

**Pine Hill Public Schools**

Content Area:		<b>Mathematics</b>	
Course Title/ Grade Level:		<b>CP Algebra 2/ Grade 11</b>	
Unit 1:	<b>Foundations for Functions</b>	Month:	<b>September</b>
Unit 2:	<b>Linear Functions</b>	Month:	<b>October</b>
Unit 3:	<b>Linear Systems</b>	Month:	<b>October/November</b>
Unit 4:	<b>Quadratic Functions</b>	Month:	<b>November/December</b>
Unit 5:	<b>Polynomial Functions</b>	Month:	<b>January</b>
Unit 6:	<b>Exponential and Logarithmic Functions</b>	Month:	<b>February</b>
Unit 7:	<b>Rational and Radical Functions</b>	Month:	<b>March</b>
Unit 8:	<b>Properties and Attributes of Functions</b>	Month:	<b>April</b>
Unit 9:	<b>Conic Sections</b>	Month:	<b>April/May</b>
Unit 10:	<b>Trigonometric Functions</b>	Month:	<b>May/June</b>
Date Created or Revised:		04/19/2012	
BOE Approval Date:		8/28/12	

**Pine Hill Public Schools  
Mathematics Curriculum**

<b>Unit Title: Foundations for Functions</b>		<b>Unit #: 1</b>
<b>Course or Grade Level: CP Algebra 2</b>		<b>Length of Time: 18 days</b>
<b>Date Created: April 19, 2012</b>		<b>BOE Approval Date:</b>
<b>Pacing</b>	18 days, 2 day introduction to course, Chapter 1, skip section 1-9, 2 review days and 2 summative assessment days	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>• What are the various sets of numbers and how do you differentiate them?</li> <li>• What is a function and how can it be written?</li> <li>• How do you identify domain and range?</li> <li>• How do you determine whether a graph is a function?</li> <li>• What is an exponent and what are its' properties?</li> <li>• How do transformations effect the graph?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>• Properties of real numbers</li> <li>• Interval notation</li> <li>• Square Roots and Operations of Square Roots</li> <li>• Algebraic Expressions</li> <li>• Exponents and their properties</li> <li>• Functions, domain, range and function notation</li> <li>• Transformations</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>• Identifying properties of real numbers</li> <li>• Simplifying square roots and perform operations on square roots</li> <li>• Simplifying algebraic expressions and expression involving exponents</li> <li>• Identifying functions and their domain and range</li> <li>• Writing functions in notation form</li> <li>• Identifying basic transformations</li> </ul>	
<b>Assessments</b>	Formative: <ul style="list-style-type: none"> <li>• Teacher observation and questioning</li> <li>• Seat and or group work</li> <li>• Homework</li> <li>• Student participation at board</li> </ul>	Summative: <ul style="list-style-type: none"> <li>• Quizzes, tests and benchmark</li> </ul>
<b>Interventions / differentiated instruction</b>	<ul style="list-style-type: none"> <li>• Students given handouts of power point notes</li> <li>• Students given access to online textbook</li> <li>• Partner or group work</li> </ul>	
<b>Inter-disciplinary Connections</b>	<ul style="list-style-type: none"> <li>• Using coordinate geometry to solve problems</li> <li>•</li> </ul>	
<b>Lesson resources / Activities</b>	<ul style="list-style-type: none"> <li>• Holt McDougal Algebra 2, copyright 2011 – Chapter 1</li> <li>• Power point resources</li> <li>• Textbook practice worksheet</li> <li>• Online textbook ( <a href="http://www.hr.com">www.hr.com</a> )</li> <li>• Construction and measuring of segments and angles</li> <li>• Scientific calculators</li> </ul>	
<b>Common Core State Standards</b>		
<b>Grade or Conceptual Category (HS only): Algebra 2</b>		

<b>Domain (name and #): Number and Quantity</b>							
Functions							
<b>Cluster:</b> Use property of Rational and irrational numbers, interpret the structure of expressions, understand concepts of functions			<b>#. Standard:</b>				
			N-RN				
			A-SSE				
			F-IF				
<b>Math Practices:</b>							
<b><u>21<sup>st</sup> Century Themes</u></b>							
	Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy
<b><u>21<sup>st</sup> Century Skills</u></b>							
	Creativity and Innovation		Critical Thinking and Problem Solving		Communication and Collaboration		Information Literacy
	Media Literacy		ICT Literacy		Life and Career Skills		

**Pine Hill Public Schools  
Mathematics Curriculum**

<b>Unit Title: Linear Functions</b>		<b>Unit #: 2</b>
<b>Course or Grade Level: CP Algebra 2</b>		<b>Length of Time: 14 days</b>
<b>Date Created: April 19, 2012</b>		<b>BOE Approval Date:</b>
<b>Pacing</b>	14 days, Chapter 2, skip sections 2-6 – 2-9, 2 review days and 2 summative assessment days	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>• How do you solve linear equations and inequalities?</li> <li>• What is a proportion and how do you solve it?</li> <li>• What is a linear function and how do you graph them?</li> <li>• How do you write a linear function using slope-intercept or point-slope form?</li> <li>• What is a linear inequality and how do you graph it?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>• Linear equations</li> <li>• Proportional Reasoning</li> <li>• Linear Functions</li> <li>• Linear Inequalities</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>• Solving Linear Equations</li> <li>• Use proportions to solve problems</li> <li>• Graphing Linear Functions</li> <li>• Writing Linear Functions using slope-intercept and point-slope form</li> <li>• Graphing Linear Inequalities on the Coordinate Plane</li> </ul>	
<b>Assessments</b>	Formative: <ul style="list-style-type: none"> <li>• Teacher observation and questioning</li> <li>• Seat and or group work</li> <li>• Homework</li> <li>• Student participation at board</li> </ul>	Summative: <ul style="list-style-type: none"> <li>• Quizzes, tests and benchmark</li> </ul>
<b>Interventions / differentiated instruction</b>	<ul style="list-style-type: none"> <li>• Students given handouts of power point notes</li> <li>• Students given access to online textbook</li> <li>• Partner or group work</li> </ul>	
<b>Inter-disciplinary Connections</b>	<ul style="list-style-type: none"> <li>• Using coordinate geometry to solve problems</li> </ul>	
<b>Lesson resources / Activities</b>	<ul style="list-style-type: none"> <li>• Holt McDougal Algebra 2, copyright 2011 – Chapter 2</li> <li>• Power point resources</li> <li>• Textbook practice worksheet</li> <li>• Online textbook ( <a href="http://www.hrw.com">www.hrw.com</a> )</li> <li>• Scientific calculators</li> </ul>	
<b>Common Core State Standards</b>		
<b>Grade or Conceptual Category (HS only): Algebra 2</b>		
<b>Domain (name and #): Reasoning With Equations and Inequalities</b>		
<b>Interpreting Functions</b>		
<b>Cluster:</b> Represent and solve equations and inequalities graphically, understand the concept of a	<b>#. Standard:</b>	
	A-REL	
	F-IF	

function and use function notation	

**Math Practices:**

[21<sup>st</sup> Century Themes](#)

	Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy
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[21<sup>st</sup> Century Skills](#)

	Creativity and Innovation		Critical Thinking and Problem Solving		Communication and Collaboration		Information Literacy
	Media Literacy		ICT Literacy		Life and Career Skills		

<b>Pine Hill Public Schools Mathematics Curriculum</b>	
<b>Unit Title: Linear Functions</b>	<b>Unit #: 3</b>
<b>Course or Grade Level: CP Algebra 2</b>	<b>Length of Time: 12 days</b>
<b>Date Created: April 19, 2012</b>	<b>BOE Approval Date:</b>
<b>Pacing</b>	12 days, Chapter 3, skip sections 3.5 – 3-6, 2 review days and 2 summative assessment days
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>• How can a graph be used to solve linear systems of equations?</li> <li>• What other methods can be used to solve linear systems?</li> <li>• How can a graph be used to solve systems of linear inequalities?</li> </ul>
<b>Content</b>	<ul style="list-style-type: none"> <li>• Linear systems of equations</li> <li>• Linear systems of inequalities</li> </ul>
<b>Skills</b>	<ul style="list-style-type: none"> <li>• Solving Linear Systems of Equations by graphing</li> <li>• Solving Linear Systems of Equations using substitution</li> <li>• Solving Linear Systems of Equations using elimination</li> <li>• Solving Linear Systems of Inequalities by graphing</li> </ul>
<b>Assessments</b>	Formative: <ul style="list-style-type: none"> <li>• Teacher observation and questioning</li> <li>• Seat and or group work</li> <li>• Homework</li> <li>• Student participation at board</li> </ul> Summative: <ul style="list-style-type: none"> <li>• Quizzes, tests and benchmark</li> </ul>
<b>Interventions / differentiated instruction</b>	<ul style="list-style-type: none"> <li>• Students given handouts of power point notes</li> <li>• Students given access to online textbook</li> <li>• Partner or group work</li> </ul>
<b>Inter-disciplinary Connections</b>	<ul style="list-style-type: none"> <li>• Using coordinate geometry to solve problems</li> </ul>
<b>Lesson resources / Activities</b>	<ul style="list-style-type: none"> <li>• Holt McDougal Algebra 2, copyright 2011 – Chapter 3</li> <li>• Power point resources</li> <li>• Textbook practice worksheet</li> <li>• Online textbook ( <a href="http://www.hrw.com">www.hrw.com</a> )</li> <li>• Scientific Calculators</li> </ul>
<b>Common Core State Standards</b>	
<b>Grade or Conceptual Category (HS only): Algebra 2</b>	
<b>Domain (name and #): Interpreting Functions</b>	
<b>Cluster:</b> Create equations that describe numbers or relationships. Represent and solve equations and inequalities graphically. Interpret functions that arise in applications in terms of the context.	<b>#. Standard:</b>
	A-CED
	F-IF
<b>Math Practices:</b>	

**21<sup>st</sup> Century Themes**

	Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy
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**21<sup>st</sup> Century Skills**

	Creativity and Innovation		Critical Thinking and Problem Solving		Communication and Collaboration		Information Literacy
	Media Literacy		ICT Literacy		Life and Career Skills		

**Pine Hill Public Schools  
Mathematics Curriculum**

<b>Unit Title:</b> Quadratic Functions		<b>Unit #: 4</b>
<b>Course or Grade Level:</b> CP Algebra 2		<b>Length of Time:</b> 19 days
<b>Date Created:</b> April 19, 2012		<b>BOE Approval Date:</b>
<b>Pacing</b>	19 days, Chapter 5, skip sections 5-7 and 5-8, 2 review days and 2 summative assessment days	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>• What does the graph of a quadratic function look like?</li> <li>• What are the properties of a quadratic function and how do they effect its' graph?</li> <li>• How can factoring be used to solve quadratic functions?</li> <li>• How can completing the square be used to solve quadratic functions?</li> <li>• What are complex numbers and how can they be simplified?</li> <li>• What is the quadratic formula and how can it be used to solve quadratic functions?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>• Quadratic Functions</li> <li>• Quadratic Equations in Vertex Form</li> <li>• Complex Numbers</li> <li>• Operations of Complex Numbers</li> <li>• Quadratic Formula</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>• Graphing Quadratic Functions</li> <li>• Finding the maximum or minimum value of a function</li> <li>• Finding the zeros of a function</li> <li>• Solve quadratic equations by completing the square</li> <li>• Simplifying complex numbers</li> <li>• Perform the operations on complex numbers</li> <li>• Using the quadratic formula to solve quadratic equations</li> </ul>	
<b>Assessments</b>	Formative: <ul style="list-style-type: none"> <li>• Teacher observation and questioning</li> <li>• Seat and or group work</li> <li>• Homework</li> <li>• Student participation at board</li> </ul>	Summative: <ul style="list-style-type: none"> <li>• Quizzes, tests and benchmark</li> </ul>
<b>Interventions / differentiated instruction</b>	<ul style="list-style-type: none"> <li>• Students given handouts of power point notes</li> <li>• Students given access to online textbook</li> <li>• Partner or group work</li> </ul>	
<b>Inter-disciplinary Connections</b>	<ul style="list-style-type: none"> <li>• Using coordinate geometry to solve problems</li> </ul>	
<b>Lesson resources / Activities</b>	<ul style="list-style-type: none"> <li>• Holt McDougal Algebra 2, copyright 2011 – Chapter 5</li> <li>• Power point resources</li> <li>• Textbook practice worksheet</li> <li>• Online textbook ( <a href="http://www.hrw.com">www.hrw.com</a> )</li> <li>• Scientific calculators</li> </ul>	
<b>Common Core State Standards</b>		
<b>Grade or Conceptual Category (HS only): Algebra 2</b>		
<b>Domain (name and #): Complex Number System</b>		
Seeing Structure in Expressions Creating Equations		



Reasoning with Equations and Inequalities  
Interpreting Categorical and Quantitative Data

<b>Cluster:</b> Perform arithmetic operations on complex numbers. Use complex numbers in polynomial identities and equations. Write expressions in equivalent forms to solve problems. Create equations that describe numbers or relationships. Represent and solve equations and inequalities graphically.	<b>#. Standard:</b>
	N-CN
	A-SSE
	A-CED
	A-REL
	F-IF

**Math Practices:**

21<sup>st</sup> Century Themes

	Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy
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21<sup>st</sup> Century Skills

	Creativity and Innovation		Critical Thinking and Problem Solving		Communication and Collaboration		Information Literacy
	Media Literacy		ICT Literacy		Life and Career Skills		

**Pine Hill Public Schools  
Mathematics Curriculum**

<b>Unit Title:</b> Operations with Polynomials		<b>Unit #: 5</b>
<b>Course or Grade Level:</b> CP Algebra 2		<b>Length of Time:</b> 13 days
<b>Date Created:</b> April 19, 2012		<b>BOE Approval Date:</b>
<b>Pacing</b>	13 days, Chapter 6, skip sections 6-6 – 6-9, 2 review days and 2 summative assessment days	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>• What are Polynomials and how can they be written in standard form?</li> <li>• How do you multiply polynomials?</li> <li>• How do you divide polynomials using the long division algorithm?</li> <li>• What procedure is used to factor a polynomial?</li> <li>• How can the real roots of a polynomial equation?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>• Degree of a Polynomial</li> <li>• Polynomials in Standard Form</li> <li>• Products of Polynomials</li> <li>• Quotients of Polynomials</li> <li>• Factors of Polynomials</li> <li>• Real Roots of Polynomial Equations</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>• Finding the degree of a polynomial</li> <li>• Writing polynomials in standard form and simplifying polynomials</li> <li>• Multiplying polynomials</li> <li>• Dividing polynomials</li> <li>• Finding factors of polynomials</li> <li>• Finding real roots of polynomial equations</li> </ul>	
<b>Assessments</b>	Formative: <ul style="list-style-type: none"> <li>• Teacher observation and questioning</li> <li>• Seat and or group work</li> <li>• Homework</li> <li>• Student participation at board</li> </ul>	Summative: <ul style="list-style-type: none"> <li>• Quizzes, tests and benchmark</li> </ul>
<b>Interventions / differentiated instruction</b>	<ul style="list-style-type: none"> <li>• Students given handouts of power point notes</li> <li>• Students given access to online textbook</li> <li>• Partner or group work</li> </ul>	
<b>Inter-disciplinary Connections</b>	<ul style="list-style-type: none"> <li>• Biology example 4 page 408</li> <li>•</li> </ul>	
<b>Lesson resources / Activities</b>	<ul style="list-style-type: none"> <li>• Holt McDougal Algebra 2, copyright 2011 – Chapter 6</li> <li>• Power point resources</li> <li>• Textbook practice worksheet</li> <li>• Online textbook ( <a href="http://www.hrw.com">www.hrw.com</a> )</li> <li>• Scientific calculators</li> </ul>	
<b>Common Core State Standards</b>		
<b>Grade or Conceptual Category (HS only): Algebra 2</b>		
<b>Domain (name and #): Complex Number System</b>		
Seeing structure in expressions Arithmetic with polynomials and rational expressions Building Functions		

Interpreting categorical and quantitative data

<b>Cluster:</b> Use complex numbers in polynomial identities and equations. Interpret structure of expressions. Write expressions in equivalent forms to solve problems. Perform arithmetic operations on polynomials. Understand the relationship between zeros and factors of a polynomial.	<b>#. Standard:</b>
	N-CN
	A-APR
	A-REL
	F-IF

**Math Practices:**

**21<sup>st</sup> Century Themes**

Global Awareness	Financial, Economic, Business, and Entrepreneurial Literacy	Civic Literacy	Health Literacy
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**21<sup>st</sup> Century Skills**

Creativity and Innovation	Critical Thinking and Problem Solving	Communication and Collaboration	Information Literacy
Media Literacy	ICT Literacy	Life and Career Skills	

**Pine Hill Public Schools  
Mathematics Curriculum**

<b>Unit Title:</b> Exponential and Logarithmic Functions		<b>Unit #: 6</b>
<b>Course or Grade Level:</b> CP Algebra 2		<b>Length of Time:</b> 12 days
<b>Date Created:</b> April 19, 2012		<b>BOE Approval Date:</b>
<b>Pacing</b>	12 days, Chapter 7, skip sections 7.2, 7.6-7.8, 2 review days and 2 summative assessment days	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>• How can you differentiate between exponential growth and exponential decay?</li> <li>• How does the graph of an asymptote differ from the graph of a line or curve?</li> <li>• What is a logarithm and how is it related to exponents?</li> <li>• How do the properties of logarithms relate to the basic arithmetic operations?</li> <li>• How can you tell when you can write both sides of an equation using the same base?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>• Exponential Functions, Growth and Decay</li> <li>• Logarithmic Functions</li> <li>• Properties of Logarithms</li> <li>• Exponential and Logarithmic Equations</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>• Identify and evaluate exponential expressions</li> <li>• Write exponential expressions</li> <li>• Graph exponential functions and identify their range</li> <li>• Write logarithmic equations</li> <li>• Write exponential equations as logarithmic equations and vice versa</li> <li>• Evaluate and graph exponential and logarithmic functions</li> <li>• Use properties to simplify logarithmic expressions (adding, subtracting, multiplying, dividing and raising to a power)</li> <li>• Solve logarithmic and exponential equations</li> </ul>	
<b>Assessments</b>	Formative: <ul style="list-style-type: none"> <li>• Teacher observation and questioning</li> <li>• Seat and or group work</li> <li>• Homework</li> <li>• Student participation at board</li> </ul>	Summative: <ul style="list-style-type: none"> <li>• Quizzes, tests and benchmark</li> </ul>
<b>Interventions / differentiated instruction</b>	<ul style="list-style-type: none"> <li>• Students given handouts of power point notes</li> <li>• Students given access to online textbook</li> <li>• Partner or group work</li> </ul>	
<b>Inter-disciplinary Connections</b>	<ul style="list-style-type: none"> <li>• Environmental Science: example 5 page 508</li> </ul>	
<b>Lesson resources / Activities</b>	<ul style="list-style-type: none"> <li>• Holt McDougal Algebra 2, copyright 2011 – Chapter 7</li> <li>• Power point resources</li> <li>• Textbook practice worksheet</li> <li>• Online textbook ( <a href="http://www.hrw.com">www.hrw.com</a> )</li> <li>• Scientific calculators</li> </ul>	
<b>Common Core State Standards</b>		
<b>Grade or Conceptual Category (HS only): Algebra 2</b>		
<b>Domain (name and #):</b> Interpreting Functions		

<b>Cluster:</b> Analyze functions using different representations. Linear, Quadratic and Exponential Models		<b>#. Standard:</b>	
		F-IF – 7e	
		F-IF – 8b	
		F-TF – 1,2,5,8	
<b>Math Practices:</b>			
<b><u>21<sup>st</sup> Century Themes</u></b>			
	Global Awareness	Financial, Economic, Business, and Entrepreneurial Literacy	Civic Literacy
			Health Literacy
<b><u>21<sup>st</sup> Century Skills</u></b>			
	Creativity and Innovation	Critical Thinking and Problem Solving	Communication and Collaboration
	Media Literacy	ICT Literacy	Information Literacy
			Life and Career Skills

**Pine Hill Public Schools  
Mathematics Curriculum**

<b>Unit Title:</b> Rational and Radical Functions		<b>Unit #: 7</b>
<b>Course or Grade Level:</b> CP Algebra 2		<b>Length of Time:</b> 16 days
<b>Date Created:</b> April 19, 2012		<b>BOE Approval Date:</b>
<b>Pacing</b>	16 days, Chapter 8, skip sections 8.1,8.4 and 8.8, 2 review days and 2 summative assessment days	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>• What is a rational expression?</li> <li>• How is a rational expression simplified?</li> <li>• How do you find the LCD of a rational expression?</li> <li>• How can you write a complex fraction as a division problem?</li> <li>• How can you tell whether a solution to a rational equation is extraneous?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>• Rational expressions</li> <li>• Multiply and divide rational expressions</li> <li>• Add and subtract rational expressions</li> <li>• Rational Equations</li> <li>• Radical Functions</li> <li>• Graph radical functions</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>• Simplify rational expressions</li> <li>• Factor polynomial expressions</li> <li>• Multiply, divide, add and subtract rational expressions</li> <li>• Determine the LCD for rational expressions</li> <li>• Simplify complex fractions</li> <li>• Solve rational equations and inequalities</li> <li>• Determine the extraneous roots of a rational equation</li> <li>• Find the zeros of a rational expression</li> </ul>	
<b>Assessments</b>	Formative: <ul style="list-style-type: none"> <li>• Teacher observation and questioning</li> <li>• Seat and or group work</li> <li>• Homework</li> <li>• Student participation at board</li> </ul>	Summative: <ul style="list-style-type: none"> <li>• Quizzes, tests and benchmark</li> </ul>
<b>Interventions / differentiated instruction</b>	<ul style="list-style-type: none"> <li>• Students given handouts of power point notes</li> <li>• Students given access to online textbook</li> <li>• Partner or group work</li> </ul>	
<b>Inter-disciplinary Connections</b>	<ul style="list-style-type: none"> <li>• Music: example 5 page 613</li> </ul>	
<b>Lesson resources / Activities</b>	<ul style="list-style-type: none"> <li>• Holt McDougal Algebra 2, copyright 2011 – Chapter 8</li> <li>• Power point resources</li> <li>• Textbook practice worksheet</li> <li>• Online textbook ( <a href="http://www.hrw.com">www.hrw.com</a> )</li> <li>• Scientific calculators</li> </ul>	
<b>Common Core State Standards</b>		
<b>Grade or Conceptual Category (HS only): Algebra 2</b>		
<b>Domain (name and #): Interpreting Functions</b>		

<b>Cluster:</b> Analyze functions using different representations. Linear, Quadratic and Exponential Models		<b>#. Standard:</b>					
		F-IF – 1					
		F-IF – 7c					
<b>Math Practices:</b>							
<b><u>21<sup>st</sup> Century Themes</u></b>							
	Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy
<b><u>21<sup>st</sup> Century Skills</u></b>							
	Creativity and Innovation		Critical Thinking and Problem Solving		Communication and Collaboration		Information Literacy
	Media Literacy		ICT Literacy		Life and Career Skills		

**Pine Hill Public Schools  
Mathematics Curriculum**

<b>Unit Title:</b> Properties and Attributes of Functions		<b>Unit #: 8</b>
<b>Course or Grade Level:</b> CP Algebra 2		<b>Length of Time:</b> 12 days
<b>Date Created:</b> June 18, 2012		<b>BOE Approval Date:</b>
<b>Pacing</b>	12 days, Chapter 9, skip sections 9.3 and 9.5, 2 review days and 2 summative assessment days	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>• What are the three predominate ways to represent a function?</li> <li>• How can each representation of a given function be interpreted?</li> <li>• Given a problem, how do you decide which representation to use?</li> <li>• What is a piecewise function?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>• Multiple representations of functions: equations, graphs and tables</li> <li>• Piecewise functions</li> <li>• Add, subtract, multiply and divide functions</li> <li>• Composite functions</li> <li>• Mathematical models</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>• Translate between various representations of functions</li> <li>• Solve problems using the various representations of functions</li> <li>• Write and graph piecewise functions</li> <li>• Use piecewise functions to describe real-world situations</li> <li>• Evaluate piecewise functions</li> <li>• Write and evaluate composite functions</li> <li>• Apply functions to problem situations</li> <li>• Use mathematical models to make predictions</li> </ul>	
<b>Assessments</b>	Formative: <ul style="list-style-type: none"> <li>• Teacher observation and questioning</li> <li>• Seat and or group work</li> <li>• Homework</li> <li>• Student participation at board</li> </ul>	Summative: <ul style="list-style-type: none"> <li>• Quizzes, tests and benchmark</li> </ul>
<b>Interventions / differentiated instruction</b>	<ul style="list-style-type: none"> <li>• Students given handouts of power point notes</li> <li>• Students given access to online textbook</li> <li>• Partner or group work</li> </ul>	
<b>Inter-disciplinary Connections</b>	<ul style="list-style-type: none"> <li>• Zoology: example 2, page 700.</li> </ul>	
<b>Lesson resources / Activities</b>	<ul style="list-style-type: none"> <li>• Holt McDougal Algebra 2, copyright 2011 – Chapter 9</li> <li>• Power point resources</li> <li>• Textbook practice worksheet</li> <li>• Online textbook ( <a href="http://www.hrw.com">www.hrw.com</a> )</li> <li>• Scientific calculators</li> </ul>	
<b>Common Core State Standards</b>		
<b>Grade or Conceptual Category (HS only): Algebra 2</b>		
<b>Domain (name and #):</b> Interpreting Functions		



<b>Cluster:</b> Understand the concept of a function! Interpret functions that arise in applications in terms of the context. Analyze functions using different representations.		<b>#. Standard:</b>	
		F-IF – 1, 2, 4, 5, 6	
		F-IF – 7b,c,e	
<b>Math Practices:</b>			
<b><u>21<sup>st</sup> Century Themes</u></b>			
Global Awareness	Financial, Economic, Business, and Entrepreneurial Literacy	Civic Literacy	Health Literacy
<b><u>21<sup>st</sup> Century Skills</u></b>			
Creativity and Innovation	Critical Thinking and Problem Solving	Communication and Collaboration	Information Literacy
Media Literacy	ICT Literacy	Life and Career Skills	

**Pine Hill Public Schools  
Mathematics Curriculum**

<b>Unit Title:</b> Conic Sections		<b>Unit #: 9</b>
<b>Course or Grade Level:</b> CP Algebra 2		<b>Length of Time:</b> 18 days
<b>Date Created:</b> June 18, 2012		<b>BOE Approval Date:</b>
<b>Pacing</b>	18 days, Chapter 10, skip section 10.1, 2 review days and 2 summative assessment days	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>• What are conic sections?</li> <li>• How does a tangent line relate to a circle?</li> <li>• Given an equation, how do you differentiate between the conic sections?</li> <li>• Why is it essential to use the technique of completing the square to write the equation for circles, ellipses and hyperbolas?</li> <li>• What is the range of solutions to a linear/quadratic or a quadratic/quadratic system?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>• Definitions of conic sections</li> <li>• Equation of a circle</li> <li>• Distance and midpoint of line segment</li> <li>• Equation of a tangent line</li> <li>• Equation of ellipse</li> <li>• Major and minor axes, and vertices of the ellipse</li> <li>• Equation of hyperbola</li> <li>• Vertices of hyperbola</li> <li>• Equation of parabola</li> <li>• Solutions to nonlinear systems</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>• Writing equations of circles in standard form</li> <li>• Given their equation, graphing circles on the coordinate plane</li> <li>• Write equations of ellipses in standard form</li> <li>• Graph ellipses from a given equation</li> <li>• Write equations of hyperbolas in standard form</li> <li>• Given the equation, graph hyperbola on the coordinate plane</li> <li>• Write equations of parabolas in standard form</li> <li>• Graph parabolas given their equations</li> <li>• Identify each conic section given their equation</li> <li>• Apply the method of completing the square to identify and graph conic sections</li> <li>• Solve systems of equations in two variables: linear/quadratic, quadratic/quadratic</li> </ul>	
<b>Assessments</b>	Formative: <ul style="list-style-type: none"> <li>• Teacher observation and questioning</li> <li>• Seat and or group work</li> <li>• Homework</li> <li>• Student participation at board</li> </ul>	Summative: <ul style="list-style-type: none"> <li>• Quizzes, tests and benchmark</li> </ul>
<b>Interventions / differentiated instruction</b>	<ul style="list-style-type: none"> <li>• Students given handouts of power point notes</li> <li>• Students given access to online textbook</li> <li>• Partner or group work</li> </ul>	
<b>Inter-disciplinary Connections</b>	<ul style="list-style-type: none"> <li>• Engineering, Physics: example 4, page 739.</li> </ul>	

<b>Lesson resources / Activities</b>	<ul style="list-style-type: none"> <li>• Holt McDougal Algebra 2, copyright 2011 – Chapter 10</li> <li>• Power point resources</li> <li>• Textbook practice worksheet</li> <li>• Online textbook ( <a href="http://www.hrw.com">www.hrw.com</a> )</li> <li>• Scientific calculators</li> </ul>
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**Common Core State Standards**

**Grade or Conceptual Category (HS only): Algebra 2**

**Domain (name and #):** Interpreting Functions

<b>Cluster:</b> Analyze functions using different representations.	<b>#. Standard:</b>
	F-IF – 7a,c
	F-IF – 8a
	F-IF – 9

**Math Practices:**

**21<sup>st</sup> Century Themes**

Global Awareness	Financial, Economic, Business, and Entrepreneurial Literacy	Civic Literacy	Health Literacy
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**21<sup>st</sup> Century Skills**

Creativity and Innovation	Critical Thinking and Problem Solving	Communication and Collaboration	Information Literacy
Media Literacy	ICT Literacy	Life and Career Skills	

**Pine Hill Public Schools  
Mathematics Curriculum**

<b>Unit Title:</b> Trigonometric Functions		<b>Unit #: 10</b>
<b>Course or Grade Level:</b> CP Algebra 2		<b>Length of Time:</b> 18 days
<b>Date Created:</b> June 18, 2012		<b>BOE Approval Date:</b>
<b>Pacing</b>	18 days, Chapter 13, 2 review days and 2 summative assessment days	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>• What are the three main trigonometric functions?</li> <li>• How do the trigonometric functions relate to the right triangle?</li> <li>• How is trigonometry useful in solving real world problems?</li> <li>• What is the meaning of ‘angle in standard position’?</li> <li>• How can angle measures convert between degrees and radians?</li> <li>• When is it useful to find the inverse of a trigonometric function?</li> <li>• What determines the use of the Law of Sines or the Law of Cosines?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>• Definitions of trigonometric ratios: sine, cosine and tangent</li> <li>• Reciprocal trigonometric ratios: cosecant, secant, and cotangent</li> <li>• Trigonometric ratios of special right triangles</li> <li>• Angle of elevation</li> <li>• Angle of depression</li> <li>• Angles of rotation: standard position, positive, negative rotation</li> <li>• Coterminal and reference angles</li> <li>• Unit circle and radian measure</li> <li>• Inverse trigonometric functions</li> <li>• Law of Sines</li> <li>• Law of Cosines</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>• Understand and use trigonometric relationships of acute angles in triangles</li> <li>• Find side lengths of triangles by applying trigonometric ratios</li> <li>• Draw angles in standard position</li> <li>• Determine values of trigonometric functions for angles in standard position</li> <li>• Find coterminal and reference angles</li> <li>• Convert angle measures between degrees and radians</li> <li>• Find values of trigonometric functions on the unit circle</li> <li>• Evaluate inverse trigonometric functions</li> <li>• Apply the Law of Sines</li> <li>• Apply the Law of Cosines</li> </ul>	
<b>Assessments</b>	Formative: <ul style="list-style-type: none"> <li>• Teacher observation and questioning</li> <li>• Seat and or group work</li> <li>• Homework</li> <li>• Student participation at board</li> </ul>	Summative: <ul style="list-style-type: none"> <li>• Quizzes, tests and benchmark</li> </ul>
<b>Interventions / differentiated instruction</b>	<ul style="list-style-type: none"> <li>• Students given handouts of power point notes</li> <li>• Students given access to online textbook</li> <li>• Partner or group work</li> </ul>	
<b>Inter-disciplinary Connections</b>	<ul style="list-style-type: none"> <li>• Geology: page 931 example 4.</li> </ul>	

<b>Lesson resources / Activities</b>	<ul style="list-style-type: none"> <li>• Holt McDougal Algebra 2, copyright 2011 – Chapter 13</li> <li>• Power point resources</li> <li>• Textbook practice worksheet</li> <li>• Online textbook ( <a href="http://www.hrw.com">www.hrw.com</a> )</li> <li>• Scientific calculators</li> </ul>
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**Common Core State Standards**

**Grade or Conceptual Category (HS only): Algebra 2**

**Domain (name and #):** Trigonometric Functions

<b>Cluster:</b> Extend the domain of trigonometric functions using the unit circle.	<b>#. Standard:</b>
	F-TF – 1,2

**Math Practices:**

**21<sup>st</sup> Century Themes**

Global Awareness	Financial, Economic, Business, and Entrepreneurial Literacy	Civic Literacy	Health Literacy
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**21<sup>st</sup> Century Skills**

Creativity and Innovation	Critical Thinking and Problem Solving	Communication and Collaboration	Information Literacy
Media Literacy	ICT Literacy	Life and Career Skills	