

**Pine Hill Public Schools**

Content Area:		<b>Mathematics</b>	
Course Title/ Grade Level:		<b>Algebra 2 Honors/ Grade 10-11</b>	
Unit 1:	<b>Quadratic Functions</b>	Duration	<b>4 weeks</b>
Unit 2:	<b>Polynomial Functions</b>	Duration	<b>4 weeks</b>
Unit 3:	<b>Rational and Radical Functions</b>	Duration	<b>4 weeks</b>
Unit 4:	<b>Exponential and Logarithmic Functions</b>	Duration	<b>4 weeks</b>
Unit 5:	<b>Properties and Attributes of Functions</b>	Duration	<b>4 weeks</b>
Unit 6:	<b>Conic Sections</b>	Duration	<b>4 weeks</b>
Unit 7:	<b>Probability and Statistics</b>	Duration	<b>4 weeks</b>
Unit 8:	<b>Sequences and Series</b>	Duration	<b>2 weeks</b>
Unit 9:	<b>Trigonometric Functions</b>	Duration	<b>2 weeks</b>
BOE Approved Revision:			
BOE Initial Adoption Date:		June 20, 2017	

**Pine Hill Public Schools  
Mathematics Curriculum**

<b>Unit Title:</b> Quadratic Functions		<b>Unit #: 1</b>
<b>Course or Grade Level:</b> Algebra 2		<b>Length of Time:</b> 24 days
<b>Pacing</b>	24 days, Chapter 5, skip section 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 Zeroes 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>New Jersey Student Learning Standards for Mathematics</b>		
<b>Grade or Conceptual Category (HS only): Algebra 2</b>		
<b>Domain (name and #): Complex Number System</b> <ul style="list-style-type: none"> <li>Seeing Structure in Expressions</li> <li>Creating Equations</li> <li>Reasoning with Equations and Inequalities</li> <li>Interpreting Categorical and Quantitative Data</li> </ul>		

<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							
<b>Math Practices:</b>							
<b>21<sup>st</sup> Century Themes</b>							
X	Global Awareness	X	Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy
<b>21<sup>st</sup> Century Skills</b>							
	Creativity and Innovation	X	Critical Thinking and Problem Solving	X	Communication and Collaboration		Information Literacy
	Media Literacy		ICT Literacy	X	Life and Career Skills		
<b>8.1 Educational Technology:</b> All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.							
<b>Strand:</b> C		<b>Content Statement:</b> Students interact, collaborate with peers using variety of media and formats.			<b>Indicator:</b> <b>8.1.12.C.1</b>		

**Pine Hill Public Schools  
Mathematics Curriculum**

<b>Unit Title:</b> Operations with Polynomials		<b>Unit #: 2</b>
<b>Course or Grade Level:</b> Algebra 2		<b>Length of Time:</b> 21 days
<b>Pacing</b>	21 days, Chapter 6, skip section ( 6-8 and 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> <li>● Fundamental Theorem of Algebra</li> <li>● Graphs of Polynomial Functions</li> <li>● Transforming Polynomials Functions</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>● Review Adding, Subtracting, and Multiplying polynomials</li> <li>● Dividing Polynomials (Long Division and Synthetic Division)</li> <li>● Finding factors of Polynomials, emphasize Multi-Step Factoring</li> <li>● Finding real roots of Polynomial Equations</li> <li>● Create Polynomial Equations by their zeros</li> <li>● Graph and determine the zeros of a Polynomial Function</li> <li>● Transform the graphs of Polynomial Functions</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> </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> </ul>	

		• Scientific calculators	
<b>New Jersey Student Learning Standards for Mathematics</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		
<b>Math Practices:</b>			
<b>21<sup>st</sup> Century Themes</b>			
X	Global Awareness	X	Financial, Economic, Business, and Entrepreneurial Literacy
			Civic Literacy
			Health Literacy
<b>21<sup>st</sup> Century Skills</b>			
	Creativity and Innovation	X	Critical Thinking and Problem Solving
			X
			Communication and Collaboration
	Media Literacy		ICT Literacy
			X
			Life and Career Skills
<b>8.1 Educational Technology:</b> All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.			
<b>Strand:</b> C	<b>Content Statement:</b> Students interact, collaborate with peers using variety of media and formats.		<b>Indicator:</b> <b>8.1.12.C.1</b>

**Pine Hill Public Schools  
Mathematics Curriculum**

<b>Unit Title:</b> Rational and Radical Functions		<b>Unit #: 3</b>
<b>Course or Grade Level:</b> Algebra 2		<b>Length of Time:</b> 20 days
<b>Pacing</b>	20 days, Chapter 8, skip sections 8.1 & 8.4, 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>● Operations with Rational Expressions</li> <li>● Rational Equations</li> <li>● Radical Functions</li> <li>● Graph Radical Functions</li> <li>● Graph Radical Inequalities</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>New Jersey Student Learning Standards for Mathematics</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 – 1				
			F-IF – 7c				
<b>Math Practices:</b>							
<b>21<sup>st</sup> Century Themes</b>							
X	Global Awareness	X	Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy
<b>21<sup>st</sup> Century Skills</b>							
	Creativity and Innovation	X	Critical Thinking and Problem Solving	X	Communication and Collaboration		Information Literacy
	Media Literacy		ICT Literacy	X	Life and Career Skills		
<b>8.1 Educational Technology:</b> All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.							
<b>Strand:</b> C			<b>Content Statement:</b> Students interact, collaborate with peers using variety of media and formats.			<b>Indicator:</b> <b>8.1.12.C.1</b>	

**Pine Hill Public Schools  
Mathematics Curriculum**

<b>Unit Title:</b> Exponential and Logarithmic Functions		<b>Unit #: 4</b>
<b>Course or Grade Level:</b> Algebra 2		<b>Length of Time:</b> 24 days
<b>Pacing</b>	24 days, Chapter 7, skip sections 7.2(not honors) 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> <li>● Inverse of Relations and Functions (Honors)</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> <li>● Solve Logarithmic and Exponential Inequalities (Honors)</li> <li>● Graphing and determining the Domain and Range of Inverse Functions (Honors)</li> <li>● Use the number <math>e</math> to write and graph Exponential Functions representing Real World Situations</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>New Jersey Student Learning Standards for Mathematics</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>21<sup>st</sup> Century Themes</b>							
X	Global Awareness	X	Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy
<b>21<sup>st</sup> Century Skills</b>							
	Creativity and Innovation	X	Critical Thinking and Problem Solving	X	Communication and Collaboration		Information Literacy
	Media Literacy		ICT Literacy	X	Life and Career Skills		
<b>8.1 Educational Technology:</b> All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.							
<b>Strand:</b> C			<b>Content Statement:</b> Students interact, collaborate with peers using variety of media and formats.			<b>Indicator:</b> <b>8.1.12.C.1</b>	

<b>Pine Hill Public Schools Mathematics Curriculum</b>		
<b>Unit Title:</b> Properties and Attributes of Functions		<b>Unit #: 5</b>
<b>Course or Grade Level:</b> Algebra 2		<b>Length of Time:</b> 20 days
<b>Pacing</b>	20 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>● Operations with Functions</li> <li>● Composite Functions</li> <li>● Introduction to Parent 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>● Determine the appropriate parent function of a given data set</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>New Jersey Student Learning Standards for Mathematics</b>		
<b>Grade or Conceptual Category (HS only): Algebra 2</b>		
<b>Domain (name and #):</b> Interpreting Functions		
<b>Cluster:</b>	<b>#. Standard:</b>	

Understand the concept of a function! Interpret functions that arise in applications in terms of the context. Analyze functions using different representations.	F-IF – 1, 2, 4, 5, 6					
	F-IF – 7b,c,e					
<b>Math Practices:</b>						
<b>21<sup>st</sup> Century Themes</b>						
X	Global Awareness	X	Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy	Health Literacy
<b>21<sup>st</sup> Century Skills</b>						
	Creativity and Innovation	X	Critical Thinking and Problem Solving	X	Communication and Collaboration	Information Literacy
	Media Literacy		ICT Literacy	X	Life and Career Skills	
<b>8.1 Educational Technology:</b> All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.						
<b>Strand:</b> C		<b>Content Statement:</b> Students interact, collaborate with peers using variety of media and formats.			<b>Indicator:</b> <b>8.1.12.C.1</b>	

**Pine Hill Public Schools  
Mathematics Curriculum**

<b>Unit Title:</b> Conic Sections		<b>Unit #: 6</b>
<b>Course or Grade Level:</b> Algebra 2		<b>Length of Time:</b> 24 days
<b>Pacing</b>	24 days, Chapter 10, 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> </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> </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> </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> </ul>	

		• Scientific calculators					
<b>New Jersey Student Learning Standards for Mathematics</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.		<b>#. Standard:</b>					
		F-IF – 7a,c					
		F-IF – 8a					
		F-IF – 9					
<b>Math Practices:</b>							
<b>21<sup>st</sup> Century Themes</b>							
X	Global Awareness	X	Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy
<b>21<sup>st</sup> Century Skills</b>							
	Creativity and Innovation	X	Critical Thinking and Problem Solving	X	Communication and Collaboration		Information Literacy
	Media Literacy		ICT Literacy	X	Life and Career Skills		
<b>8.1 Educational Technology:</b> All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.							
<b>Strand:</b> C		<b>Content Statement:</b> Students interact, collaborate with peers using variety of media and formats.			<b>Indicator:</b> <b>8.1.12.C.1</b>		

**Pine Hill Public Schools  
Mathematics Curriculum**

<b>Unit Title:</b> Probability and Statistics		<b>Unit #: 7</b>
<b>Course or Grade Level:</b> Algebra 2		<b>Length of Time:</b> 16 days
<b>Pacing</b>	16 days, Chapter 11, 2 review days and 2 summative assessment days	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>● How can I use probability and statistics to make predictions and decisions that will benefit me in life?</li> <li>● How should I interpret statistical information that I see in the news?</li> <li>● What is the bell curve, why does it appear in many aspects of society, and why is understanding it so important to our society?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>● Permutations and Combinations</li> <li>● Theoretical and Experimental Probability</li> <li>● Independent and Dependent Events</li> <li>● Compound Events</li> <li>● Measures of Central Tendency and Variation</li> <li>● Binomial and Normal Distributions</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>● Solve problems involving Permutations and Combinations</li> <li>● Find the Theoretical and Experimental Probability of an event</li> <li>● Find the probability of Independent and Dependent Events</li> <li>● Find the probability of Mutually Exclusive and Inclusive Events</li> <li>● Find measures of Central Tendency and measures of variation for statistical data.</li> <li>● Use the Binomial Theorem to expand a binomial raised to a power.</li> <li>● Recognize Normally Distributed Data.</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>● Genetics, Biology: example 25, page 823.</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> </ul>	

		• Scientific calculators					
<b>New Jersey Student Learning Standards for Mathematics</b>							
<b>Grade or Conceptual Category (HS only): Algebra 2</b>							
<b>Domain (name and #): Statistics and Probability</b>							
<b>Cluster:</b> Summarize represent and interpret data. Understand statistics as a process for making inferences about population parameters based on a random sample from that population.		<b>#. Standard:</b>					
		S-ID.B					
		S-ID.C					
<b>Math Practices:</b>							
<b>21<sup>st</sup> Century Themes</b>							
X	Global Awareness	X	Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy
<b>21<sup>st</sup> Century Skills</b>							
	Creativity and Innovation	X	Critical Thinking and Problem Solving	X	Communication and Collaboration		Information Literacy
	Media Literacy		ICT Literacy	X	Life and Career Skills		
<b>8.1 Educational Technology:</b> All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.							
<b>Strand:</b> C		<b>Content Statement:</b> Students interact, collaborate with peers using variety of media and formats.			<b>Indicator:</b> <b>8.1.12.C.1</b>		

**Pine Hill Public Schools  
Mathematics Curriculum**

<b>Unit Title:</b> Sequences and Series		<b>Unit #: 8</b>
<b>Course or Grade Level:</b> Algebra 2		<b>Length of Time:</b> 15 days
<b>Pacing</b>	15 days, Chapter 12, skip 12-5, 2 review days and 2 summative assessment days	
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>● What kinds of patterns commonly arise in our world?</li> <li>● Why is it sometimes desirable to describe a pattern mathematically?</li> <li>● When we notice a real-world or mathematical pattern, what are some different ways which we can describe it?</li> </ul>	
<b>Content</b>	<ul style="list-style-type: none"> <li>● Introduction to Sequences</li> <li>● Series and Summation</li> <li>● Arithmetic Sequences and Series</li> <li>● Geometric Sequences and Series</li> </ul>	
<b>Skills</b>	<ul style="list-style-type: none"> <li>● Find the <math>n</math>th term of a Sequence</li> <li>● Write rules for Sequences</li> <li>● Evaluate the sum of a series expressed in Sigma Notation</li> <li>● Find the indicated terms and sums of an Arithmetic Sequence</li> <li>● Find the terms of a Geometric Sequence, including Geometric Means</li> <li>● Find the sums of Geometric Series</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>● Physics: example 44, page 885</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>						
<b>New Jersey Student Learning Standards for Mathematics</b>							
<b>Grade or Conceptual Category (HS only): Algebra 2</b>							
<b>Domain (name and #): Algebra and Functions</b>							
<b>Cluster:</b> Derive the formula for the sum of a finite geometric series and use it to solve problems. Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations and transform between the two forms.	<b>#. Standard:</b>						
	A-SSE.B						
	F-BF.A						
<b>Math Practices:</b>							
<b>21<sup>st</sup> Century Themes</b>							
X	Global Awareness	X	Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy
<b>21<sup>st</sup> Century Skills</b>							
	Creativity and Innovation	X	Critical Thinking and Problem Solving	X	Communication and Collaboration		Information Literacy
	Media Literacy		ICT Literacy	X	Life and Career Skills		
<b>8.1 Educational Technology:</b> All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.							
<b>Strand:</b> C	<b>Content Statement:</b> Students interact, collaborate with peers using variety of media and formats.				<b>Indicator:</b> <b>8.1.12.C.1</b>		

**Pine Hill Public Schools  
Mathematics Curriculum**

<b>Unit Title:</b> Trigonometric Functions		<b>Unit #: 9</b>
<b>Course or Grade Level:</b> Algebra 2		<b>Length of Time:</b> 14 days
<b>Pacing</b>	14 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> </ul>	

	<ul style="list-style-type: none"> <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>

**New Jersey Student Learning Standards for Mathematics**

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

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

**Cluster:**

Extend the domain of trigonometric functions using the unit circle.

**#. Standard:**

F-TF

**Math Practices:**

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

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

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

**8.1 Educational Technology:** All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

<b>Strand:</b> C	<b>Content Statement:</b> Students interact, collaborate with peers using variety of media and formats.	<b>Indicator:</b> <b>8.1.12.C.1</b>
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