

Pine Hill Public Schools			
Content Area:		Mathematics	
Course Title/ Grade Level:		CP Algebra /Grade 9	
Unit 1:	Foundations of Algebra	Month:	September/ October
Unit 2:	Equations	Month:	October
Unit 3:	Inequalities	Month:	November
Unit 4:	Functions	Month:	November/December
Unit 5:	Linear Functions	Month:	December/January
Unit 6:	Solving Equations and Inequalities	Month:	January/ February
Unit 7:	Exponents and Polynomials	Month:	February/ March
Unit 8:	Factoring Polynomials	Month:	March/ April
Unit 9:	Quadratic Functions and Equations	Month:	April
Unit 10:	Data Analysis and Probability	Month:	April/May
Unit 11:	Exponential and Radical Functions	Month:	May/June
Date Created or Revised:		06/20/2012	
BOE Approval Date:		8/28/12	

**Pine Hill Public Schools
Mathematics Curriculum**

Unit Title: Foundations of Algebra		Unit #: 1
Course or Grade Level: CP Algebra I		Length of Time: 19 days
Date Created: April 19, 2012		BOE Approval Date:
Pacing	19 days, 2 day introduction to course, 1-2 days per section, covering all sections in chapter 1 , 2 review days and 2 summative assessment days	
Essential Questions	<ul style="list-style-type: none"> • How can you determine the difference between an expression and an equation? • What is the difference between a variable and a constant? • What is the importance of a variable and can a variables value change? • What is the process to substitute a value for a variable to simplify an expression? • When solving an expression, how do you determine the sign of the solution of the expression given the integers it contains? • What is the real number system? • How do I justify the steps of simplification? • What is the coordinate plane and what does it contain? • How can you relate the shape of a graph to the properties of its equation? 	
Content	<ul style="list-style-type: none"> • Variables and Expressions • Adding and Subtracting Real Numbers • Multiplying and Dividing Real Numbers • Powers and Exponents • Square Roots and Real Numbers • Order of Operations • Simplifying Expressions • Introduction to Functions 	
Skills	<ul style="list-style-type: none"> • Evaluating Algebraic Expressions • Translating from words to Algebra and vice versa • Performing all operations on real numbers • Evaluating Powers, Exponents, and Square Roots • Evaluating expressions by the use of the Order of Operations • Simplifying Numerical and Algebraic expressions • Graphing and locating points in the Coordinate Plane • Generating and graphing ordered pairs • Identifying a graph's shape by the properties of its equation 	
Assessments	Formative: <ul style="list-style-type: none"> • Teacher observation and questioning • Seat and or group work • Fist to five/ Thumbs up, thumbs down • Homework • Student participation at board 	Summative: <ul style="list-style-type: none"> • Quizzes, tests and benchmark
Interventions / differentiated instruction	<ul style="list-style-type: none"> • Students given handouts of power point notes • Students given assess to online textbook • Partners or group work (groups formed heterogeneously according to ability) 	
Inter-disciplinary Connections	<ul style="list-style-type: none"> • Simplifying expressions by determining the perimeter of geometric shapes 	
Lesson resources / Activities	<ul style="list-style-type: none"> • Holt McDougal Algebra I , copyright 2007 – Chapter 1 • Power point resources • Textbook practice worksheet 	

	<ul style="list-style-type: none"> • Online textbook (www.hrw.com)
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Common Core State Standards

Grade or Conceptual Category (HS only): Algebra I

Domain (name and #): The Real Number System; Quantities; Linear, Quadratic, and exponential models

Cluster: Use properties of rational and irrational numbers. Reason quantitatively and use units to solve problems. Interpret expressions for functions in terms of the situation they model.	#. Standard:
	N-RN-3
	N-Q-1
	F-LE-5

Math Practices: Reason abstractly and quantitatively, Construct viable arguments and critique the reasoning of others, Use appropriate tools strategically, Look for and express regularity in repeated reasoning

[21st Century Themes](#)

	Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy
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[21st 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**

Unit Title: Equations		Unit #: 2
Course or Grade Level: CP Algebra I		Length of Time: 19 days
Date Created: April 19, 2012		BOE Approval Date:
Pacing	19 days, 1– 2 days per section, covering all sections in chapter 2 , 2 review days and 2 summative assessment days	
Essential Questions	<ul style="list-style-type: none"> • How does solving equations apply to the real world? • How are inverse operations useful in solving equations? • What is the difference in the strategies used to solve multi-step equations and equations containing a variable on both sides of the equal sign? • How can I use proportions to solve real world problems? • How can an interest rate affect an individual’s loan or deposit? • How is finding the result of a percent increase similar to finding the result of a percent decrease? 	
Content	<ul style="list-style-type: none"> • Solving equations by Adding or Subtracting • Solving equations by Multiplying and Dividing • Solving Two-Step and Multi-Step equations • Solving equations with variables on both sides • Solving for a variable • Rates, Ratios, and Proportions • Applications of Proportions • Percents • Applications of Percents • Percent Increase and Decrease 	
Skills	<ul style="list-style-type: none"> • Solve equations by isolating the variable and using inverse operations • Use the distributive property to simplify multi-step equations • Combine like terms to simplify the left or right side of the equation • Find ratios and unit rates • Convert rates • Cross multiply to solve proportions • Use formulas to find base salary upon commission and simple interest 	
Assessments	Formative: <ul style="list-style-type: none"> • Teacher observation and questioning • Seat and or group work • Fist to five/ Thumbs up, thumbs down • Homework • Student participation at board 	Summative: <ul style="list-style-type: none"> • Quizzes, tests and benchmark
Interventions / differentiated instruction	<ul style="list-style-type: none"> • Students given handouts of power point notes • Students given access to online textbook • Partners or group work (groups formed heterogeneously according to ability) 	
Inter-disciplinary Connections	<ul style="list-style-type: none"> • Using geometry to determine the area and perimeter of shapes • Using geometry to determine the similarity ratio from one figure to another. • Using geometric shapes to solve proportions • Using finance to calculate simple interest and base salaries 	
Lesson resources / Activities	<ul style="list-style-type: none"> • Holt McDougal Algebra I , copyright 2007 – Chapter 2 • Power point resources • Textbook practice worksheet • Online textbook (www.hrw.com) 	
Common Core State Standards		

Grade or Conceptual Category (HS only): Algebra I

Domain (name and #): Quantities; Seeing Structure in expressions; Creating equations; Reasoning with equations and Inequalities

Cluster: Reason quantitatively and use units to solve problems. Interpret the structure of expressions. Create equations that describe numbers or relationships. Understand solving equations as a process of reasoning and explain the reasoning. Solve equations and inequalities in one variable.

#. Standard:

N-Q-1

N-Q-3

A-SSE-1b

A-CED-1

A-CED-4

A-REL-1

A-REL-3

Math Practices: Make sense of problems and persevere in solving them, Reason abstractly and quantitatively, Construct viable arguments and critique the reasoning of others, Model with mathematics

21st Century Themes

Global Awareness

Financial, Economic, Business, and Entrepreneurial Literacy

Civic Literacy

Health Literacy

21st 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**

Unit Title: Inequalities		Unit #: 3
Course or Grade Level: CP Algebra I		Length of Time: 6 days
Date Created: April 19, 2012		BOE Approval Date:
Pacing	6 days, 1 days per section, covering sections 1-5 in chapter 3 (grouping sections 2 and 3 together), 1 review days and 1 summative assessment days, 4 benchmark review and assessment days	
Essential Questions	<ul style="list-style-type: none"> • What is the difference between the solution of an equation and an inequality? • What is the difference of the solution of an inequalities that contains a less than/greater than sign compared to a less than or equal to/ greater that or equal to? • What is the difference of a solution to an inequality when multiplied/divided by a positive or negative number? 	
Content	<ul style="list-style-type: none"> • Graphing and Writing Inequalities • Solving One-Step Inequalities of all operations • Solving Two-Step and Multi-Step Inequalities • Solving Inequalities with variables on both sides 	
Skills	<ul style="list-style-type: none"> • Identify solutions of inequalities • Graph inequality solutions and determine a solution from a graph • Solve inequalities by isolating the variable and using inverse operations 	
Assessments	Formative: <ul style="list-style-type: none"> • Teacher observation and questioning • Seat and or group work • Fist to five/ Thumbs up, thumbs down • Homework • Student participation at board 	Summative: <ul style="list-style-type: none"> • Quizzes, tests and benchmark
Interventions / differentiated instruction	<ul style="list-style-type: none"> • Students given handouts of power point notes • Students given assess to online textbook • Partners or group work (groups formed heterogeneously according to ability) 	
Inter-disciplinary Connections	<ul style="list-style-type: none"> • Using geometry to determine differences of area between two shapes 	
Lesson resources / Activities	<ul style="list-style-type: none"> • Holt McDougal Algebra I , copyright 2007 – Chapter 3 • Power point resources • Textbook practice worksheet • Online textbook (www.hrw.com) 	
Common Core State Standards		
Grade or Conceptual Category (HS only): Algebra		
Domain (name and #): Creating Equations; Reasoning with Equations and Inequalities		
Cluster: Create equations that describe numbers or relationships. Solve equations and inequalities in one variable.	#. Standard:	
	A-CED-1	
	A-REL-3	
Math Practices: Make sense of problems and persevere in solving them, Reason abstractly and quantitatively, Construct viable arguments and critique the reasoning of others, Model with mathematics		

21st Century Themes

	Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy
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21st 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**

Unit Title: Functions		Unit #: 4
Course or Grade Level: CP Algebra I		Length of Time: 15 days
Date Created: April 19, 2012		BOE Approval Date:
Pacing	15 days, 2 days per section, covering all sections in chapter 4, 2 review days and 2 summative assessment days	
Essential Questions	<ul style="list-style-type: none"> • What is a function? • Why is the range allowed to repeat in a function, but a domain cannot? • What are the steps and strategies of graphing a function from a given equation? • What factors could affect the accuracy of a prediction? • Why is it important to have a formula to determine positions in an arithmetic sequence? 	
Content	<ul style="list-style-type: none"> • Graphing relationships • Relations and Functions • Writing Functions • Graphing Functions • Scatter Plots and Trend Lines • Arithmetic Sequences 	
Skills	<ul style="list-style-type: none"> • Relate graphs to situations, sketch graphs for situations, and write situations for graphs • Find the domain and range of a function • Identify functions • Identify independent and dependent variables of functions • Evaluate functions by the use of substitution • Graph functions • Describe correlations from scatter plots • Use a trend line to make predictions from data • Identify and find the nth term of an arithmetic sequence 	
Assessments	Formative: <ul style="list-style-type: none"> • Teacher observation and questioning • Seat and or group work • Fist to five/ Thumbs up, thumbs down • Homework • Student participation at board 	Summative: <ul style="list-style-type: none"> • Quizzes, tests and benchmark
Interventions / differentiated instruction	<ul style="list-style-type: none"> • Students given handouts of power point notes • Students given access to online textbook • Partners or group work (groups formed heterogeneously according to ability) 	
Inter-disciplinary Connections	<ul style="list-style-type: none"> • Using biology to help sketch graphs of functions 	
Lesson resources / Activities	<ul style="list-style-type: none"> • Holt McDougal Algebra I, copyright 2007 – Chapter 4 • Power point resources • Textbook practice worksheet • Online textbook (www.hrw.com) 	
Common Core State Standards		
Grade or Conceptual Category (HS only): Algebra I		
Domain (name and #): Quantities; Creating Equations; Reasoning with Equations and Inequalities; Interpreting Functions, Linear, Quadratic, and exponential models; Interpreting Categorical and Quantitative data		
Cluster: Reason	#. Standard:	

quantitatively and use units to solve problems. Create equations that describe numbers or relationships Represent and equations and inequalities graphically Understand the concept of a function and use function notation Construct and compare linear, quadratic, and exponential models and solve problems Summarize, represent, and interpret data on two categorical and quantitative variables	N-Q-2					
	N-Q-3					
	A-CED-1					
	A-REL-10					
	F-IF-1					
	F-IF-2					
	F-IF-3					
	F-LE-2					
	S-ID-6c					
Math Practices: Make sense of problems and persevere in solving them, model with mathematics, use appropriate tools strategically						
<u>21st Century Themes</u>						
	Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy	Health Literacy
<u>21st Century Skills</u>						
	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**

Unit Title: Linear Functions		Unit #: 5
Course or Grade Level: CP Algebra I		Length of Time: 16 days
Date Created: April 19, 2012		BOE Approval Date:
Pacing	16 days, 2 days per section, covering sections 1-4: 6-8 in chapter 5 , 2 review days and 2 summative assessment days	
Essential Questions	<ul style="list-style-type: none"> • What are two different ways to determine if a function is a linear function? • Why is slope considered a “rate of change”? • How do you determine if it is useful to write a linear equation in slope-intercept form or point-slope form? • How do you determine if a pair of lines is parallel or perpendicular? • What is the difference between a pair of lines that are parallel and a pair of lines that are perpendicular? 	
Content	<ul style="list-style-type: none"> • Identifying Linear Functions • Using Intercepts • Rate of Change and Slope • The Slope Formula • Slope-Intercept Form • Point-Slope Form • Slopes of Parallel and Perpendicular Lines 	
Skills	<ul style="list-style-type: none"> • Identify linear functions from a graph and/or ordered pairs • Graph linear functions • Identify intercepts • Determine the slope of a line • Write linear equations in slope-intercept and point-slope form • Identify a pair of lines as parallel or perpendicular 	
Assessments	Formative: <ul style="list-style-type: none"> • Teacher observation and questioning • Seat and or group work • Fist to five/ Thumbs up, thumbs down • Homework • Student participation at board 	Summative: <ul style="list-style-type: none"> • Quizzes, tests and benchmark
Interventions / differentiated instruction	<ul style="list-style-type: none"> • Students given handouts of power point notes • Students given access to online textbook • Partners or group work (groups formed heterogeneously according to ability) 	
Inter-disciplinary Connections	<ul style="list-style-type: none"> • Use finance to determine the domain and range of functions • Use finance to determine the rate of change in cost over a period of time 	
Lesson resources / Activities	<ul style="list-style-type: none"> • Holt McDougal Algebra I , copyright 2007 – Chapter 5 • Power point resources • Textbook practice worksheet • Online textbook (www.hrw.com) 	
Common Core State Standards		
Grade or Conceptual Category (HS only): Algebra I		
Domain (name and #): Creating Equations; Reasoning with Equations and Inequalities; Interpreting Functions; Building Functions; Linear, Quadratic, and exponential models; Interpreting Categorical and Quantitative data.		
Cluster: Creating equations that describe	#. Standard:	
	A-CED-2	

numbers or relationships Represent and solve equations and inequalities graphically. Analyze functions using different representations. Build a function that models a relationship between two quantities. Construct and compare linear, quadratic, and exponential models and solve problems. Interpret expressions for functions in terms of the situation they model. Interpret linear models.	A-CED-3					
	REL-10					
	F-IF-8					
	F-BF-1					
F-LE-1b						
F-LE-5						
S-ID-7						
Math Practices: Make sense of problems and persevere in solving them, Construct viable arguments and critique the reasoning of others, Model with mathematics, Use appropriate tools strategically, Attend to precision, Look for and express regularity in repeated reasoning						
<u>21st Century Themes</u>						
	Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy	Health Literacy
<u>21st Century Skills</u>						
	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**

Unit Title: Systems of Equations and Inequalities		Unit #: 6
Course or Grade Level: CP Algebra I		Length of Time: 16 days
Date Created: June 20, 2012		BOE Approval Date:
Pacing	16 days, 2 days per section, covering all sections of chapter 6 , 2 review days and 2 summative assessment days; 4 benchmark review and assessment days	
Essential Questions	<ul style="list-style-type: none"> • What is the difference between a system of equations and a linear function? • How can you determine the best method to solve a system of equations? • How do you determine if a system is classified as a special system? 	
Content	<ul style="list-style-type: none"> • Solving Systems by Graphing • Solving Systems by Substitution • Solving Systems by Elimination • Solving Special Systems • Solving Linear Inequalities • Solving Systems of Linear Inequalities 	
Skills	<ul style="list-style-type: none"> • Graph a system of linear equations to find a solution • Determine the solution of a system by substitution • Determine the solution of a system by elimination • Classify a special system as consistent or inconsistent • Classify a special system by the number of solutions 	
Assessments	Formative: <ul style="list-style-type: none"> • Teacher observation and questioning • Seat and or group work • Fist to five/ Thumbs up, thumbs down • Homework • Student participation at board 	Summative: <ul style="list-style-type: none"> • Quizzes, tests and benchmark
Interventions / differentiated instruction	<ul style="list-style-type: none"> • Students given handouts of power point notes • Students given access to online textbook • Partners or group work (groups formed heterogeneously according to ability) 	
Inter-disciplinary Connections	<ul style="list-style-type: none"> • Use finance to determine the solution of a system of equation. • Use geometry to determine the degree measurement of x and y by solving a system of equations. 	
Lesson resources / Activities	<ul style="list-style-type: none"> • Holt McDougal Algebra I , copyright 2007 – Chapter 6 • Power point resources • Textbook practice worksheet • Online textbook (www.hrw.com) 	
Common Core State Standards		
Grade or Conceptual Category (HS only): Algebra I		
Domain (name and #): Creating Equations; Reasoning with Equations and Inequalities; Interpreting Functions; Building Functions; Linear, Quadratic, and Exponential Models.		
Cluster: Creating equations that describe numbers or relationships. Solve systems of equations.	#. Standard:	
	A-CED-2	
	A-CED-3	
	REL-5	

Represent and solve equations and inequalities graphically. Analyze functions using different representations. Build a function that models a relationship between two quantities. Construct and compare linear, quadratic, and exponential models and solve problems.	REL-6						
	REL-11						
	REL-12						
	F-IF-8						
	F-BF-1						
	F-LE-5						
Math Practices: Make sense of problems and persevere in solving them, Reason abstractly and quantitatively, Construct viable arguments and critique the reasoning of others, Use appropriate tools strategically, Attend to precision.							
<u>21st Century Themes</u>							
	Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy
<u>21st Century Skills</u>							
	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**

Unit Title: Exponents and Polynomials		Unit #: 7
Course or Grade Level: CP Algebra I		Length of Time: 17 days
Date Created: June 20, 2012		BOE Approval Date:
Pacing	17 days, 1-2 days per section, covering all sections in chapter 7 , 2 review days and 2 summative assessment days	
Essential Questions	<ul style="list-style-type: none"> • What is the difference between scientific notation and standard notation? • Why can an exponent never be negative? • When combining like terms why doesn't the value of the exponent change? • What is the difference between multiplying and dividing numerical bases containing exponents and variable bases? • How do you determine if a polynomial is a perfect square trinomial or a difference of squares? • What are the steps to multiply polynomials by the use of FOIL and the box method? 	
Content	<ul style="list-style-type: none"> • Integer exponents • Powers of 10 and scientific notation • Multiplication properties of exponents • Division properties of exponents • Polynomials • Adding and subtracting polynomials • Multiplying polynomials • Special products of binomials 	
Skills	<ul style="list-style-type: none"> • Evaluate integer exponents, rewrite negative exponents as positive • Express numbers in standard and scientific notation • Simplify algebraic expressions by exponent properties • Identify polynomials and express them in standard form • Add and subtract polynomials by combining like terms • Multiply polynomials by FOIL or box method • Determine a binomial as a perfect square trinomial or a difference of squares 	
Assessments	Formative: <ul style="list-style-type: none"> • Teacher observation and questioning • Seat and or group work • Fist to five/ Thumbs up, thumbs down • Homework • Student participation at board 	Summative: <ul style="list-style-type: none"> • Quizzes, tests and benchmark
Interventions / differentiated instruction	<ul style="list-style-type: none"> • Students given handouts of power point notes • Students given access to online textbook • Partners or group work (groups formed heterogeneously according to ability) 	
Inter-disciplinary Connections	<ul style="list-style-type: none"> • Use astronomy to express approximate distances in scientific and standard notation. • Use chemistry to express pH solution of household objects in scientific and standard notation. • Use finance to add and subtract polynomial profits of two different industries. • Use photography to determine the area of photograph by multiplying binomials. 	
Lesson resources / Activities	<ul style="list-style-type: none"> • Holt McDougal Algebra I , copyright 2007 – Chapter 7 • Power point resources • Textbook practice worksheet • Online textbook (www.hrw.com) 	
Common Core State Standards		
Grade or Conceptual Category (HS only): Algebra I		

Domain (name and #): The Real Number System; Seeing Structure in Expressions; Arithmetic with Polynomials and Rational Expressions.

Cluster: Extend the properties of exponents to rational exponents. Interpret the structure of expressions. Write expressions in equivalent forms to solve problems. Perform arithmetic operations on polynomials.	#. Standard:
	N-RN-2
	A-SSE-1a
	A-SSE-3c
	A-APR-1

Math Practices: Make sense of problems and persevere in solving them, Construct viable arguments and critique the reasoning of others, Model with mathematics, Attend to precision, Look for and make sure of structure, Look for and express regularity in repeated reasoning.

[21st Century Themes](#)

Global Awareness	Financial, Economic, Business, and Entrepreneurial Literacy	Civic Literacy	Health Literacy
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[21st 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**

Unit Title: Factoring Polynomials		Unit #: 8
Course or Grade Level: CP Algebra I		Length of Time: 16 days
Date Created: June 20, 2012		BOE Approval Date:
Pacing	16 days, 2 days per section, covering all sections in chapter 8, 2 review days and 2 summative assessment days	
Essential Questions	<ul style="list-style-type: none"> • How does the GCF between a number and a variable differ? • What is the difference between factoring a polynomial in the form $x^2 + bx + c$ compared to $ax^2 + bx + c$? • What are the properties to determine if a polynomial is a perfect square trinomial or a difference of squares? • What are signs of identification to help determine the appropriate factoring method? 	
Content	<ul style="list-style-type: none"> • Factors and greatest common factors • Factoring by GCF • Factoring $x^2 + bx + c$ • Factoring $ax^2 + bx + c$ • Factoring special products • Choosing a factoring method 	
Skills	<ul style="list-style-type: none"> • Identify the prime factorization of a monomial • Identify the GCF between a set of monomials • Factor the GCF from a polynomial to express as a distributive expression • Factor a trinomial into a multiplication of binomials • Determine if a trinomial is a perfect square trinomial by use of square roots • Determine if a binomial difference is a difference of squares by use of square roots • Determine the appropriate factoring method to difference forms of polynomials 	
Assessments	Formative: <ul style="list-style-type: none"> • Teacher observation and questioning • Seat and or group work • Fist to five/ Thumbs up, thumbs down • Homework • Student participation at board 	Summative: <ul style="list-style-type: none"> • Quizzes, tests and benchmark
Interventions / differentiated instruction	<ul style="list-style-type: none"> • Students given handouts of power point notes • Students given access to online textbook • Partners or group work (groups formed heterogeneously according to ability) 	
Inter-disciplinary Connections	<ul style="list-style-type: none"> • Use finance to determine the domain and range of functions • Use finance to determine the rate of change in cost over a period of time 	
Lesson resources / Activities	<ul style="list-style-type: none"> • Holt McDougal Algebra I , copyright 2007 – Chapter 8 • Power point resources • Textbook practice worksheet • Online textbook (www.hrw.com) 	
Common Core State Standards		
Grade or Conceptual Category (HS only): Algebra I		
Domain (name and #): Quantities; Seeing Structure in Expression.		
Cluster: Reason quantitatively and use units to solve problems. Interpret the structure of expressions. Write expressions in	#. Standard:	
	N-Q-3	
	A-SSE-1	
		A-SSE-2

equivalent forms to solve problems.							
		A-SSE-3					
Math Practices: Make sense of problems and persevere in solving them, Reason abstractly and quantitatively, Construct viable arguments and critique the reasoning of others, Model with mathematics, Use appropriate tools strategically, Attend to precision, Look for and make use of structure, Look for and express regularity in repeated reasoning.							
<u>21st Century Themes</u>							
	Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy
<u>21st Century Skills</u>							
	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**

Unit Title: Quadratic Functions and Equations		Unit #: 9
Course or Grade Level: CP Algebra I		Length of Time: 18 days
Date Created: June 20, 2012		BOE Approval Date:
Pacing	18 days, 2 days per section, covering sections 1-7 in chapter 9 , 2 review days and 2 summative assessment days; 4 benchmark review and assessment days	
Essential Questions	<ul style="list-style-type: none"> • How does the graph differ from a linear function to a quadratic function? • What determines if a quadratic equation has a maximum or minimum? • What are the steps to graph a quadratic function using its axis of symmetry, vertex, and y-intercept? • What is the difference between having $a > 1$ and $a < 1$, and what is its effect on a quadratic function? • What are the zeros of a quadratic function? • What are the steps to determine the zeros of a quadratic function by the use of the zero product property? • What are the steps to determine the zeros of a quadratic function by the use of square roots? • What is the difference between determining the zeros of a quadratic function by factoring and use of square roots? 	
Content	<ul style="list-style-type: none"> • Identifying Quadratic Functions • Characteristics of Quadratics Functions • Graphing Quadratic Functions • Transforming Quadratic Functions • Solving Quadratic Functions by Graphing • Solving Quadratic Equations by Factoring • Solving Quadratic Equations by Using Square Roots 	
Skills	<ul style="list-style-type: none"> • Identify an equation quadratic by having a degree of two • Determine the axis of symmetry and vertex of a quadratic function by its graph • Determine the axis of symmetry and vertex of a quadratic function by its equation • Determine the maximum and minimum of a quadratic function • Graph a quadratic function by determining the axis of symmetry, vertex, and y-intercept • Identify the transformation of a quadratic function to its parent function $f(x) = x^2$ • Determine the zeros of a quadratic function by factoring and the zero product property • Determine the zeros of a quadratic function by the use of square roots 	
Assessments	Formative: <ul style="list-style-type: none"> • Teacher observation and questioning • Seat and or group work • Fist to five/ Thumbs up, thumbs down • Homework • Student participation at board 	Summative: <ul style="list-style-type: none"> • Quizzes, tests and benchmark
Interventions / differentiated instruction	<ul style="list-style-type: none"> • Students given handouts of power point notes • Students given access to online textbook • Partners or group work (groups formed heterogeneously according to ability) 	
Inter-disciplinary Connections	<ul style="list-style-type: none"> • Use knowledge of architecture to determine if the height of a boat can pass under the arch of a bridge. • Use physics to determine the velocity of a water flow in a pipe and if it varies according to the circumference in the pipe. • Use physics to compare the graphs of falling objects from two different heights and the length it takes to reach the ground. 	
Lesson resources / Activities	<ul style="list-style-type: none"> • Holt McDougal Algebra I , copyright 2007 – Chapter 9 • Power point resources • Textbook practice worksheet • Online textbook (www.hrw.com) 	

Common Core State Standards

Grade or Conceptual Category (HS only): Algebra I

Domain (name and #): Quantities; Seeing Structure in Expressions; Reasoning with Equations and Inequalities; Interpreting Functions; Building Functions.

Cluster: Reason quantitatively and use units to solve problems. Write expressions in equivalent forms to solve problems. Solve equations and inequalities in one variable. Analyze functions using different representations. Build new functions from existing functions.	#. Standard:
	N-Q-3
	A-SSE-3a
	A-SSE-3b
	A-REL-4b
	F-IF-7
	F-IF-7a
	F-IF-8a
	F-BF-3

Math Practices: Make sense of problems and persevere in solving them, Reason abstractly and quantitatively, Construct viable arguments and critique the reasoning of others, Model with mathematics, Use appropriate tools strategically, Attend to precision, Look for and make use of structure.

21st Century Themes

Global Awareness	Financial, Economic, Business, and Entrepreneurial Literacy	Civic Literacy	Health Literacy
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21st 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**

Unit Title: Data Analysis and Probability		Unit #: 10
Course or Grade Level: CP Algebra I		Length of Time: 14 days
Date Created: June 20, 2012		BOE Approval Date:
Pacing	14 days, 1-2 days per section, covering all sections in chapter 10 , 2 review days and 2 summative assessment days	
Essential Questions	<ul style="list-style-type: none"> • How can you determine the best visual representation for given data? • How can you determine if your measure of central tendency is accurate? • How is the mean of a data set affected if the outlier is eliminated? • What are some factors that cause a graph to be misleading? • What is the difference between experimental and theoretical probability? • What is the difference between an independent and dependent event? • When determining the probability of a dependent event, what is affected if an object in the event is not replaced? • What is the difference between a combination and a permutation, and what characteristics help determine the correct principle needed to find the solution? 	
Content	<ul style="list-style-type: none"> • Organizing and Displaying Data • Frequency and Histograms • Data Distributions • Misleading Graphs and Statistics • Experimental Probability • Theoretical Probability • Independent and Dependent Events • Combinations and Permutations 	
Skills	<ul style="list-style-type: none"> • Read and interpret bar graphs, line graphs, circle graphs • Make a stem-and-leaf plot, frequency table, and histogram • Find the mean, median, mode, and range of a data set • Determine a measure of central tendency • Determine if a data representation is misleading • Determine the experimental probability of a given event • Determine the theoretical probability of a given event • Determine the outcome of an independent event • Determine the outcome of a dependent event • Determine the number of outcomes using the fundamental counting principle • Determine the number of outcomes of combinations and permutations 	
Assessments	Formative: <ul style="list-style-type: none"> • Teacher observation and questioning • Seat and or group work • Fist to five/ Thumbs up, thumbs down • Homework • Student participation at board 	Summative: <ul style="list-style-type: none"> • Quizzes, tests and benchmark
Interventions / differentiated instruction	<ul style="list-style-type: none"> • Students given handouts of power point notes • Students given access to online textbook • Partners or group work (groups formed heterogeneously according to ability) 	
Inter-disciplinary Connections	<ul style="list-style-type: none"> • Use history in developing the population of different cultural minorities by the use of graphical representations. • Use finance to determine the central tendency of a display of data. • Use history to determine the total number of outcomes in the NANP by the use of permutations. 	

Lesson resources / Activities	<ul style="list-style-type: none"> • Holt McDougal Algebra I , copyright 2007 – Chapter 10 • Power point resources • Textbook practice worksheet • Online textbook (www.hrw.com)
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Common Core State Standards

Grade or Conceptual Category (HS only): Algebra I

Domain (name and #): Quantities; Interpreting Categorical and Quantitative Data

Cluster: Reason quantitatively and use units to solve problems. Summarize, repeat, and interpret data on a single count or measureable variable. Summarize, represent, and interpret data on two categorical and quantitative variables.	#. Standard:
	N-Q-3
	S-ID-1
	S-ID-2
	S-ID-3
	S-ID-5

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21st Century Themes

Global Awareness	Financial, Economic, Business, and Entrepreneurial Literacy	Civic Literacy	Health Literacy
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Media Literacy	ICT Literacy	Life and Career Skills	

**Pine Hill Public Schools
Mathematics Curriculum**

Unit Title: Exponential and Radical Functions		Unit #: 11
Course or Grade Level: CP Algebra I		Length of Time: 8 days
Date Created: June 20, 2012		BOE Approval Date:
Pacing	8 days, 1-2 days per section, covering sections 1-4 in chapter 11, 1 review days and 1 summative assessment days, 4 benchmark review and assessment days	
Essential Questions	<ul style="list-style-type: none"> • What is the difference between a geometric sequence and an arithmetic sequence? • What is the difference between the graph of a linear, quadratic, and exponential function? • What is the difference between exponential growths when compared to exponential decays? • What real world situations would best compare with exponential growths and exponential decays? 	
Content	<ul style="list-style-type: none"> • Geometric Sequences • Exponential Functions • Exponential Growth and Decay • Linear, Quadratic, and Exponential Models 	
Skills	<ul style="list-style-type: none"> • Extend and find the <i>n</i>th of a Geometric Sequence • Identify and evaluate an Exponential Function • Graph an Exponential Function by use of a table • Determine the exponential growth and decay of functions • Graph data to determine if a model is linear, quadratic, or exponential 	
Assessments	Formative: <ul style="list-style-type: none"> • Teacher observation and questioning • Seat and or group work • Fist to five/ Thumbs up, thumbs down • Homework • Student participation at board 	Summative: <ul style="list-style-type: none"> • Quizzes, tests and benchmark
Interventions / differentiated instruction	<ul style="list-style-type: none"> • Students given handouts of power point notes • Students given access to online textbook • Partners or group work (groups formed heterogeneously according to ability) 	
Inter-disciplinary Connections	<ul style="list-style-type: none"> • Use history in determining if the population is an exponential growth or decay through centuries. • Use finance to determine the exponential effect of the compound interest function. • Use science to determine measurements remaining after a certain period of time by the use of the half-life formula. 	
Lesson resources / Activities	<ul style="list-style-type: none"> • Holt McDougal Algebra I , copyright 2007 – Chapter 11 • Power point resources • Textbook practice worksheet • Online textbook (www.hrw.com) 	
Common Core State Standards		
Grade or Conceptual Category (HS only): Algebra I		
Domain (name and #): Quantities; Seeing Structure in Expressions; Build Functions; Linear, Quadratic, and Exponential Models.		
Cluster: Reason quantitatively and use units to solve problems. Write expressions in equivalent forms to solve problems. Build a function that models a relationship	#. Standard:	
	N-Q-3	
	A-SSE-3c	
	A-SSE-4	
	F-BF-2	
F-LE-1a		

between two quantities. Construct and compare linear, quadratic, and exponential models and solve problems. Interpret expressions for functions in terms of the situation they model.	
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	F-LE-2
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	F-LE-3
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	F-LE-5
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[21st Century Themes](#)

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

	Creativity and Innovation		Critical Thinking and Problem Solving		Communication and Collaboration		Information Literacy
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