoring</p>	<p>9-12.A.1.0. ~ Use procedures to transform algebraic expressions.</p> <p>9-12.A.1.1. ~ write equivalent forms of algebraic expressions using properties of the set of real numbers.</p> <p>9-12.A.2.0. ~ Use a variety of algebraic concepts and methods to solve equations and inequalities.</p> <p>9-12.N.2.0. ~ Apply number operations with real numbers and other number systems.</p> <p>9-12.N.2.1. ~ add, subtract, multiply, and divide real numbers including integral exponents.</p> <p>9-12.N.3.0. ~ Develop conjectures, predictions, or estimations to solve problems and verify or justify the results.</p> <p>9-12.N.3.2. ~ select alternative computational strategies and explain</p>

the chosen strategy.

Rational Equations and Functions

Content	Skills	Standards
Ratios, proportions, and percents	Solve and apply proportions	9-12.A.1.0. ~ Use procedures to transform algebraic expressions.
Direct and inverse variation	Set up and solve percent problems	9-12.A.1.1. ~ write equivalent forms of algebraic expressions using properties of the set of real numbers.
Simplifying rational expressions	Simplify rational expressions and solve rational equations	9-12.A.2.0. ~ Use a variety of algebraic concepts and methods to solve equations and inequalities.
Multiplying and dividing rational expressions	Add, subtract, multiply, and divide rational expressions	9-12.A.2.1. ~ use algebraic properties to transform multi-step, single-variable, first-degree equations.
Adding and subtracting rational expressions		9-12.A.3.0. ~ Interpret and develop mathematical models.
Dividing polynomials		9-12.A.3.1. ~ create linear models to represent problem situations.
Rational equations and functions		9-12.N.1.1. ~ identify multiple representations of a real number.
		9-12.N.2.0. ~ Apply number operations with real numbers and other number systems.
		9-12.N.2.1. ~ add, subtract, multiply, and divide real numbers including integral exponents.
		9-12.N.3.2. ~ select alternative computational strategies and explain the chosen strategy.

MAY	Radicals and Connections to Geometry		
	Content	Skills	Standards
	<p>Functions involving square roots</p> <p>Operations with radical expressions</p> <p>Solving radical equations</p>	<p>Simplify expressions involving radicals</p> <p>Graph square root functions</p> <p>Solve radical equations by factoring or using the quadratic formula</p>	<p>9-12.A.1.0. ~ Use procedures to transform algebraic expressions.</p> <p>9-12.A.2.0. ~ Use a variety of algebraic concepts and methods to solve equations and inequalities.</p> <p>9-12.A.3.0. ~ Interpret and develop mathematical models.</p> <p>9-12.A.4.0 ~ Describe and use properties and behaviors of relations, functions, and inverses.</p> <p>9-12.N.1.2. ~ apply the concept of place value, magnitude, and relative magnitude of real numbers.</p> <p>9-12.N.2.0. ~ Apply number operations with real numbers and other number systems.</p> <p>9-12.N.3.1. ~ use estimation strategies in problem situations to predict results and to check the reasonableness of results.</p> <p>9-12.N.3.2. ~ select alternative computational strategies and explain the chosen strategy.</p>

Teacher: Core Algebra 2

Year: 2008-2009

Course: Algebra 2

AUG	Equations and Inequalities		
	Content	Skills	Standards

U S T	Real numbers and number operations	Graph and order real numbers on a number line	9-12.A.1.0. ~ Use procedures to transform algebraic expressions.
	Algebraic expressions and models	Identify the properties of real numbers in operations	9-12.A.1.1. ~ write equivalent forms of algebraic expressions using properties of the set of real numbers.
	Solving and rewriting linear equations and formulas	Evaluate and simplify algebraic expressions and solve linear equations	9-12.A.2.0. ~ Use a variety of algebraic concepts and methods to solve equations and inequalities.
	Problem solving using algebraic models	Rewrite equations with more than one variable, including formulas	9-12.A.2.1. ~ use algebraic properties to transform multi-step, single-variable, first-degree equations.
	Solving linear inequalities	Use a problem solving plan to solve real life applications	9-12.A.2.2. ~ use algebraic properties to transform multi-step, single-variable, first-degree inequalities and represent solutions using a number line.
Solving absolute value equations and inequalities	Solve simple and compound inequalities and absolute value equations and inequalities	9-12.A.2.3A. ~ determine solutions to absolute value statements.	
			9-12.A.3.0. ~ Interpret and develop mathematical models.
			9-12.A.3.1. ~ create linear models to represent problem situations.
			9-12.A.4.1. ~ use graphs, tables, and equations to represent linear functions.
			9-12.A.4.6A. ~ graph solutions to linear inequalities.
			9-12.N.1.0. ~ Analyze the structural characteristics of the real number system and its various subsystems. Analyze the concept of value, magnitude, and relative magnitude of real numbers.
			9-12.N.1.1. ~ identify multiple representations of a real number.
			9-12.N.1.2. ~ apply the concept of place value, magnitude, and relative magnitude of real numbers.
			9-12.N.2.0. ~ Apply number operations with real numbers and other number systems.

		<p>9-12.N.2.1. ~ add, subtract, multiply, and divide real numbers including integral exponents.</p> <p>9-12.N.3.0. ~ Develop conjectures, predictions, or estimations to solve problems and verify or justify the results.</p> <p>9-12.N.3.1. ~ use estimation strategies in problem situations to predict results and to check the reasonableness of results.</p> <p>9-12.N.3.2. ~ select alternative computational strategies and explain the chosen strategy.</p>
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SEPTEMBER **Linear Equations and Functions**

SEPTEMBER	Content	Skills	Standards
	Functions and their graphs	Identify and represent relations and functions graphically	9-12.A.2.0. ~ Use a variety of algebraic concepts and methods to solve equations and inequalities.
	Slope and rate of change	Find slope of a line and identify parallel and perpendicular lines from their slopes	9-12.A.2.1. ~ use algebraic properties to transform multi-step, single-variable, first-degree equations.
	Quick graphs of linear equations using intercepts and slope	Graph linear equations using both slope-intercept and standard forms, and identify and graph horizontal and vertical lines	9-12.A.2.2. ~ use algebraic properties to transform multi-step, single-variable, first-degree inequalities and represent solutions using a number line.
	Writing equations of lines	Write equations of lines using the slope and intercept, a point and the slope, or two points on the line	9-12.A.3.0. ~ Interpret and develop mathematical models.
	Linear inequalities in two variables	Graph linear inequalities in two variables, piecewise functions, and	9-12.A.3.1. ~ create linear models to represent problem situations.
	Piecewise and absolute value functions		9-12.A.4.0 ~ Describe and use properties and behaviors of relations, functions, and inverses.
			9-12.A.4.1. ~ use graphs, tables, and equations to represent linear

	<p>absolute value functions</p> <p>Use linear equations and inequalities to model real-life applications</p>	<p>functions.</p> <p>9-12.A.4.1A. ~ determine the domain, range, and intercepts of a function.</p> <p>9-12.A.4.5A. ~ describe characteristics of nonlinear functions and relations.</p> <p>9-12.N.3.0. ~ Develop conjectures, predictions, or estimations to solve problems and verify or justify the results.</p> <p>9-12.N.3.1. ~ use estimation strategies in problem situations to predict results and to check the reasonableness of results.</p> <p>9-12.N.3.2. ~ select alternative computational strategies and explain the chosen strategy.</p>
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OCTOBER	Systems of Linear Equations and Inequalities		
	Content	Skills	Standards
	Solving linear systems by graphing	Solve systems of two linear equations in two variables algebraically and by graphing	9-12.A.2.0. ~ Use a variety of algebraic concepts and methods to solve equations and inequalities.
	Solving linear systems algebraically	Identify systems with one solution, no solutions, and infinitely many solutions	9-12.A.2.1. ~ use algebraic properties to transform multi-step, single-variable, first-degree equations.
	Graphing and solving systems of linear inequalities	Graph the solutions of systems of linear inequalities	9-12.A.2.2. ~ use algebraic properties to transform multi-step, single-variable, first-degree inequalities and represent solutions using a number line.
	Linear programming	Use linear programming problems to solve real-life optimizations problems	9-12.A.2.2A. ~ determine the solution of systems of equations and systems of inequalities.
Solving systems of linear equations in three variables		9-12.A.3.0. ~ Interpret and develop mathematical models.	

	Use systems of three equations and three variables to model real-life problems, and solve algebraically	<p>9-12.A.3.1. ~ create linear models to represent problem situations.</p> <p>9-12.A.4.1. ~ use graphs, tables, and equations to represent linear functions.</p> <p>9-12.A.4.6A. ~ graph solutions to linear inequalities.</p> <p>9-12.N.3.0. ~ Develop conjectures, predictions, or estimations to solve problems and verify or justify the results.</p> <p>9-12.N.3.1. ~ use estimation strategies in problem situations to predict results and to check the reasonableness of results.</p> <p>9-12.N.3.2. ~ select alternative computational strategies and explain the chosen strategy.</p>
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NOVEMBER Matrices and Determinants		
Content	Skills	Standards
<p>Matrix operations</p> <p>Multiplying Matrices</p> <p>Determinants and Cramer's Rule</p> <p>Identity and inverse matrices</p> <p>Solving systems using inverse matrices</p>	<p>Add and subtract matrices and multiply by a scalar</p> <p>Multiply a matrix by another matrix</p> <p>Find determinants of 2x2 and 3x3 matrices</p> <p>Use Cramer's Rule to solve systems of linear equations</p> <p>Find inverse matrices and use them to solve systems of linear equations and real world problems</p>	<p>9-12.A.2.0. ~ Use a variety of algebraic concepts and methods to solve equations and inequalities.</p> <p>9-12.A.2.1. ~ use algebraic properties to transform multi-step, single-variable, first-degree equations.</p> <p>9-12.A.3.0. ~ Interpret and develop mathematical models.</p> <p>9-12.A.3.1. ~ create linear models to represent problem situations.</p> <p>9-12.N.2.1. ~ add, subtract, multiply, and divide real numbers including integral exponents.</p> <p>9-12.N.3.0. ~ Develop conjectures, predictions, or estimations to solve</p>

	Solve systems using augmented matrices	problems and verify or justify the results. 9-12.N.3.1. ~ use estimation strategies in problem situations to predict results and to check the reasonableness of results. 9-12.N.3.2. ~ select alternative computational strategies and explain the chosen strategy.
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Quadratic Functions

Content	Skills	Standards
Graphing quadratic functions	Graph quadratic equations in standard, vertex, and intercept forms	9-12.A.1.0. ~ Use procedures to transform algebraic expressions.
Solving quadratic equations		9-12.A.1.2A. ~ extend the use of real number properties to expressions involving complex numbers.
Complex numbers	Factor quadratic expressions	9-12.A.2.0. ~ Use a variety of algebraic concepts and methods to solve equations and inequalities.
Completing the square	Solve quadratic equations by factoring, finding square roots, completing the square, or using the quadratic formula	9-12.A.2.1. ~ use algebraic properties to transform multi-step, single-variable, first-degree equations.
The quadratic formula and the discriminant		9-12.A.2.2. ~ use algebraic properties to transform multi-step, single-variable, first-degree inequalities and represent solutions using a number line.
Graphing and solving quadratic inequalities	Write and solve quadratic equations to represent real-life situations	9-12.A.2.1A. ~ determine solutions of quadratic equations.
Modeling with quadratic functions	Solve quadratic equations with complex solutions and perform operations with complex numbers	9-12.A.3.0. ~ Interpret and develop mathematical models.
	Use the discriminant to determine the number and nature of solutions to a quadratic equation	9-12.A.3.2. ~ distinguish between linear and nonlinear models.
	Graph quadratic inequalities in two variables, including systems of	9-12.A.4.0 ~ Describe and use properties and behaviors of relations, functions, and inverses.

	inequalities	<p>9-12.A.4.1. ~ use graphs, tables, and equations to represent linear functions.</p> <p>9-12.N.1.1. ~ identify multiple representations of a real number.</p> <p>9-12.N.1.1A. ~ describe the relationship of the real number system to the complex number system.</p> <p>9-12.N.2.1. ~ add, subtract, multiply, and divide real numbers including integral exponents.</p> <p>9-12.N.3.0. ~ Develop conjectures, predictions, or estimations to solve problems and verify or justify the results.</p> <p>9-12.N.3.1. ~ use estimation strategies in problem situations to predict results and to check the reasonableness of results.</p> <p>9-12.N.3.2. ~ select alternative computational strategies and explain the chosen strategy.</p>
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D E C E M B E R	Polynomials and Polynomial Functions		
	Content	Skills	Standards
	Properties of exponents	Use properties of exponents to simplify algebraic expressions	9-12.A.1.0. ~ Use procedures to transform algebraic expressions.
	Evaluating and graphing polynomial functions	Use synthetic substitution to evaluate polynomial expressions	9-12.A.1.1. ~ write equivalent forms of algebraic expressions using properties of the set of real numbers.
	Adding, subtracting, and multiplying polynomials	Graph polynomial functions to investigate end behavior	9-12.A.2.0. ~ Use a variety of algebraic concepts and methods to solve equations and inequalities.
	Solving polynomial equations	Add, subtract, multiply, and divide	9-12.A.2.1. ~ use algebraic properties to transform multi-step, single-variable, first-degree equations.
The remainder and factor			

<p>theorems</p> <p>Finding rational zeros</p> <p>Using the Fundamental Theorem of Algebra</p> <p>Analyzing graphs of polynomial functions</p>	<p>polynomial functions</p> <p>Use factoring, synthetic division, and the rational zero theorem to find zeros of polynomial functions</p> <p>Use the Fundamental Theorem of Algebra to determine the number of solutions to a polynomial function</p> <p>Use x-intercepts and turning points to write and graph polynomial functions</p>	<p>9-12.A.2.1A. ~ determine solutions of quadratic equations.</p> <p>9-12.A.3.0. ~ Interpret and develop mathematical models.</p> <p>9-12.A.3.2. ~ distinguish between linear and nonlinear models.</p> <p>9-12.A.4.0 ~ Describe and use properties and behaviors of relations, functions, and inverses.</p> <p>9-12.A.4.1. ~ use graphs, tables, and equations to represent linear functions.</p> <p>9-12.A.4.2A. ~ describe the behavior of a polynomial, given the leading coefficient, roots, and degree.</p> <p>9-12.A.4.3A. ~ apply transformations to graphs and describe the results.</p> <p>9-12.N.2.1. ~ add, subtract, multiply, and divide real numbers including integral exponents.</p> <p>9-12.N.3.2. ~ select alternative computational strategies and explain the chosen strategy.</p>
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JANUARY	Powers, Roots, and Radicals		
	Content	Skills	Standards
	Nth roots and rational exponents	Evaluate nth roots of real numbers using radical and exponential notation	9-12.A.1.0. ~ Use procedures to transform algebraic expressions.
	Properties of rational exponents		9-12.A.1.1. ~ write equivalent forms of algebraic expressions using properties of the set of real numbers.
Power functions and function operations	Use properties of rational exponents to simplify expressions	9-12.A.2.0. ~ Use a variety of algebraic concepts and methods to	

Inverse functions	and evaluate power functions	solve equations and inequalities.
Graphing square root and cube root functions	Perform arithmetic operations with functions as well as composition of functions	9-12.A.3.2. ~ distinguish between linear and nonlinear models.
Solving radical equations	Find inverses of functions	9-12.A.4.0 ~ Describe and use properties and behaviors of relations, functions, and inverses.
	Graph square root and cube root functions	9-12.A.4.1. ~ use graphs, tables, and equations to represent linear functions.
	Solve equations that have radicals or rational exponents	9-12.N.1.1. ~ identify multiple representations of a real number.
		9-12.N.1.2. ~ apply the concept of place value, magnitude, and relative magnitude of real numbers.
		9-12.N.2.0. ~ Apply number operations with real numbers and other number systems.
		9-12.N.2.1. ~ add, subtract, multiply, and divide real numbers including integral exponents.
		9-12.N.2.1A. ~ add, subtract, multiply, and divide real numbers including rational exponents.
		9-12.N.3.2. ~ select alternative computational strategies and explain the chosen strategy.

F E B R U A R	Exponential and Logarithmic Functions		
	Content	Skills	Standards
	Exponential growth Exponential decay	Graph general exponential functions as well as growth and decay functions Use exponential functions to	9-12.A.1.0. ~ Use procedures to transform algebraic expressions. 9-12.A.1.1. ~ write equivalent forms of algebraic expressions using properties of the set of real numbers.

Y	The number e	represent real-life situations such as compound interest and depreciation	9-12.A.2.0. ~ Use a variety of algebraic concepts and methods to solve equations and inequalities.
	Logarithmic functions		
	Properties of logarithms	Simplify and evaluate expressions involving the natural base e, and graph such functions	9-12.A.3.0. ~ Interpret and develop mathematical models.
	Solving exponential and logarithmic equations		9-12.A.3.2. ~ distinguish between linear and nonlinear models.
	Modeling with exponential and power functions	Evaluate logarithmic expressions and functions including common and natural bases	9-12.A.4.0 ~ Describe and use properties and behaviors of relations, functions, and inverses.
Logistic growth functions	Examine the inverse relationship between logarithmic and exponential functions	9-12.A.4.4A. ~ apply properties and definitions of trigonometric, exponential, and logarithmic expressions.	
	Use the change of base formula and properties of logarithms to expand and condense logarithmic expressions	9-12.N.1.0. ~ Analyze the structural characteristics of the real number system and its various subsystems. Analyze the concept of value, magnitude, and relative magnitude of real numbers.	
	Solve exponential and logarithmic equations	9-12.N.1.1. ~ identify multiple representations of a real number.	
		9-12.N.1.2. ~ apply the concept of place value, magnitude, and relative magnitude of real numbers.	
		9-12.N.2.0. ~ Apply number operations with real numbers and other number systems.	
		9-12.N.2.1. ~ add, subtract, multiply, and divide real numbers including integral exponents.	
		9-12.N.2.1A. ~ add, subtract, multiply, and divide real numbers including rational exponents.	
		9-12.N.3.0. ~ Develop conjectures, predictions, or estimations to solve problems and verify or justify the results.	
		9-12.N.3.1. ~ use estimation strategies in problem situations to predict results and to check the reasonableness of results.	

9-12.N.3.2. ~ select alternative computational strategies and explain the chosen strategy.

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Rational Equations and Functions

Content	Skills	Standards
Inverse and joint variation Graphing simple rational functions Graphing general rational functions Add, subtract, multiply, and divide rational expressions Solving rational equations	Write and use inverse variation and joint variation models in real-life problems Graph rational functions Simplify complex fractions and rational expressions Solve equations that contain rational expressions	9-12.A.1.0. ~ Use procedures to transform algebraic expressions. 9-12.A.1.1. ~ write equivalent forms of algebraic expressions using properties of the set of real numbers. 9-12.A.2.0. ~ Use a variety of algebraic concepts and methods to solve equations and inequalities. 9-12.A.3.0. ~ Interpret and develop mathematical models. 9-12.A.3.1. ~ create linear models to represent problem situations. 9-12.A.3.2. ~ distinguish between linear and nonlinear models. 9-12.A.3.1A. ~ distinguish between linear, quadratic, inverse variation, and exponential models. 9-12.A.3.2A. ~ create formulas to model relationships that are algebraic, geometric, trigonometric, and exponential. 9-12.A.4.0 ~ Describe and use properties and behaviors of relations, functions, and inverses. 9-12.N.1.1. ~ identify multiple representations of a real number. 9-12.N.2.0. ~ Apply number operations with real numbers and other number systems.

		<p>9-12.N.2.1. ~ add, subtract, multiply, and divide real numbers including integral exponents.</p> <p>9-12.N.3.2. ~ select alternative computational strategies and explain the chosen strategy.</p>
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**A
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L** **Quadratic Relations and Conic Sections**

Content	Skills	Standards
The distance and midpoint formulas	Use the distance and midpoint formulas for line segments	9-12.A.2.0. ~ Use a variety of algebraic concepts and methods to solve equations and inequalities.
Parabols, Circles, Ellipses, and Hyperbolas	Write equations and draw graphs for parabolas, circles, ellipses, and hyperbolas	9-12.A.2.1. ~ use algebraic properties to transform multi-step, single-variable, first-degree equations.
Graphing and classifying conics	Translate centers of conic sections to points in the coordinate plane other than the origin	9-12.A.2.1A. ~ determine solutions of quadratic equations.
Solving quadratic systems	Solve quadratic systems by using algebraic techniques and graphing	9-12.A.3.1. ~ create linear models to represent problem situations. 9-12.A.3.2. ~ distinguish between linear and nonlinear models. 9-12.A.4.0 ~ Describe and use properties and behaviors of relations, functions, and inverses. 9-12.N.3.0. ~ Develop conjectures, predictions, or estimations to solve problems and verify or justify the results. 9-12.N.3.1. ~ use estimation strategies in problem situations to predict results and to check the reasonableness of results. 9-12.N.3.2. ~ select alternative computational strategies and explain the chosen strategy.

Sequences and Series

Content	Skills	Standards
Introduction to sequences and series	Use, write, and graph arithmetic and geometric sequences	9-12.A.2.0. ~ Use a variety of algebraic concepts and methods to solve equations and inequalities.
Arithmetic sequences and series	Use summation notation to write a series and find the sum of a series	9-12.A.3.0. ~ Interpret and develop mathematical models.
Geometric sequences and series	Write a rule for the n th term of a sequence	<p>9-12.A.3.1. ~ create linear models to represent problem situations.</p> <p>9-12.A.3.2. ~ distinguish between linear and nonlinear models.</p> <p>9-12.A.3.3A. ~ use sequences and series to model relationships</p> <p>9-12.N.1.0. ~ Analyze the structural characteristics of the real number system and its various subsystems. Analyze the concept of value, magnitude, and relative magnitude of real numbers.</p> <p>9-12.N.2.0. ~ Apply number operations with real numbers and other number systems.</p> <p>9-12.N.2.1. ~ add, subtract, multiply, and divide real numbers including integral exponents.</p> <p>9-12.N.3.0. ~ Develop conjectures, predictions, or estimations to solve problems and verify or justify the results.</p> <p>9-12.N.3.1. ~ use estimation strategies in problem situations to predict results and to check the reasonableness of results.</p> <p>9-12.N.3.2. ~ select alternative computational strategies and explain the chosen strategy.</p>

M A Y	Probability and Statistics		
	Content	Skills	Standards
	The Fundamental Counting Principal and permutations	Use permutations and combinations to count the number of ways an event can happen	
	Combinations and the Binomial Theorem	Expand a binomial that is raised to a power	
	Introduction to probability	Find theoretical and experimental probabilities of independent and dependent events	
	Probability of compound events		
	Probability of independent and dependent events		

Teacher: Core Geometry

Year: 2008-2009

Course: Geometry

A U G U S T	Basics of Geometry		
	Content	Skills	Standards
	Finding and Describing Patterns	Find and describe patterns	9-12.G.1.0. ~ Use deductive and inductive reasoning to recognize and apply properties of geometric figures.
	Introduction to Inductive Reasoning	Sketch points, lines, planes, and their intersections	9-12.G.2.1. ~ recognize the relationship between a three-dimensional figure and its two-dimensional representation.
	Points, Lines, and Planes	Measure segments and add their lengths	9-12.G.2.2. ~ reflect across vertical or horizontal lines, and translate two-dimensional figures
	Segments and Their	Measure angles and classify them	

Measurements	based on their measure	
Angles and Their Measurements	Organize definitions, postulates, and theorems in a Geometry Notebook	
Video - Channel One Standard Deviants on Basic Geometry		

SEPTEMBER Segments and Angles

Content	Skills	Standards
Segment Bisectors	Analyze segment bisectors and angle bisectors	9-12.A.2.0. ~ Use a variety of algebraic concepts and methods to solve equations and inequalities.
Angle Bisectors	Identify complementary angles, supplementary angles, vertical angles, and linear pairs	9-12.G.1.0. ~ Use deductive and inductive reasoning to recognize and apply properties of geometric figures.
Complementary and Supplementary Angles	Use properties of equality and congruence to justify mathematical statements	9-12.N.3.0. ~ Develop conjectures, predictions, or estimations to solve problems and verify or justify the results.
Video - Channel One Standard Deviants on Angles		
Vertical Angles		
Video - Geometry in Motion for Linear Pairs and Vertical Angles		
If-Then Statements and Deductive Reasoning		
Properties of Equality and Congruence		

OCTOBER Parallel and Perpendicular Lines

T O B E R	Content	Skills	Standards
	Relationships between lines	Identify relationships between the angles formed by two lines and a transversal, especially when two lines are parallel	9-12.A.2.0. ~ Use a variety of algebraic concepts and methods to solve equations and inequalities.
	Theorems about Perpendicular lines		9-12.G.1.0. ~ Use deductive and inductive reasoning to recognize and apply properties of geometric figures.
	Origami	Use properties of parallel and perpendicular lines to find angle measures	9-12.G.2.1. ~ recognize the relationship between a three-dimensional figure and its two-dimensional representation.
	Angles formed by Transversals	Identify the angle relationship necessary for showing that two lines are parallel	9-12.G.2.2. ~ reflect across vertical or horizontal lines, and translate two-dimensional figures
	Video - Channel One Parallel Lines and Angles	Explore translations	9-12.N.3.0. ~ Develop conjectures, predictions, or estimations to solve problems and verify or justify the results.
	Introduction to Logical Proofs and Logical Reasoning	Explore geometric constructions using a straightedge and compass	

N O V E M B E R	Triangle Relationships		
	Content	Skills	Standards
Classifying Triangles	Classify triangles according to angle measurements and side lengths	9-12.G.1.0. ~ Use deductive and inductive reasoning to recognize and apply properties of geometric figures.	
Angle Measure of Triangles		9-12.G.1.1. ~ apply the properties of triangles and quadrilaterals to find unknown parts.	
Isosceles and Equilateral Triangles	Use Triangle Sum Theorem, Base Angles Theorem, Pythagorean Theorem and the Triangle Inequality Theorem	9-12.G.1.1A. ~ justify properties of geometric figures.	
Pythagorean Theorem and the Distance Formula		9-12.G.2.0. ~ Use properties of geometric figures to solve problems from a variety of perspectives.	
Medians of a Triangle	Discover the algebraic relationship between the medians of a triangle and its centroid		
Triangle Inequalities			

Geometry Pictionary		
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DECEMBER **Congruent Triangles**

Content	Skills	Standards
Congruent Triangles	Identify corresponding parts of congruent triangles	9-12.A.2.0. ~ Use a variety of algebraic concepts and methods to solve equations and inequalities.
Proving Triangles are congruent using SSS, SAS, ASA Postulates and AAS and HL Theorems	Show triangles are congruent using Postulates and Theorems	9-12.G.1.0. ~ Use deductive and inductive reasoning to recognize and apply properties of geometric figures.
Using Congruent Triangles	Use angle bisectors and perpendicular measurements and segment lengths in situations involving triangles	9-12.G.1.1. ~ apply the properties of triangles and quadrilaterals to find unknown parts.
Angle Bisectors and Perpendicular Bisectors		9-12.G.1.2. ~ identify and apply relationships among triangles.
Reflections and Symmetry	Reflect figures over lines of symmetry in a figure	9-12.G.2.0. ~ Use properties of geometric figures to solve problems from a variety of perspectives. 9-12.N.3.0. ~ Develop conjectures, predictions, or estimations to solve problems and verify or justify the results.

JANUARY **Quadrilaterals**

Content	Skills	Standards
Classifying Polygons	Find angle measures of quadrilaterals	9-12.A.2.0. ~ Use a variety of algebraic concepts and methods to solve equations and inequalities.
Properties of Parallelograms	Identify special quadrilaterals	9-12.G.1.0. ~ Use deductive and inductive reasoning to recognize and apply properties of geometric figures.
Showing Quadrilaterals are Parallelograms	Use the properties of parallelograms, rhombuses,	9-12.G.1.1. ~ apply the properties of triangles and quadrilaterals to find

Rhombuses, Rectangles, and Squares	rectangles, squares, and trapezoids to find their side lengths and angle measurements	unknown parts.
Trapezoids		9-12.G.2.0. ~ Use properties of geometric figures to solve problems from a variety of perspectives.
Deductive Reasoning about Special Quadrilaterals	Investigate the midsegment of a trapezoid	9-12.G.2.1. ~ recognize the relationship between a three-dimensional figure and its two-dimensional representation.
Exploration Activity using parallel lines		9-12.G.2.1A. ~ use Cartesian coordinates to verify geometric properties.

FEBRUARY	Similarity		
	Content	Skills	Standards
	Ratio and Proportion	Use ratios and solve proportions, especially as they relate to similar polygons	9-12.A.2.0. ~ Use a variety of algebraic concepts and methods to solve equations and inequalities.
	Similar Polygons		9-12.A.3.0. ~ Interpret and develop mathematical models.
	Triangle Similarity using AA Postulate, SSS and SAS Theorems	Identify similar polygons	9-12.G.1.0. ~ Use deductive and inductive reasoning to recognize and apply properties of geometric figures.
	Proportions of Similar Triangles	Use Postulates and Theorems to show that two triangles are similar	9-12.G.1.1. ~ apply the properties of triangles and quadrilaterals to find unknown parts.
	Dilations	Identify and draw dilations of polygons	9-12.G.1.2. ~ identify and apply relationships among triangles.
	Video- Patterns, Symmetry, & Beauty		9-12.G.2.0. ~ Use properties of geometric figures to solve problems from a variety of perspectives.
	Golden Rectangle Ratios		9-12.G.2.1. ~ recognize the relationship between a three-dimensional figure and its two-dimensional representation.
Tangram Manipulations using technology		9-12.G.2.2. ~ reflect across vertical or horizontal lines, and translate	

		<p>two-dimensional figures</p> <p>9-12.G.2.3. ~ use proportions to solve problems.</p> <p>9-12.N.1.1. ~ identify multiple representations of a real number.</p>
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MARCH Polygons and Area

MARCH	Content	Skills	Standards
	Classifying Polygons	Find measures of interior and exterior angles of polygons	9-12.A.2.0. ~ Use a variety of algebraic concepts and methods to solve equations and inequalities.
	Angles in Polygons		
	Areas of Rectangles, Squares, and Triangles	Find the area of squares, rectangles, triangles, parallelograms, and trapezoids	9-12.A.2.1. ~ use algebraic properties to transform multi-step, single-variable, first-degree equations.
	Side relationships of Special Right Triangles	Find the circumference and area of circles	9-12.G.1.0. ~ Use deductive and inductive reasoning to recognize and apply properties of geometric figures.
	Area of Parallelograms	Simplify radicals	9-12.G.1.1. ~ apply the properties of triangles and quadrilaterals to find unknown parts.
	Area of Trapezoids	Solve right triangles involving 30-60-90, and 45-45-90 measurements	9-12.G.1.1A. ~ justify properties of geometric figures.
	Areas of Regular Polygons		9-12.G.2.0. ~ Use properties of geometric figures to solve problems from a variety of perspectives.
	Areas and Circumference of Circles		9-12.G.2.3. ~ use proportions to solve problems.
	construct polygons		9-12.N.1.1. ~ identify multiple representations of a real number.

APRIL Surface Area and Volume

R I L	Content	Skills	Standards
	Solid figures	Identify and name solid figures	9-12.A.2.0. ~ Use a variety of algebraic concepts and methods to solve equations and inequalities.
	Surface Area of Prisms and Cylinders	Find the surface area and volume of prisms, cylinders, pyramids, cones, and spheres	9-12.A.2.1. ~ use algebraic properties to transform multi-step, single-variable, first-degree equations.
	Surface Area of Pyramids and Cones		9-12.G.1.0. ~ Use deductive and inductive reasoning to recognize and apply properties of geometric figures.
	Lateral Area of Polygons		9-12.G.1.1. ~ apply the properties of triangles and quadrilaterals to find unknown parts.
	Volume of Prisms and Cylinders		9-12.G.1.1A. ~ justify properties of geometric figures.
	Volume of Pyramids and Cones		9-12.G.1.4A. ~ use formulas for surface area and volume to solve problems involving three-dimensional figures.
	Surface Area, Lateral Area, and Volume of Spheres		9-12.G.2.0. ~ Use properties of geometric figures to solve problems from a variety of perspectives.
	9-12.G.2.3. ~ use proportions to solve problems.		

Right Triangles and Trigonometry

Content	Skills	Standards
Sine, Cosine, and Tangent Ratios of a Triangle	Find the sine, cosine, and tangent ratios of the acute angles in a right triangle	9-12.A.2.0. ~ Use a variety of algebraic concepts and methods to solve equations and inequalities.
		9-12.G.1.1. ~ apply the properties of triangles and quadrilaterals to find unknown parts.
		9-12.G.1.2. ~ identify and apply relationships among triangles.

		<p>9-12.G.1.2A. ~ determine the values of the sine, cosine, and tangent ratios of right triangles.</p> <p>9-12.M.1.0. ~ Apply measurement concepts in practical applications.</p>
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M
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Y **Circles**

Content	Skills	Standards
Parts of a Circle	Identify parts of a circle, such as arcs	9-12.A.2.0. ~ Use a variety of algebraic concepts and methods to solve equations and inequalities.
Properties of Tangents	Identify properties of circles	9-12.A.2.1. ~ use algebraic properties to transform multi-step, single-variable, first-degree equations.
Arcs and Central Angles	Identify inscribed angles and intersecting chords in circles	9-12.G.1.0. ~ Use deductive and inductive reasoning to recognize and apply properties of geometric figures.
Arcs and Chords	Construct inscribed and circumscribed polygons	9-12.G.1.1. ~ apply the properties of triangles and quadrilaterals to find unknown parts.
Inscribed Angles and Polygons	Use properties of inscribed angles and intersecting chords to find segment or angle measurements	9-12.G.1.1A. ~ justify properties of geometric figures.
Properties of Chords	Write and graph equations of circles	9-12.G.1.3A. ~ apply properties associated with circles.
Equations of circles	Identify rotational symmetry and rotations in a plane	9-12.G.2.0. ~ Use properties of geometric figures to solve problems from a variety of perspectives.
Reflections and Rotations		9-12.G.2.2. ~ reflect across vertical or horizontal lines, and translate two-dimensional figures

Teacher: Core Pre-Calculus

Year: 2008-2009

Course: Pre-Calc

A U G U S T	Linear and Quadratic functions		
	Content	Skills	Standards
	Points and Lines	Find length and midpoint of a segment	9-12.A.1.0. ~ Use procedures to transform algebraic expressions.
S E P T E M B E R	Linear and Quadratic Functions		
	Content	Skills	Standards
	Slopes and Equations of Lines	Find intersection and slope	9-12.A.1.0. ~ Use procedures to transform algebraic expressions.
	Linear Functions and Models	Determine if lines are parallel/perpend.	9-12.A.1.1A. ~ write equivalent forms of rational algebraic expressions using properties of real numbers.
	The Complex Numbers	Operations of complex numbers	9-12.A.1.2A. ~ extend the use of real number properties to expressions involving complex numbers.
	Solving Quadratic Equations	Solve quadratics by several methods and graph quadratics	9-12.A.2.0. ~ Use a variety of algebraic concepts and methods to solve equations and inequalities.
	Quadratics and Their Graphs		9-12.A.2.1A. ~ determine solutions of quadratic equations.
			9-12.A.2.2A. ~ determine the solution of systems of equations and systems of inequalities.
			9-12.A.3.0. ~ Interpret and develop mathematical models.
			9-12.N.1.1A. ~ describe the relationship of the real number system to the complex number system.

Polynomial Functions			
Content	Skills	Standards	
Polynomials Synthetic Division; Remainder and Factor Theorems Graphing Polynomial Functions Solve Polynomials by Factoring	Identify polynomial functions evaluate to find the zeros (synthetic) Graph polynomial functions and determine an equation from a graph Solve polynomials by various methods (i.e. factoring, rational root theorem)	9-12.A.2.0. ~ Use a variety of algebraic concepts and methods to solve equations and inequalities. 9-12.A.2.1A. ~ determine solutions of quadratic equations. 9-12.A.2.2A. ~ determine the solution of systems of equations and systems of inequalities. 9-12.A.3.0. ~ Interpret and develop mathematical models. 9-12.N.1.0 ~ Analyze the structural characteristics of the real number system and its various subsystems. Analyze the concept of value, magnitude, and relative magnitude of real numbers.	
Functions			
O C T O B E R	Content	Skills	Standards
	Functions	Identify a function, domain, range, zeros, and graph	9-12.A.4.0. ~ Describe and use properties and behaviors of relations, functions, and inverses.
	Operations of Functions	Perform operations of functions (i.e. composition, +,-,x,/)	9-12.A.4.1A. ~ determine the domain, range, and intercepts of a function.
	Reflecting Graphs, Symmetry	Study the behavior of graphs	9-12.A.4.2A. ~ describe the behavior of a polynomial, given the leading coefficient, roots, and degree.
	Inverse Functions	Find inverses of functions, if exists	9-12.A.4.3A. ~ apply transformations to graphs and describe the results.
	Functions of Two Variables		

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Exponents and Logarithms

Content	Skills	Standards
Growth and Decay; W/ Integral and Rational Exponents	Define and apply integral and rational exponents	9-12.A.3.1A. ~ distinguish between linear, quadratic, inverse variation, and exponential models.
Exponential Functions	Define and use exponential functions	9-12.A.3.2A. ~ create formulas to model relationships that are algebraic, geometric, trigonometric, and exponential.
Number e and Function e raised to a power	Define and apply natural and common logarithmic functions	9-12.A.4.1A. ~ determine the domain, range, and intercepts of a function.
Logarithmic Functions	Apply laws of logarithms	9-12.A.4.4A. ~ apply properties and definitions of trigonometric, exponential, and logarithmic expressions.
Laws of Logarithms	Solve exponential equations	9-12.A.4.5A. ~ describe characteristics of nonlinear functions and relations.
Exponential Equations	Able to change bases	

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Sequences and Series

Content	Skills	Standards
Arithmetic and Geometric Sequences	Identify an arithmetic or geometric sequence finding the nth term	9-12.A.3.3A. ~ use sequences and series to model relationships
Arithmetic and Geometric Series and Their Sums	Find the sum of the first n terms of a geometric or arithmetic series	
Sigma Notation	Represent series using sigma notation	

J A N U A R Y	Limits		
	Content	Skills	Standards
	Limits of functions	Find the limit of a function and determine if continuous	9-12.A.4.1A. ~ determine the domain, range, and intercepts of a function.
	Graphs of Rational Functions	Sketch the graph of rational functions	9-12.N.1.0 ~ Analyze the structural characteristics of the real number system and its various subsystems. Analyze the concept of value, magnitude, and relative magnitude of real numbers.
	Polar Coordinates		
	Content	Skills	Standards
	Polar coordinates and graphs	Graph polar equations	9-12.A.3.2A. ~ create formulas to model relationships that are algebraic, geometric, trigonometric, and exponential.
	Geometric representation of complex numbers	Write complex numbers in polar form	

Teacher: Core Trigonometry

Year: 2008-2009

Course: Trigonometry

J A N U A R Y	Trig Functions		
	Content	Skills	Standards
	Measure of angles	Find angles in degrees and radians	9-12.A.4.0. ~ Describe and use properties and behaviors of relations, functions, and inverses.
Sectors of Circles	Find arc length and area of a	9-12.G.1.2A. ~ determine the values of the sine, cosine, and tangent	

Sine and Cosine Function	sector	ratios of right triangles.
Evaluating and Graphing Sin,Cos	Solve simple equations with sin & cos	9-12.G.1.3A. ~ apply properties associated with circles.
Other Trig Functions	Use a reference angle and calculator to find values	
Inverse Trig Functions	Find values of inverse trig functions	
	Sketch graphs of trig functions	

F **Trig Equations and Applications**

F	Content	Skills	Standards
E	Simple Trig Equations	Solve simple trig equations	9-12.A.4.3A. ~ apply transformations to graphs and describe the results.
R	Sine and Cosine Curves	Use trig functions to model periodic behavior	9-12.A.4.5A. ~ describe characteristics of nonlinear functions and relations.
U	Modeling Periodic Behavior	Simplify and prove trig identities	9-12.G.1.2A. ~ determine the values of the sine, cosine, and tangent ratios of right triangles.
A	Relationships Among Functions		9-12.M.1.0. ~ Apply measurement concepts in practical applications.
R	Solving Difficult Trig Equations		9-12.N.3.0. ~ Develop conjectures, predictions, or estimations to solve problems and verify or justify the results.

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C H	Content	Skills	Standards
	Solve right triangles	Find sides and angles of right triangles	9-12.A.3.2A. ~ create formulas to model relationships that are algebraic, geometric, trigonometric, and exponential. 9-12.G.1.2A. ~ determine the values of the sine, cosine, and tangent ratios of right triangles. 9-12.N.3.0. ~ Develop conjectures, predictions, or estimations to solve problems and verify or justify the results.
	Area of triangles	Find area of a triangle	
	Law of sines	Use law of sines to find unknown parts	
	Law of cosines	Use law of cosines to find unknown parts	
Applications of trigonometry	Use trig in real world situations		

A P R I L	Polar Coordinates		
	Content	Skills	Standards
	Polar coordinates and graphs	Graph polar equations	9-12.A.3.2A. ~ create formulas to model relationships that are algebraic, geometric, trigonometric, and exponential.
Geometric representation of complex numbers	Write complex numbers in polar form		

Trig Formulas		
Content	Skills	Standards
Formulas for \sin & $\cos(\hat{a}\pm\hat{a})$	Derive and apply formulas	9-12.A.4.4A. ~ apply properties and definitions of trigonometric, exponential, and logarithmic expressions.
Double and half-angle formulas	Use identities to solve trig equations	

M A Y	Vectors		
	Content	Skills	Standards
Geometric rep of Vectors	Perform basic operations on vectors	9-12.A.3.2A. ~ create formulas to model relationships that are algebraic, geometric, trigonometric, and exponential.	
Algebraic rep of vectors	Use coordinates to perform operations	9-12.G.1.0. ~ Use deductive and inductive reasoning to recognize and apply properties of geometric figures.	
Vector and Parametric equations	Use Vector and Parametric equations to describe motion in a plane	9-12.G.2.0. ~ Use properties of geometric figures to solve problems from a variety of perspectives.	
Dot Product	Define and apply the dot product		