Algebra 2 Curriculum

Unit 0 Introduction

Estimated	Big Ideas	Essential Questions	Concepts	Competencies	Lessons/ Suggested	Vocabulary	Standards/ Eligible				
Unit Time			(Know)	(Do)	Resources		Content				
Frames				<u> </u>							
	Course Preview	Course Preview Incidentals, Books, Seating Charts, Class Rules and Procedures Resources: Suggested Text Pearson -Algebra 2									
5 Days	Relations and functions are mathematical relationships that can be represented and analyzed using words, tables, graphs, and equations.	How do you write, solve, graph, and interpret linear equations and inequalities to model relationships between quantities?	Algebraic properties processes and representations.	Represent a polynomial function in multiple ways, including tables, graphs, equations, and contextual situations, and make connections among representations; relate the solution of the associated polynomial equation to each representation.	Solving Equations (Formulas) for a Variable Objective: SWBA to solve an equation/ formula for an indicated variable. See Algebra 2 AAEC	Formula Variables Inverse operations	A2.1.3.2 Describe or determine change. A21.3.2.2 Use algebraic processes to solve a formula for a given variable.				
	Relations and functions are mathematical relationships that can be represented and analyzed using words, tables, graphs, and equations.	How do you write, solve, graph, and interpret linear equations and inequalities to model relationships between quantities?	Algebraic properties processes and representations.	Represent a polynomial function in multiple ways, including tables, graphs, equations, and contextual situations, and make connections among representations; relate the solution of the associated polynomial	Writing Linear Equations Objectives: SWBA to write and equation given the slope and a point on the line. SWBA to write an equation of a line parallel or perpendicular to a given line Suggested Texts	Slope-intercept form Point-slope form Parallel Perpendicular	2.8.A2.C-Recognize, describe and generalize patterns using sequences and series to predict long-term outcomes A2.2.1.1-Analyze and/or use patterns or relations. A2.2.1.1-Analyze a set of data for the existence of a pattern and represent the pattern with a rule				

			equation to each representation.	Pearson Algebra 2 (2012) Section 2-4 (Pg. 74-80)		algebraically and/or graphically.
				Glencoe Algebra 2 (2010) Section 2-4 (pgs 83-89)		
Relations and functions are mathematical relationships the can be represen and analyzed using words, tables, graphs, a equations.	nd	Algebraic properties processes and representations.	Represent a polynomial function in multiple ways, including tables, graphs, equations, and contextual situations, and make connections among representations; relate the solution of the associated polynomial equation to each representation.	Determining Change Objective: SWBA to describe how the change in one variable relates to a change I the second variable. See Algebra 2 AAEC	Change	A2.1.3.2 Describe or determine change. A21.3.2.1 Determine how a change in one variable related to a change in the second variable.
Bivariate data of be modeled with mathematical functions that approximate the data well and hous make predictions base on the data.	curves of best fit to model real world situations and to provide predictions based on a sample?	Polynomial functions and equations	Represent exponential functions in multiple ways, including tables, graphs, equations, and contextual situations, and make connections among representations; relate the growth/decay rate of the associated exponential equation to each representation.	Scatter Plots and Lines of Regression Objectives: SWBA to write linear equations that model real-world data. SWBA to make predictions from linear models. Suggested Texts Pearson Algebra 2 (2012) Section 2-5 (Pg.92-98) Glencoe Algebra 2 (2010) Section 2-5 (pgs 92-98)	Bivariate data Correlation Scatter plot Dot plot Positive correlation Negative correlation Line of fit Prediction equation	2.6.A2.C-Construct a line of best fit and calculate its equation for linear and non linear two variable data. 2.6.A2.E-Make predictions based on lines of best fit or draw conclusions on the value of a variable in a population based on the results of a sample A2.2.3.1-Analyze and/or interpret data on a scatter plot to make predictions. A2.2.3.1.1-Draw, identify, find, interpret, and/or write an equation for a regression model (lines

						Regression line Correlation coefficient	and curves of best fit) for a scatter plot. A2.2.3.1.2-Make predictions using the equations or graphs of regression models (lines and curves of best fit) of scatter plots.
		Unit 1	L Quadratic F	unctions and E	Equations		
Estimated Unit Time Frames	Big Ideas	Essential Questions	Concepts (Know)	Competencies (Do)	Lessons/ Suggested Resources	Vocabulary	Standards/ Eligible Content
24 days	Mathematical functions are relationships that assign each member of one set (domain) to a unique member of another set (range), and the relationship is recognizable across representations.	How do quadratic equations and their graphs and/or tables help us interpret events that occur in the world around us?	Quadratic functions and equations.	Represent a quadratic function in multiple ways, including tables, graphs, equations, and contextual situations, and make connections among representations; relate the solution of the associated quadratic equation to each representation.	Quadratic Functions and Relations/ Graphing Quadratic Functions Objectives: SWBA to graph quadratic functions . SWBA to find and interpret the maximum and minimum value of a quadratic function Suggested Texts Pearson Algebra 2 (2012) Section 4-1 (Pg. 194-201) Glencoe Algebra 2 (2010) Chapter 5 -Section 5-1 (pgs 249-257)	Quadratic function Quadratic term Linear term Constant term Parabola Axis of symmetry Vertex Maximum value Minimum value	2.8.A2.B Evaluate and simplify algebraic expressions, for example: products/quotients of polynomials, logarithmic expressions and complex fractions; and solve and graph linear, quadratic, exponential, and logarithmic equations and inequalities, and solve and graph systems of equations and inequalities. 2.8.A2.D Demonstrate an understanding and apply properties of functions (domain, range, inverses) and characteristics of families of functions (linear, polynomial, rational, exponential and logarithmic)

		Section 5-7 (pgs 305-	2.8.A2.E Use
		310)	combinations of
			symbols and numbers
			to
			create expressions,
			equations, and
			inequalities in two or
			more variables,
			systems of equations
			and inequalities, and
			functional relationships
			that model problem
			situation.
			2.11.A2.A Determine
			the maximum and
			minimum values of a
			function over a specific
			interval.
			A2.2.1 Patterns,
			Relations and
			Functions
			A2.2.2 Applications of
			Functions
			A2.2.1.1 Analyze
			and/or use patterns or
			relations.
			A2.2.2.1 Create,
			interpret, and/or use
			polynomial
			exponential and/or
			logarithmic functions
			and their equations,
			graphs or tables.
			A2.2.1.1.4 Identify
			the characteristics of
			an exponential,
			quadratic, or
			polynomial function.
			A2.2.2.1.3
			Determine, use and/or
			interpret maximum and
			minimum values over
			specified interval of a
			graph of a polynomial,

							exponential, logarithmic function. A2.2.2.1.4 Translate a polynomial, exponential or logarithmic function from one representation to another (graph table and equation).
func relai assi men (dor unic anot (ran relai reco	athematical actions are ationships that ign each mber of one set omain) to a que member of other set nge), and the ationship is ognizable oss resentations.	How do quadratic equations and their graphs and/or tables help us interpret events that occur in the world around us?	Quadratic functions and equations.	Represent a quadratic function in multiple ways, including tables, graphs, equations, and contextual situations, and make connections among representations; relate the solution of the associated quadratic equation to each representation.	Solve Quadratic Equations by Graphing Objectives: SWBA to solve quadratic equations by graphing. SWBA to estimate solutions of quadratic equations by graphing Suggested Text Pearson Algebra 2 (2012) Section 4-5 (Pg. 226-231) Glencoe Algebra 2 (2010) Section 5-2 (pgs 259-266) .	Quadratic equation Standard form Root Zero	2.8.A2.B-Evaluate and simplify algebraic expressions; solve and graph, quadratic, exponential, and logarithmic equations; and, solve and graph systems of equations and inequalities. 2.8.A2.E-Use combinations of symbols and numbers to create expressions, equations, and inequalities in two or more variables, systems of equations and inequalities, and functional relationships that model problem situations. 2.8.A2.F-Interpret the results of solving equations, inequalities, systems of equations, and systems of inequalities in the context of the situation that motivated the model. A2.1.3.1-Write and/or solve non-linear

		T	<u> </u>				equations using vericus
							equations using various methods.
							A2.1.3.1.1-Write
							and/or solve quadratic
							equations (including
							factoring and using the
							Quadratic Formula).
							A2.2.2.1-Create,
							interpret, and/or use
							polynomial,
							exponential, and/or
							logarithmic functions
							and their equations,
							graphs, or tables.
							A2.2.2.1.1-Create,
							interpret, and/or use the
							equation, graph, or
							table of a polynomial
							function (including
	M 1 1 1	TT 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0 1 .:	D .	61: 0 1:	E 4 10	quadratics).
	Mathematical functions are	How do quadratic equations and their graphs and/or	Quadratic functions and	Represent a	Solving Quadratic	Factored form	2.1.A2.B-Use factoring
	relationships that	tables help us interpret	equations.	quadratic function in multiple ways,	Equations by Factoring		to create equivalent forms of polynomials
	assign each	events that occur in the	equations.	including tables,	Objectives:	FOIL method	2.8.A2.B-Evaluate and
	member of one set	world around us?		graphs, equations,	SWBA to write		simplify algebraic
	(domain) to a	world around us.		and contextual	quadratic equations in	Zero of the	expressions; solve and
	unique member of			situations, and	intercept form.	Function	graph, quadratic,
	another set			make connections	SWBA to solve		exponential, and
	(range), and the			among	quadratic equations by	Zero-Product	logarithmic equations;
	relationship is			representations;	factoring.	Property	and, solve and graph
	recognizable			relate the solution	_		systems of equations
	across			of the associated	Suggested Texts		and inequalities.
	representations.			quadratic equation			2.8.A2.E-Use
				to each	Pearson Algebra 2 (2012)		combinations of
				representation.	Section 4-5 (Pg. 226-		symbols and numbers
					231)		to create expressions,
							equations, and
					Glencoe Algebra 2		inequalities in two or
					(2010)		more variables,
					Section 5-3 (pgs 268-		systems of equations
					275)		and inequalities, and functional relationships
							that model problem
							situations.
							2.8.A2.F-Interpret the
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						results of solving
						equations, inequalities,
						systems of equations,
						and systems of
						inequalities in the
						context of the situation
						that motivated the
						model.
						A2.1.2.2-Simplify
						expressions involving
						polynomials.
						A2.1.2.2.1-Factor
						algebraic expressions,
						including difference of
						squares and trinomials.
						Note: Trinomials
						limited to the form
						ax2+bx+c where a is
						not equal to 0.
						A2.1.3.1-Write and/or solve non-linear
						equations using various methods.
						A2.1.3.1.1-Write
						and/or solve quadratic
						equations (including
						factoring and using the
						Quadratic Formula).
Mathematical	How do quadratic equations	Quadratic	Extend algebraic	Completing the Square	Completing the	2.8.A2.B-Evaluate and
functions are	and their graphs and/or	functions and	properties and	Suggested Text-Glencoe	square	simplify algebraic
relationships that	tables help us interpret	equations.	processes to		1	expressions; solve and
assign each	events that occur in the	1	quadratic	Algebra 2 (2010)		graph, quadratic,
member of one set	world around us?		exponential and	Section 5-5 (pgs 284-		exponential, and
(domain) to a			polynomial	290)		logarithmic equations;
unique member of			expressions and			and, solve and graph
another set			equations and to	Pearson Algebra 2 (2012)		systems of equations
(range), and the			matrices, and apply	Section 4-6 (Pg. 233-		and inequalities.
relationship is			them to solve real	239)		2.8.A2.E-Use
recognizable			world problems.			combinations of
across				Objectives:		symbols and numbers
representations.				CHIDA		to create expressions,
				SWBA to solve		equations, and
				quadratics by completing		inequalities in two or
				the square.		more variables,
						systems of equations

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					Duration:3 Days		and inequalities, and functional relationships
							that model problem
							situations.
							2.8.A2.F-Interpret the
							results of solving
							equations, inequalities,
							systems of equations,
							and systems of
							inequalities in the
							context of the situation
							that motivated the
							model.
							A2.1.3.1-Write and/or
							solve non-linear
							equations using various
							methods.
							A2.1.3.1.1-Write
							and/or solve quadratic
							equations (including
							factoring and using the
							Quadratic Formula).
	Mathematical	How do quadratic equations	Quadratic	Extend algebraic	Completing the Square	Completing the	2.8.A2.B-Evaluate and
	functions are	and their graphs and/or	functions and	properties and		square	simplify algebraic
	relationships that	tables help us interpret	equations.	processes to	Objectives:		expressions; solve and
	assign each	events that occur in the		quadratic	CIVID A		graph, quadratic,
	member of one set	world around us?		exponential and	SWBA to solve		exponential, and
	(domain) to a			polynomial	quadratics by completing		logarithmic equations;
	unique member of another set			expressions and equations and to	the square		and, solve and graph systems of equations
	(range), and the			matrices, and apply			and inequalities.
	relationship is			them to solve real	Suggested Text-Glencoe		2.8.A2.E-Use
	recognizable			world problems.	Suggested Text-Glencoe		combinations of
	across			world problems.	Algebra 2 (2010)		symbols and numbers
	representations.				Section 5-5 (pgs 284-		to create expressions,
	representations.				290)		equations, and
							inequalities in two or
					Pearson Algebra 2 (2012)		more variables,
					Section 4-6 (Pg. 233-		systems of equations
					239)		and inequalities, and
							functional relationships
							that model problem
							situations.
							2.8.A2.F-Interpret the
1	1	I	I	1	1		results of solving

	<u> </u>	1	1			equations, inequalities,
						systems of equations,
						and systems of
						inequalities in the
						context of the situation
						that motivated the
						model.
						A2.1.3.1-Write and/or
						solve non-linear
						equations using various
						methods.
						A2.1.3.1.1-Write
						and/or solve quadratic
						equations (including
						factoring and using the
			<u> </u>			Quadratic Formula).
Mathematical	How can we show that	Quadratic	Extend algebraic	Quadratic Formula and	Quadratic	2.8.A2.B-Evaluate and
functions are	algebraic properties and	functions and	properties and	the Discriminant	Formula	simplify algebraic
relationships that	processes are extensions of	equations.	processes to		ъ.	expressions; solve and
assign each	arithmetic properties and		quadratic	Objectives:	Discriminant	graph, quadratic,
member of one set (domain) to a	processes, and how can we		exponential and	CW/D A 4l d4:-		exponential, and
unique member of	use algebraic properties and processes to solve		polynomial expressions and	SWBA to solve quadratic equations by using the		logarithmic equations; and, solve and graph
another set	problems?		equations and to	Quadratic Formula.		systems of equations
(range), and the	problems:		matrices, and apply	Quadratic Porniura.		and inequalities.
relationship is			them to solve real	SWBA to use the		2.8.A2.E-Use
recognizable			world problems.	discriminant to determine		combinations of
across			world problems.	the number and the type		symbols and numbers
representations.				of roots of a quadratic		to create expressions,
				equation.		equations, and
				1		inequalities in two or
				Suggested Text-Glencoe		more variables,
				Algebra 2 (2010)		systems of equations
				Section 5-6 (pgs 292-		and inequalities, and
				300)		functional relationships
						that model problem
				Pearson Algebra 2 (2012)		situations.
				Section 4-7 (Pg. 240-		2.8.A2.F-Interpret the
				247)		results of solving
						equations, inequalities,
						systems of equations,
						and systems of
						inequalities in the
						context of the situation
						that motivated the

Families of functions exhibit properties and behaviors that can be recognized across representations. Functions can be transformed, combined, and composed to create new functions in mathematical	How can we show that algebraic properties and processes are extensions of arithmetic properties and processes, and how can we use algebraic properties and processes to solve problems?	Quadratic functions and equations	Represent a polynomial function in multiple ways, including tables, graphs, equations, and contextual situations, and make connections among representations; relate the solution of the associated polynomial	Parent Functions and Transformations Objectives: SWBA to identify and use parent functions. SWBA to describe transformations of functions. Suggested Text-Glencoe Algebra 2 (2010) Section 2-7 (pgs 109-116)	Bivariate data Scatter plot Dot plot Positive correlation Negative correlation Line of fit Prediction equation	model. A2.1.3.1-Write and/or solve non-linear equations using various methods. A2.1.3.1.1-Write and/or solve quadratic equations (including factoring and using the Quadratic Formula). 2.3.A2.E-Describe how a change in the value of one variable in formulas affects the value of the measurement. 2.8.A2.D-Demonstrate an understanding and apply properties of functions (domain, range, inverses) and characteristics of families of functions (linear, polynomial, rational, exponential,
	_			use parent functions.		
_	1		' '	SWBA to describe		
representations.			•			_
Functions can				tunctions.		1
be transformed,			among		Contenation	range, inverses) and
				_	Line of fit	
create new functions in mathematical			solution of the associated	Section 2-7 (pgs 109-		(linear, polynomial, rational,
and real world situations.			equation to each	Pearson Algebra 2	Regression	logarithmic).
Situations.			representation.	(2012) Section 2-6 (Pg. 99-	line	A2.2.1.1-Analyze and/or use patterns
				106)	Correlation	or relations.
					coefficient	A2.2.1.1.4-Identify
						and/or determine the characteristics of
						an exponential,
						quadratic, or
						polynomial function
						(e.g., intervals of
						increase/decrease,

							intercepts, zeros, and asymptotes). A2.2.2-Describe and/or determine
							families of functions. A2.2.2.2.1-Identify
							or describe the
							effect of changing
							parameters within a family of functions
F	Families of	How can we show that	Quadratic	Represent	Transformations with	Vertex form	2.3.A2.E-Describe how
	functions exhibit properties and	algebraic properties and processes are extensions of	functions and equations.	exponential functions in	Quadratic Functions		a change in the value of one variable in
	behaviors that can	arithmetic properties and		multiple ways,	Objectives:		formulas affects the
	be recognized across	processes, and how can we use algebraic properties and		including tables, graphs, equations,	SWBA to write a		value of the measurement.
	representations.	processes to solve problems?		and contextual	quadratic function in		2.8.A2.D-Demonstrate
				situations, and make connections	vertex form.		an understanding and apply properties of
	Functions can be transformed,			among	SWBA to transform		functions (domain,
	combined, and			representations;	graphs of quadratic		range, inverses) and
	composed to			relate the growth/decay rate	functions in vertex form		characteristics of families of functions
	create new functions in			of the associated			(linear, polynomial,
	mathematical and			exponential	Suggested Text		rational, exponential,
	real world			equation to each			logarithmic).
S	situations.			representation.	Glencoe Algebra 2 (2010)		A2.2.1.1-Analyze and/or use patterns or
					Section 5-7 (pgs 305-		relations.
					310)		A2.2.1.1.4-Identify
							and/or determine the characteristics of an
							exponential, quadratic,
							or polynomial function
					Day 33, 34, 35		(e.g., intervals of
							increase/decrease, intercepts, zeros, and
							asymptotes).
							A2.2.2.Describe
							and/or determine
							families of functions. A2.2.2.2.1-Identify or
							describe the effect of

						changing parameters within a family of functions
Families of functions exproperties a behaviors the recogniz across representati Functions of transformed combined, a composed to create new functions in mathematic real world situations.	processes are extensions of arithmetic properties and processes, and how can we use algebraic properties and processes to solve problems?	Quadratic functions and equations.	Represent a quadratic function in multiple ways, including tables, graphs, equations, and contextual situations, and make connections among representations; relate the solution of the associated quadratic equation to each representation.	Quadratic Functions and Relations/ Graphing Quadratic Functions Suggested Text-Glencoe Algebra 2 (2010) Chapter 5 -Section 5-1 (pgs 249-257) Section 5-7 (pgs 305-310) Pearson Algebra 2 (2012) Section 4-1 (Pg. 194-201) Objectives: SWBA to write a quadratic function in vertex form. SWBA to transform graphs of quadratic functions in vertex form	Quadratic function Quadratic term Linear term Constant term Parabola Axis of symmetry Vertex Maximum value Minimum value	2.8.A2.B Evaluate and simplify algebraic expressions, for example: products/quotients of polynomials, logarithmic expressions and complex fractions; and solve and graph linear, quadratic, exponential, and logarithmic equations and inequalities, and solve and graph systems of equations and inequalities. 2.8.A2.D Demonstrate an understanding and apply properties of functions (domain, range, inverses) and characteristics of families of functions (linear, polynomial, rational, exponential and logarithmic) 2.8.A2.E Use combinations of symbols and numbers to create expressions, equations, and inequalities in two or more variables, systems of equations and inequalities, and functional relationships that model problem situation. 2.11.A2.A Determine

_	T	T	,				
							the maximum and
							minimum values of a
							function over a specific
							interval.
							A2.2.1 Patterns,
							Relations and
							Functions
							A2.2.2 Applications of
							Functions
							A2.2.1.1 Analyze
							and/or use patterns or
							relations.
							A2.2.2.1 Create,
							interpret, and/or use
							polynomial
							exponential and/or
							logarithmic functions
							and their equations,
							graphs or tables.
							A2.2.1.1.4 Identify
							the characteristics of an
							exponential, quadratic,
							or polynomial function. A2.2.2.1.3
							Determine, use and/or
							interpret maximum and
							minimum values over
							specified interval of a
							graph of a polynomial,
							exponential,
							logarithmic function.
							A2.2.2.1.4 Translate a
							polynomial,
							exponential or
							logarithmic function
							from one
							representation to
							another
							(graph table and
							equation).
		Review Unit 1 Comm	on Assessment Qu	adratic Functions and	d Equations Duration: 1 Da	ау	
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Test Unit 1 Common Assessment Quadratic Functions and Equations Duration: 1 Day

Unit 2 Complex Numbers

Estimated Unit Time	Big Ideas	Essential Questions	Concepts (Know)	Competencies (Do)	Lessons/ Suggested Resources	Vocabulary	Standards/ Eligible Content
10 Days	Numbers, measures, expressions, equations, and inequalities can represent mathematical situations and structures in many equivalent forms.	How can we show that algebraic properties and processes are extensions of arithmetic properties and processes, and how can we use algebraic properties and processes to solve problems?	Algebraic properties processes and representations.	Extend algebraic properties and processes to quadratic exponential and polynomial expressions and equations and to matrices, and apply them to solve real world problems.	Complex Numbers Objectives: SWBA to perform operations on pure imaginary numbers. Suggested Text-Glencoe Algebra 2 (2010) Section 5-4 (pgs 276-282) Pearson Algebra 2 (2012) Section 4-8 (Pg. 248-255)	Imaginary Unit Pure imaginary number Complex number Complex conjugates	2.1.A2.A-Model and compare values of complex numbers. 2.2.A2.C-Evaluate numerical expressions of complex numbers that include the four basic operations and operations of powers, opposites, conjugates, and absolute values. A2.1.1.1-Represent and/or use imaginary numbers in equivalent forms (e.g., square roots and exponents). A2.1.1.1-Simplify/write square roots in terms of i A2.1.1.1.2-Simplify/evaluate expressions involving powers of i A2.1.1.2-Apply the order of operations in computation and in problem solving situations. A2.1.1.2.1-Add and subtract complex numbers. A2.1.1.2.2-Multiply

						and divide complex
Numbers, measures, expressions, equations, and inequalities can represent mathematical situations and structures in many equivalent forms.	How can we show that algebraic properties and processes are extensions of arithmetic properties and processes, and how can we use algebraic properties and processes to solve problems?	Algebraic properties processes and representations.	Extend algebraic properties and processes to quadratic exponential and polynomial expressions and equations and to matrices, and apply them to solve real world problems.	Complex Numbers Objectives: SWBA to perform operations on Complex Numbers Suggested Texts Glencoe Algebra 2 (2010) Section 5-4 (pgs 276-282) Pearson Algebra 2 (2012) Section 4-8 (Pg. 248-255)	Imaginary Unit Pure imaginary number Complex number Complex conjugates	numbers. 2.1.A2.A-Model and compare values of complex numbers. 2.2.A2.C-Evaluate numerical expressions of complex numbers that include the four basic operations and operations of powers, opposites, conjugates, and absolute values. A2.1.1.1-Represent and/or use imaginary numbers in equivalent forms (e.g., square roots and exponents). A2.1.1.1-Simplify/write square roots in terms of i A2.1.1.1.2-Simplify/evaluate expressions involving powers of i A2.1.1.2-Apply the order of operations in computation and in problem solving situations. A2.1.1.2.1-Add and subtract complex numbers. A2.1.1.2.2-Multiply and divide complex
Numbers, measures, expressions, equations, and inequalities can represent mathematical situations and	How can we show that algebraic properties and processes are extensions of arithmetic properties and processes, and how can we use algebraic properties and processes to solve problems?	Algebraic properties processes and representations.	Extend algebraic properties and processes to quadratic exponential and polynomial expressions and equations and to matrices, and apply	Complex Numbers Suggested Text-Glencoe Algebra 2 (2010) Section 5-4 (pgs 276- 282) Pearson Algebra 2 (2012) Section 4-8 (Pg. 248- 255)	Imaginary Unit Pure imaginary number	numbers. 2.1.A2.A-Model and compare values of complex numbers. 2.2.A2.C-Evaluate numerical expressions of complex numbers that include the four basic operations and operations of powers,

	structures in many equivalent forms.			them to solve real world problems.	Objectives: SWBA to solve equations with Complex Numbers. Duration: 3 Days	Complex number Complex conjugates	opposites, conjugates, and absolute values. A2.1.1.1-Represent and/or use imaginary numbers in equivalent forms (e.g., square roots and exponents). A2.1.1.1-Simplify/write square roots in terms of i A2.1.1.2-Simplify/evaluate expressions involving powers of i . A2.1.1.2-Apply the order of operations in computation and in problem solving situations.
							A2.1.1.2.1-Add and subtract complex numbers. A2.1.1.2.2-Multiply and divide complex numbers.
		Review Unit 2	Common Assessme	nt Complex Numbe	ers Duration: 1 Day		
		Test Unit 2 (Common Assessmen	t Complex Number	s Duration: 1 Day		
		Unit 3	Polynomials a	and Polynomia	Functions		
Estimated Unit Time Frames	Big Ideas	Essential Questions	Concepts (Know)	Competencies (Do)	Lessons/ Suggested Resources	Vocabulary	Standards/ Eligible Content
24 Days	Numbers, measures, expressions,	How can we show that algebraic properties and processes are extensions of	Polynomial functions and equations	Extend algebraic properties and processes to	Operations with Polynomials	Simplify	2.1.A2.D-Use exponential notation to represent any rational

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equations, and	arithmetic properties and		quadratic	Objectives:		number.
inequalities can	processes, and how can we		exponential and	CM/DA 4 14: 1	Degree of a	2.2.A2.C-Evaluate
represent	use algebraic properties and		polynomial	SWBA to multiply,	polynomial	numerical expressions
mathematical	processes to solve		expressions and	divide, and simplify		of complex numbers
situations and	problems?		equations and to	monomials and		that include the four
structures in many			matrices, and apply	expressions involving		basic operations and
equivalent forms.			them to solve real	powers.		operations of powers,
			world problems.	CWDA		opposites, conjugates,
				SWBA to add, subtract		and absolute values. A2.1.2.1-Use
				and multiply		
				polynomials.		exponents, roots,
				Suggested Text		and/or absolute values to represent equivalent
				Suggested Text		forms or to solve
				Clamaca Alashus 2		problems.
				Glencoe Algebra 2 (2010)- Chapter 6		A2.1.2.1.1-Use
				Section 6-1 (pgs 333-		exponential
				339)		exponential expressions to
				337)		represent rational
				Glencoe Algebra 2		numbers.
				(2012)		A2.1.2.1.2-
				Chapter 5		Simplify/evaluate
				Section 5-1 (pgs303-310)		expressions involving
				pecuant r (pgss ss s rs)		positive and negative
				Pearson Algebra 2 (2012)		exponents and/or roots
				Pg. 978		(may contain all types
						of
						real numbers exponents
						should not exceed
						power of 10).
						A2.1.2.1.3-
						Simplify/evaluate
						expressions involving
						multiplying with
						exponents, powers of
						powers
Numbers,	How can we show that	Polynomial	Extend algebraic	Dividing Polynomials	Synthetic	2.1.A2.D-Use
measures,	algebraic properties and	functions and	properties and		division	exponential notation to
expressions,	processes are extensions of	equations	processes to	Objectives:		represent any rational
equations, and	arithmetic properties and		quadratic			number.
inequalities can	processes, and how can we		exponential and	SWBA to divide		A2.1.2.1-Use
represent	use algebraic properties and		polynomial	polynomials.		exponents, roots,
mathematical	processes to solve		expressions and			and/or absolute values
situations and	problems?		equations and to			to represent equivalent
			matrices, and apply			forms or to solve

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structures in many			them to solve real	SWBA to divide		problems.
equivalent forms.			world problems.	polynomials using		A2.1.2.1.1-Use
				synthetic division.		exponential
						expressions to
				Suggested Text-Glencoe		represent rational
				Algebra 2 (2010)		numbers.
				Section 6-2 (pgs 341-		A2.1.2.1.3-
				347)		Simplify/evaluate
						expressions involving
				Glencoe: Algebra 2		multiplying with
				(2012)		exponents, powers of
				Section 5-2 (pgs 311-		powers and powers of
				319)		products. Note: Limit
				319)		to rational exponents.
				D 41 1 2 (2012)		to rational exponents.
				Pearson Algebra 2 (2012)		
				Section 5-4 (Pg. 303-		
				310)		
Relations and	How do you explain the	Polynomial	Represent	Polynomial Functions	Polynomial in	2.8.A2.B-Evaluate and
functions are	benefits of multiple methods	functions and	exponential		one variable	simplify algebraic
mathematical	of representing polynomial	equations	functions in	Objectives:		expressions; solve and
relationships that	functions (tables, graphs,		multiple ways,		Monomial	graph, quadratic,
can be represented	equations, and contextual		including tables,	SWBA to classify		exponential, and
and analyzed	situations)?		graphs, equations,	polynomial functions	Degree of the	logarithmic equations;
using words,			and contextual		monomial	and, solve and graph
tables, graphs, and			situations, and	SWBA to evaluate		systems of equations
equations.			make connections	polynomial functions.	Degree of the	and inequalities.
1			among	F	polynomial	2.8.A2.E-Use
			representations;	SWBA to identify	porjuonnar	combinations of
			relate the	general shapes of graph	Leading	symbols and numbers
			growth/decay rate	of polynomial functions.	coefficient	to create expressions,
			of the associated	or porynomial functions.	Cocinciciii	equations, and
			exponential	Suggested Text	Polynomial	inequalities in two or
			equation to each	Suggested Text	function	more variables,
			_	Clamaca Alcahua 2	Tunction	
			representation.	Glencoe Algebra 2	D. C.	systems of equations
				(2010)	Power function	and inequalities, and
				Section 6-3 (pgs 348-		functional relationships
				355)	End behavior	that model problem
						situations.
				Pearson Algebra 2	Quartic function	A2.2.2.1-Create,
				Section5-1 (Pg. 280-		interpret, and/or use
				287)	Turning point	polynomial,
						exponential, and/or

fu m re ca an us ta ec	chartenatical elationships that an be represented analyzed sing words, ables, graphs, and quations	How do you explain the benefits of multiple methods of representing polynomial functions (tables, graphs, equations, and contextual situations)? How can we show that	Polynomial functions and equations Algebraic	Represent exponential functions in multiple ways, including tables, graphs, equations, and contextual situations, and make connections among representations; relate the growth/decay rate of the associated exponential equation to each representation.	Analyzing Graphs of Polynomial Functions Objectives: SWBA to graph polynomial functions and locate their zeros. SWBA to find the relative maxima and minima of polynomial functions. Suggested Text-Glencoe Algebra 2 (2010) Section 6-4 (pgs 357-364) Pearson Algebra 2 Section5-2 (Pg. 288-295) Factoring Polynomials	Relative maximum Relative minimum Extrema Multiplicity Multiple zero Factor Theorem	logarithmic functions and their equations, graphs, or tables. A2.2.2.1.1-Create, interpret, and/or use the equation, graph, or table of a polynomial function (including quadratics). A2.2.2.1.4-Translate from one representation of a function to another (graph, table, and equation). 2.8.A2.B-Evaluate and simplify algebraic expressions; solve and graph, quadratic, exponential, and logarithmic equations; and, solve and graph systems of equations and inequalities. A2.2.2.1-Create, interpret, and/or use polynomial, exponential, and/or logarithmic functions and their equations, graphs, or tables. A2.2.2.1.1-Create, interpret, and/or use the equation, graph, or table of a polynomial function (including quadratics).
re ar	elationships that	algebraic properties and processes are extensions of arithmetic properties and processes, and how can we	properties processes and representations	properties and processes to quadratic exponential and	Objectives:	Binomial Trinomial	Expressions A2.1.2.2.1 Factor algebraic expressions

relationships are used as the rules of arithmetic and algebra and are useful for writing equivalent forms of expressions and solving equations and inequalities.	use algebraic properties and processes to solve problems?		polynomial expressions and equations and to matrices, and apply them to solve real world problems.	SWBA to factor polynomials by using various techniques Suggested Text-Glencoe Algebra 2 (2010) Section 0-3 (pgs P7-P8) Glencoe: Algebra 2 (2012) Section 0-3 (pgs P7-P8) Pearson Algebra 2 (2012) Section 5-3 (Pg. 296- 302) Objectives: SWBA to factor polynomials by using	Difference of two squares Perfect Square Trinomial	including the difference of two squares and trinomials limited to the form ax^2 + bx +c where a is not equal to zero.
				various techniques. Duration: 3 Days		
There are some mathematical relationships that are always true and these relationships are used as the rules of arithmetic and algebra and are useful for writing equivalent forms of expressions and solving equations and inequalities.	How can we show that algebraic properties and processes are extensions of arithmetic properties and processes, and how can we use algebraic properties and processes to solve problems?	Polynomial functions and equations	Represent exponential functions in multiple ways, including tables, graphs, equations, and contextual situations, and make connections among representations; relate the growth/decay rate of the associated exponential equation to each representation.	Solving Polynomial Equations Suggested Text-Glencoe Algebra 2 (2010) Section 6-5 (pgs 368- 375) Objectives: SWBA to factor polynomials. SWBA to solve polynomial equations by factoring.	Prime polynomials Quadratic form	2.8.A2.B-Evaluate and simplify algebraic expressions; solve and graph, quadratic, exponential, and logarithmic equations; and, solve and graph systems of equations and inequalities. 2.8.A2.E-Use combinations of symbols and numbers to create expressions, equations, and inequalities in two or more variables, systems of equations and inequalities, and functional relationships that model problem situations. A2.2.2.1-Create, interpret, and/or use

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						polynomial,
						exponential, and/or
						logarithmic functions
						and their equations,
						graphs, or tables.
						A2.2.2.1.1-Create,
						interpret, and/or use the
						equation, graph, or
						table of a polynomial
						function (including
						quadratics).
						A2.2.2.1.4-Translate
						from one
						representation of a
						function to another
						(graph, table, and
N. 1		41 1 .	D . 11		D :	equation).
Numbers,	How can we show that	Algebraic	Extend algebraic	The Remainder and	Prime	2.8.A2.B-Evaluate and
measures,	algebraic properties and	properties,	properties and	Factor Theorems	polynomials	simplify algebraic
expressions,	processes are extensions of	processes and	processes to			expressions; solve and
equations, and	arithmetic properties and	representations.	quadratic	Objectives:	Quadratic form	graph, quadratic,
inequalities can	processes, and how can we		exponential and			exponential, and
represent	use algebraic properties and		polynomial	SWBA to divide	Synthetic	logarithmic equations;
mathematical	processes to solve		expressions and	polynomials using long	Division	and, solve and graph
situations and	problems?		equations and to	division.		systems of equations
structures in many			matrices, and apply		Remainder	and inequalities.
equivalent forms.			them to solve real	SWBA to divide	Theorem	2.8.A2.E-Use
			world problems.	polynomials using		combinations of
				synthetic division.		symbols and numbers
				SWBA to evaluate		to create expressions,
				functions using synthetic		equations, and
				substitution.		inequalities in two or
						more variables,
				SWBA to determine		systems of equations
				whether a binomial is a		and inequalities, and
				factor of a polynomial		functional relationships
				using synthetic		that model problem
				substitution.		situations.
				Substitution.		A2.2.2.1-Create,
				Suggested Text		interpret, and/or use
				Glencoe Algebra 2		polynomial,
				(2010)		
						exponential, and/or
				Section 6-6 (pgs 377-		logarithmic functions
				382)		and their equations,
						graphs, or tables.

	T		T	Pearson Algebra 2	I	A2.2.2.1.1-Create,
				Section5-4 (Pg. 303-		interpret, and/or use the
				310)		equation, graph, or
				310)		table of a polynomial
						function (including
						quadratics).
						A2.2.2.1.4-Translate
						from one
						representation of a
						function to another
						(graph, table, and
						equation).
There are some	How can we show that	Algebraic	Extend algebraic	Theorems about Roots	Roots	2.8.A2.B-Evaluate and
mathematical	algebraic properties and	properties,	properties and	and Zeros of Polynomial		simplify algebraic
relationships that	processes are extensions of	processes and	processes to	Equations.	Zeros	expressions; solve and
are always true	arithmetic properties and	representations.	quadratic		Zeros	graph, quadratic,
and these	processes, and how can we		exponential and	Objectives:	D	exponential, and
relationships are	use algebraic properties and		polynomial		Descartes' Rule	logarithmic equations;
used as the rules	processes to solve		expressions and	SWBA to determine the	of Signs	and, solve and graph
of arithmetic and	problems?		equations and to	number and the type of		systems of equations
algebra and are			matrices, and apply	roots for a polynomial		and inequalities.
useful for writing			them to solve real	function.		2.8.A2.E-Use
equivalent forms			world problems.			combinations of
of expressions and				SWBA to find the zeros		symbols and numbers
solving equations				of a polynomial function.		to create expressions,
and inequalities.				G A LT A CL		equations, and
				Suggested Text-Glencoe		inequalities in two or
				Algebra 2 (2010)		more variables,
				Section 6-7 (pgs 383-390)		systems of equations and inequalities, and
				390)		functional relationships
				Pearson Algebra 2		that model problem
				Section5-5 (Pg. 312-		situations.
				318)		A2.2.2.1-Create,
				210)		interpret, and/or use
						polynomial,
						exponential, and/or
						logarithmic functions
						and their equations,
						graphs, or tables.
						A2.2.2.1.1-Create,
						interpret, and/or use the
						equation, graph, or
						table of a polynomial
						function (including

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						quadratics).
						A2.2.2.1.4-Translate
						from one
						representation of a
						function to another
						(graph, table, and
						equation).
There are some	How can we show that	Algebraic	Extend algebraic	Rational Zero Theorem	Roots	2.8.A2.B-Evaluate and
mathematical	algebraic properties and	properties,	properties and			simplify algebraic
relationships that	processes are extensions of	processes and	processes to	Objectives:	Zeros	expressions; solve and
are always true	arithmetic properties and	representations.	quadratic			graph, quadratic,
and these	processes, and how can we		exponential and	SWBA to identify	D.C. ID.	exponential, and
relationships are	use algebraic properties and		polynomial	possible rational zeros of	Rational Root	logarithmic equations;
used as the rules	processes to solve		expressions and	a polynomial function	Theorem	and, solve and graph
of arithmetic and	problems?		equations and to			systems of equations
algebra and are			matrices, and apply	SWBA to find all the	Conjugate Root	and inequalities.
useful for writing			them to solve real	rational zeros of a	Theorem	2.8.A2.E-Use
equivalent forms			world problems.	polynomial function.		combinations of
of expressions and				SWBA to solve	Descartes' Rule	symbols and numbers
solving equations				equations using the	of Signs	to create expressions,
and inequalities.				Rational Root Theorem.	01 218113	equations, and
						inequalities in two or
				SWBA to use the		more variables,
				conjugate Root Theorem.		systems of equations
						and inequalities, and
						functional relationships
				Suggested Text-		that model problem
						situations.
				Glencoe Algebra 2		A2.2.2.1-Create,
				(2010)		interpret, and/or use
				Section 6-8 (pgs 391-		polynomial,
				399)		exponential, and/or
						logarithmic functions
				Pearson Algebra 2		and their equations,
				Section5-5 (Pg. 312-		graphs, or tables.
				318)		A2.2.2.1.1-Create,
						interpret, and/or use the
						equation, graph, or
						table of a polynomial
						function (including
						quadratics).
						A2.2.2.1.4-Translate
						from one
						representation of a
						function to another

						(graph, table, and equation).	
Review Unit 3 Common Assessment Polynomials and Polynomial Functions Duration: 1 day							
	Test Unit 3 Cor	nmon Assessment	Polynomials and Pol	ynomial Functions Durati	ion: 1 day		

Unit 4 Inverses and Radical Functions and Relations

Estimated Unit Time Frames	Big Ideas	Essential Questions	Concepts (Know)	Competencies (Do)	Lessons/ Suggested Resources	Vocabulary	Standards/ Eligible Content
18 Days	Mathematical functions are relationships that assign each member of one set (domain) to a unique member of another set (range), and the relationship is recognizable across representations.	How can we show that algebraic properties and processes are extensions of arithmetic properties and processes, and how can we use algebraic properties and processes to solve problems?	Polynomial functions and equations	Extend algebraic properties and processes to quadratic exponential and polynomial expressions and equations and to matrices, and apply them to solve real world problems.	Operations on Functions Objectives: SWBA to find the sum, difference, product and quotient of functions. SWBA to find the composition of two functions. Suggested Text- Glencoe Algebra 2 (2010) Section 7-1 Operations on Functions (pgs 409- 416) Pearson Algebra 2 Section 6-6 (Pg. 398-404)	Composition of functions	2.8.A2.D-Demonstrate an understanding and apply properties of functions (domain, range, inverses) and characteristics of families of functions (linear, polynomial, rational, exponential, logarithmic). A2.2.1.1-Analyze and/or use patterns or relations. A2.2.1.1.3-Determine the domain, range, or inverse of a relation.
	Patterns exhibit relationships that can be extended,	What are the advantages/disadvantages of the various methods to represent exponential	Polynomial functions and equations	Represent exponential functions in multiple ways,	Inverse Functions and Relations Objectives:	Inverse relation Inverse function	2.8.A2.D-Demonstrate an understanding and apply properties of functions (domain,

described, and generalized.	functions (table, graph, equation) and how do we choose the most appropriate representation?		including tables, graphs, equations, and contextual situations, and make connections among representations; relate the growth/decay rate of the associated exponential equation to each representation.	SWBA to find the inverse of a function or a relation. SWBA to determine if two functions or relations are inverses. Suggested Text- Glencoe Algebra 2 (2010) Section 7-2 (pgs 417-422) Pearson Algebra 2 Section 6-7 (Pg. 405-412)	One-to-One function	range, inverses) and characteristics of families of functions (linear, polynomial, rational, exponential, logarithmic). A2.2.1.1-Analyze and/or use patterns or relations. A2.2.1.1.3-Determine the domain, range, or inverse of a relation.
Mathematical functions are relationships that assign each member of one set (domain) to a unique member of another set (range), and the relationship is recognizable across representations.	equation) and how do we	Polynomial functions and equations	Represent exponential functions in multiple ways, including tables, graphs, equations, and contextual situations, and make connections among representations; relate the growth/decay rate of the associated exponential equation to each representation.	Square Root Functions and Inequalities Objectives: SWBA to graph and analyze square root functions. SWBA to graph square root inequalities. Suggested Text-Glencoe Algebra 2 (2010) Section 7-3 (pgs 424-430) Pearson Algebra 2 Section 6-8 (Pg. 414-420)	Square root function Radical functions Square root inequality	2.8.A2.D-Demonstrate an understanding and apply properties of functions (domain, range, inverses) and characteristics of families of functions (linear, polynomial, rational, exponential, logarithmic). A2.2.1.1-Analyze and/or use patterns or relations. A2.2.1.1.3-Determine the domain, range, or inverse of a relation.
Numbers, measures, expressions, equations, and inequalities can	How can we show that algebraic properties and processes are extensions of arithmetic properties and processes, and how can we	Algebraic properties, processes and representations.	Extend algebraic properties and processes to quadratic exponential and	nth Roots Objectives:	Nth root Radical sign	2.2.A2.C-Evaluate numerical expressions of complex numbers that include the four basic operations and

represent	use algebraic properties and		polynomial	SWBA to simplify	Index	operations of powers,
mathematical	processes to solve		expressions and	radicals.	muca	opposites, conjugates,
situations and	problems?		equations and to	radicais.		and absolute values.
structures in many	problems:		matrices, and apply	SWBA to use a	Radicand	A2.1.2.1-Use
equivalent forms.			them to solve real	calculator to estimate		exponents, roots,
equivalent forms.			world problems.	radicals.	Principal root	and/or absolute values
			world problems.	radicals.	1	to represent equivalent
						forms or to solve
				Suggested Text-Glencoe		problems.
				Algebra 2 (2010)		A2.1.2.1.2-
				Section 7-4 (pgs 431-		Simplify/evaluate
				436)		expressions involving
				D Alb 2 (2012)		positive and negative
				Pearson Algebra 2 (2012)		exponents and/or roots
				Section 6-2		(may contain all types of real numbers
				(Pg. 367-373)		
						exponents should not
NT 1	TT 1 d :	A1 1 '	F (1 1 1 1 1	0 4 4 5 1	D (' 1' '	exceed power of 10).
Numbers,	How can we show that	Algebraic	Extend algebraic	Operations with Radical	Rationalizing	2.2.A2.C-Evaluate
measures,	algebraic properties and	properties,	properties and	Expressions	the denominator	numerical expressions
expressions,	processes are extensions of	processes and	processes to			of complex numbers
equations, and	arithmetic properties and	representations.	quadratic	01: ::	Like radical	that include the four
inequalities can	processes, and how can we		exponential and	Objectives:	expressions	basic operations and
represent	use algebraic properties and		polynomial	CMAD V V 1.C		operations of powers,
mathematical	processes to solve		expressions and	SWBA to simplify	Conjugate	opposites, conjugates,
situations and	problems?		equations and to	radical expressions	Conjugute	and absolute values.
structures in many			matrices, and apply	SWBA to add, subtract		A2.1.2.1-Use
equivalent forms.			them to solve real world problems.	multiply and divide		exponents, roots,
			world problems.			and/or absolute values
				radical expressions.		to represent equivalent
				Suggested Text-		forms or to solve problems.
				Suggested Text-		
				Clanges Alashus 2		A2.1.2.1.2- Simplify/evaluate
				Glencoe Algebra 2 (2010)		expressions involving
				Section 7-5 (pgs 439-		positive and negative
				Section 7-5 (pgs 459- 445)		exponents and/or roots
				++J)		(may contain all types
				Pearson Algebra 2 (2012)		of real numbers
				Section 6-2		exponents should not
				(Pg. 303-310)		exceed power of 10).
Numbers,	How can we show that	Algebraic	Extend algebraic	Rational Exponents	Rational	2.2.A2.C-Evaluate
measures,	algebraic properties and	properties,	properties and	Kational Exponents	Exponents	numerical expressions
expressions,	processes are extensions of	properties, processes and	processes to	Objectives:	Exponents	of complex numbers
equations, and	arithmetic properties and	representations.	quadratic	Objectives.		that include the four
equations, and	arunnene properties and	representations.	quauranc			mai menude me mui

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inequalities can	processes, and how can we		exponential and	SWBA to write		basic operations and
represent	use algebraic properties and		polynomial	expressions with rational		operations of powers,
mathematical	processes to solve		expressions and	exponents in radical		opposites, conjugates,
situations and	problems?		equations and to	form.		and absolute values.
structures in many			matrices, and apply			A2.1.2.1-Use
equivalent forms.			them to solve real	SWBA to write		exponents, roots,
			world problems.	expressions in radical		and/or absolute values
			_	form with rational		to represent equivalent
				exponents.		forms or to solve
				•		problems.
				SWBA to simplify		A2.1.2.1.2-
				expressions in		Simplify/evaluate
				exponential or radical		expressions involving
				form.		positive and negative
						exponents and/or roots
				Suggested Text-Glencoe		(may contain all types
				Algebra 2 (2010)		of real numbers
				Section 7-6 (pgs 446-		exponents should not
				452)		exceed power of 10).
				432)		exceed power or 10).
				Pearson Algebra 2 (2012)		
				Section 6-4		
				(Pg. 381-388)		
There are some	How can we show that	Polynomial	Extend algebraic	Solving Radical	Radical	2.8.A2.B-Evaluate and
mathematical	algebraic properties and	functions and	properties and	Equations and	equation	simplify algebraic
relationships that	processes are extensions of	equations	processes to	Inequalities	equation	expressions; solve and
are always true	arithmetic properties and	equations	quadratic	mequanties		graph, quadratic,
and these	processes, and how can we		exponential and	Objectives:	Extraneous	exponential, and
relationships are	use algebraic properties and		polynomial	Objectives.	solution	logarithmic equations;
used as the rules	processes to solve		expressions and	SWBA to solve		and, solve and graph
of arithmetic and	problems?		equations and to	equations containing	Radical	systems of equations
algebra and are	problems:		matrices, and apply	radicals.	inequality	and inequalities.
useful for writing			them to solve real	SWBA to solve	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2.8.A2.E-Use
equivalent forms			world problems.	inequalities containing		combinations of
of expressions and			world problems.	radicals.		
solving equations				Taulcais.		symbols and numbers
and inequalities.				Suggested Text-Glencoe		to create expressions,
and mequanties.				Algebra 2 (2010)		equations, and inequalities in two or
				Section 7-7 (pgs 453-		more variables,
				459)		systems of equations
				D 41 1 2		and inequalities, and
				Pearson Algebra 2		functional relationships
				(2012)		that model problem
				Section 6-5 (Pg. 390-		situations.
				397)		2.8.A2.F-Interpret the

							results of solving equations, inequalities, systems of equations, and systems of inequalities in the context of the situation that motivated the model. A2.1.3.1-Write and/or solve non-linear equations using various methods. A2.1.3.1.2-Solve equations involving rational and/or radical expressions
		Review Unit 4 Com	mon Assessment II	nverses and Radical F	unctions and Relations C	ouration: 1 day	
		Test Unit 4 Comm	on Assessment In	verses and Radical Fu	inctions and Relations C	Ouration: 1 day	
		Unit 5 Expone	ential and Log	arithmic Funct	ions and Relation	s	
Estimated Unit Time Frames	Big Ideas	Essential Questions	Concepts (Know)	Competencies (Do)	Lessons/ Suggested Resources	Vocabulary	Standards/ Eligible Content
27 Days	There are some mathematical relationships that are always true and these relationships are used as the rules of arithmetic and algebra and are useful for writing equivalent forms	What are the advantages/disadvantages of the various methods to represent exponential functions (table, graph, equation) and how do we choose the most appropriate representation?	Exponential functions and equations.	Represent exponential functions in multiple ways, including tables, graphs, equations, and contextual situations, and make connections among representations;	Exploring Exponential Models Graphing Exponential Functions Objectives: SWBA to graph exponential growth functions	Exponential Function Exponential Growth Asymptote Growth factor	2.1.A2.F-Understand the concepts of exponential and logarithmic forms and use the inverse relationships between exponential and logarithmic expression to determine unknown quantities in equations. 2.8.A2.B-Evaluate and

		1				
of expressions ar			relate the		Exponential	simplify algebraic
solving equations	S		growth/decay rate	SWBA to graph	decay	expressions; solve and
and inequalities.			of the associated	exponential decay		graph, quadratic,
			exponential	functions.	Decay factor	exponential, and
			equation to each			logarithmic equations;
			representation.			and, solve and graph
				Suggested Text-		systems of equations
						and inequalities.
				Glencoe Algebra 2		2.8.A2.D-Demonstrate
				(2010)		an understanding and
				Section 8-1 (pgs 475-		apply properties of
				482)		functions (domain,
						range, inverses) and
				Pearson Algebra 2		characteristics of
				Section7-1 (Pg. 434-		families of functions
				441)		(linear, polynomial,
						rational, exponential,
						logarithmic).
						A2.1.2.1-Use
						exponents, roots,
						and/or absolute values
						to represent equivalent
						forms or to solve
						problems.
						A2.1.2.1.4-Simplify or
						evaluate expressions
						involving logarithms
						and exponents (e.g.,
						$\log 28 = 3 \text{ or } \log 42 =$
						$\hat{A}^{1/2}$).
						A2.2.1.1-Analyze
						and/or use patterns or
						relations.
						A2.2.1.1.3-Determine
						the domain, range, or
						inverse of a relation.
						A2.2.2.1-Create,
						interpret, and/or use
						polynomial,
						exponential, and/or
						logarithmic functions
						and their equations,
						graphs, or tables.
						A2.2.2.1.2-Create,
						interpret, and/or use the

						equation, graph, or
						table of an exponential
						or logarithmic function (including common
						and natural
						logarithms).
						A2.1.3.1 Write and/or
						solve non-linear
						equations using various
						methods
						A2.1.3.1.4 Write, solve and or apply linear or
						exponential growth of
						decay (including
						problem situations).
There are some	What are the	Exponential	Represent	Solving Exponential	Exponential	2.1.A2.F-Understand
mathematical	advantages/disadvantages of	functions and	exponential	Equations and	Equation	the concepts of
relationships that	the various methods to	equations.	functions in	Inequalities		exponential and
are always true	represent exponential		multiple ways,	OI: ···	Exponential	logarithmic forms and
and these relationships are	functions (table, graph, equation) and how do we		including tables, graphs, equations,	Objectives:	Inequality	use the inverse relationships between
used as the rules	choose the most appropriate		and contextual	SWBA to solve	Natural base	exponential and
of arithmetic and	representation?		situations, and	exponential equations.	exponential	logarithmic expression
algebra and are	· ·		make connections	1	function	to determine unknown
useful for writing			among	SWBA to solve		quantities in equations.
equivalent forms			representations;	exponential inequalities	Continuously	2.8.A2.E-Use
of expressions and			relate the	G	compounded	combinations of
solving equations			growth/decay rate of the associated	Suggested Text-Glencoe Algebra 2 (2010)	interest	symbols and numbers
and inequalities.			exponential	Section 8-2 (pgs 485-		to create expressions, equations, and
			equation to each	491)		inequalities in two or
			representation.	.51)		more variables,
			1	Pearson Algebra 2 (2012)		systems of equations
				Section 7-5 (Pg.469-475)		and inequalities, and
						functional relationships
						that model problem
						situations.
						2.8.A2.F-Interpret the results of solving
						equations, inequalities,
						systems of equations,
						and systems of
						inequalities in the
						context of the situation
						that motivated the

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	Numbers, measures, expressions, equations, and inequalities can represent mathematical situations and structures in many equivalent forms.	How can we show that algebraic properties and processes are extensions of arithmetic properties and processes, and how can we use algebraic properties and processes to solve problems?	Exponential functions and equations.	Represent exponential functions in multiple ways, including tables, graphs, equations, and contextual situations, and make connections among representations; relate the growth/decay rate of the associated exponential equation to each representation.	Logarithm and Logarithmic Functions Objectives: SWBA to write and evaluate logarithmic expressions. SWBA to graph logarithmic functions. Suggested Text Glencoe Algebra 2 (2010) Section 8-3 (pgs 492- 499) Pearson Algebra 2 (2012) Section7-3 (Pg. 451- 458)	Logarithm Logarithmic function Common logarithm Logarithmic scale	model. A2.1.3.1-Write and/or solve non-linear equations using various methods. A2.1.3.1.3-Write and/or solve a simple exponential or logarithmic equation (including common and natural logarithms). 2.8.A2.B-Evaluate and simplify algebraic expressions; solve and graph, quadratic, exponential, and logarithmic equations; and, solve and graph systems of equations and inequalities. 2.8.A2.E-Use combinations of symbols and numbers to create expressions, equations, and inequalities in two or more variables, systems of equations and inequalities, and functional relationships that model problem situations. A2.2.2.1-Create, interpret, and/or use polynomial, exponential, and/or
					Pearson Algebra 2 (2012) Section7-3 (Pg. 451-		that model problem situations. A2.2.2.1-Create, interpret, and/or use
							and their equations, graphs, or tables. A2.2.2.1.2-Create, interpret, and/or use the equation, graph, or table of an exponential or logarithmic function

						(including common
						and natural
						logarithms).
						A2.2.2.1.4-Translate
						from one
						representation of a
						function to another
						(graph, table, and
						equation).
There are some	What are the	Exponential	Represent	Solving Logarithmic	Logarithmic	2.1.A2.F-Understand
mathematical	advantages/disadvantages of	functions and	exponential	Equations and	equation	the concepts of
relationships that	the various methods to	equations.	functions in	Inequalities	1	exponential and
are always true	represent exponential	1	multiple ways,	1	Logarithmic	logarithmic forms and
and these	functions (table, graph,		including tables,	Objectives:	Inequality	use the inverse
relationships are	equation) and how do we		graphs, equations,			relationships between
used as the rules	choose the most appropriate		and contextual	SWBA to solving		exponential and
of arithmetic and	representation?		situations, and	Logarithmic Equations.		logarithmic expression
algebra and are	1		make connections			to determine unknown
useful for writing			among	SWBA to solving		quantities in equations.
equivalent forms			representations;	Logarithmic Inequalities.		2.8.A2.E-Use
of expressions and			relate the			combinations of
solving equations			growth/decay rate	Suggested Text-		symbols and numbers
and inequalities.			of the associated			to create expressions,
•			exponential	Glencoe Algebra 2		equations, and
			equation to each	(2010)		inequalities in two or
			representation.	Section 8-4 (pgs. 503-		more variables,
			1	507)		systems of equations
				,		and inequalities, and
				Pearson Algebra 2 (2012)		functional relationships
				Section 7-5 (Pg. 469-		that model problem
				476)		situations.
				,		2.8.A2.F-Interpret the
						results of solving
						equations, inequalities,
						systems of equations,
						and systems of
						inequalities in the
						context of the situation
						that motivated the
						model.
						A2.1.3.1-Write and/or
						solve non-linear
						equations using various
						methods.
						A2.1.3.1.3-Write

							and/or solve a simple exponential or logarithmic equation
							(including common
							and natural
							logarithms).
math relat are a and relat used of ar algel usefu equi of ex solvi	ere are some thematical ationships that always true I these ationships are d as the rules arithmetic and ebra and are ful for writing tivalent forms expressions and ving equations I inequalities.	What are the advantages/disadvantages of the various methods to represent exponential functions (table, graph, equation) and how do we choose the most appropriate representation?	Exponential functions and equations.	Represent exponential functions in multiple ways, including tables, graphs, equations, and contextual situations, and make connections among representations; relate the growth/decay rate of the associated exponential equation to each representation.	Properties of Logarithms Objectives: SWBA to use properties of logarithms to simplify, expand and evaluate logarithmic expressions. SWBA to solve logarithmic Equations using the properties of logarithms. Suggested Text Glencoe Algebra 2 (2010) Section 8-5 (pgs 509-515) Pearson Algebra 2 (2012) Section 7-4 (Pg. 462-488) Objectives: SWBA to use properties of logarithms to simplify, expand and evaluate logarithmic expressions.	Change of Base Formula	logarithms). 2.1.A2.F-Understand the concepts of exponential and logarithmic forms and use the inverse relationships between exponential and logarithmic expression to determine unknown quantities in equations. 2.8.A2.E-Use combinations of symbols and numbers to create expressions, equations, and inequalities in two or more variables, systems of equations and inequalities, and functional relationships that model problem situations. 2.8.A2.F-Interpret the results of solving equations, inequalities, systems of equations, and systems of inequalities in the context of the situation that motivated the model. A2.1.3.1-Write and/or solve non-linear equations using various methods. A2.1.3.1.3-Write and/or solve a simple exponential or
							logarithmic equation

						(including common
						and natural
						logarithms).
There are some	What are the	Exponential	Represent	Common Logarithms	Common	2.1.A2.F-Understand
mathematical	advantages/disadvantages of	functions and	exponential		logarithm	the concepts of
relationships that	the various methods to	equations.	functions in	Objectives:		exponential and
are always true	represent exponential	1	multiple ways,		Change of Base	logarithmic forms and
and these	functions (table, graph,		including tables,	SWBA to solve	Formula	use the inverse
relationships are	equation) and how do we		graphs, equations,	exponential equations	Tomula	relationships between
used as the rules	choose the most appropriate		and contextual	and inequalities using		exponential and
of arithmetic and	representation?		situations, and	common logarithms.		logarithmic expression
algebra and are			make connections			to determine unknown
useful for writing			among	SWBA to evaluate		quantities in equations.
equivalent forms			representations;	logarithmic expressions		2.8.A2.B-Evaluate and
of expressions and			relate the	using the Change of Base		simplify algebraic
solving equations			growth/decay rate	Formula.		expressions; solve and
and inequalities.			of the associated			graph, quadratic,
			exponential	Suggested Text-Glencoe		exponential, and
			equation to each	Algebra 2 (2010)		logarithmic equations;
			representation.	Section 8-6 (pgs 516-		and, solve and graph
				522)		systems of equations
				D A1 1 2 (2012)		and inequalities.
				Pearson Algebra 2 (2012)		A2.1.2.1-Use
				Section7-3 (Pg. 451-458)		exponents, roots, and/or absolute values
				438)		to represent equivalent
						forms or to solve
						problems.
						A2.1.2.1.4-Simplify or
						evaluate expressions
						involving logarithms
						and exponents (e.g.,
						log28 = 3 or log42 =
						½).
						A2.2.2.1.2-Create,
						interpret, and/or use the
						equation, graph, or
						table of an exponential
						or logarithmic function
						(including common
						and natural
						logarithms).
There are some	What are the	Exponential	Represent	Base e and Natural	Natural base, e	2.1.A2.F-Understand
mathematical	advantages/disadvantages of	functions and	exponential	Logarithms		the concepts of
relationships that	the various methods to	equations.	functions in			exponential and

<u> </u>		<u> </u>				
are always true	represent exponential		multiple ways,	Objectives:		logarithmic forms and
and these	functions (table, graph,		including tables,		Natural base	use the inverse
relationships are	equation) and how do we		graphs, equations,	SWBA to evaluate	exponential	relationships between
used as the rules	choose the most appropriate		and contextual	expressions involving the	function	exponential and
of arithmetic and	representation?		situations, and	natural base and natural	1411411011	logarithmic expression
algebra and are			make connections	logarithms.		to determine unknown
useful for writing			among		Natural	quantities in equations.
equivalent forms			representations;	SWBA to solve	logarithm	2.8.A2.B-Evaluate and
of expressions and			relate the	exponential equations		simplify algebraic
solving equations			growth/decay rate	using natural logarithms		expressions; solve and
and inequalities.			of the associated			graph, quadratic,
			exponential			exponential, and
			equation to each	Suggested Text		logarithmic equations;
			representation.			and, solve and graph
			¥	Glencoe Algebra 2		systems of equations
				(2010)		and inequalities.
				Section 8-7 (pgs 525-		2.8.A2.D-Demonstrate
				530)		an understanding and
						apply properties of
				Pearson Algebra 2		functions (domain,
				Section7-6 (Pg. 478-		range, inverses) and
				483)		characteristics of
				403)		families of functions
						(linear, polynomial,
				•		rational, exponential,
						logarithmic).
						A2.1.2.1-Use
						exponents, roots,
						and/or absolute values
						to represent equivalent
						forms or to solve
						problems.
						A2.1.2.1.4-Simplify or
						evaluate expressions
						involving logarithms
						and exponents (e.g.,
						log28 = 3 or log42 =
						½).
						A2.2.1.1-Analyze
						and/or use patterns or
						relations.
						A2.2.1.1.3-Determine
						the domain, range, or
						inverse of a relation.
						A2.2.2.1-Create,

There are some mathematical relationships that are always true and these relationships are used as the rules of arithmetic and algebra and are useful for writing	What are the advantages/disadvantages of the various methods to represent exponential functions (table, graph, equation) and how do we choose the most appropriate representation?	Exponential functions and equations.	Represent exponential functions in multiple ways, including tables, graphs, equations, and contextual situations, and make connections among	Using Exponential and Logarithmic Functions Objectives: SWBA to solve problems involving exponential and logarithmic functions.	Natural base, e Natural base exponential function Natural logarithm	interpret, and/or use polynomial, exponential, and/or logarithmic functions and their equations, graphs, or tables. A2.2.2.1.2-Create, interpret, and/or use the equation, graph, or table of an exponential or logarithmic function (including common and natural logarithms). 2.1.A2.F-Understand the concepts of exponential and logarithmic forms and use the inverse relationships between exponential and logarithmic expression to determine unknown quantities in equations.
of expressions and solving equations and inequalities.			relate the growth/decay rate of the associated exponential equation to each representation.	to solve problems involving logistic growth. SWBA to graph exponential growth functions. SWBA to graph exponential decay functions. Suggested Text- Glencoe Algebra 2 (2010) Section 8-1 (pgs 475-482) Section 8-8 (pgs 533-539)		simplify algebraic expressions; solve and graph, quadratic, exponential, and logarithmic equations; and, solve and graph systems of equations and inequalities. 2.8.A2.D-Demonstrate an understanding and apply properties of functions (domain, range, inverses) and characteristics of families of functions (linear, polynomial, rational, exponential, logarithmic). A2.1.2.1-Use exponents, roots,

				Pearson Algebra 2		and/or absolute values
				Section7-1 (Pg. 434-		to represent equivalent
				441)		forms or to solve
				Section 7-2 (pg. 442-450)		problems.
				(10.1.2 100)		A2.1.2.1.4-Simplify or
						evaluate expressions
						involving logarithms
						and exponents (e.g.,
						$log28 = 3 \text{ or } log42 = \hat{A}^{1/2}$).
						A2.2.1.1-Analyze
						and/or use patterns or
						relations.
						A2.2.1.1.3-Determine
						the domain, range, or
						inverse of a relation.
						A2.2.2.1-Create,
						interpret, and/or use
						polynomial,
						exponential, and/or
						logarithmic functions
						and their equations,
						graphs, or tables. A2.2.2.1.2-Create,
						interpret, and/or use the
						equation, graph, or
						table of an exponential
						or logarithmic function
						(including common
						and natural
						logarithms).
						A2.1.3.1 Write and/or
						solve non-linear
						equations using various
						methods
						A2.1.3.1.4 Write, solve
						and or apply linear or
						exponential growth of
						decay (including
						problem situations).
	Review Unit 5 Common	Assessment Expon	ential and Logarithm	nic Functions and Relations	5 Duration: 1 day	

Test Unit 5 Common Assessment Exponential and Logarithmic Functions and Relations Duration: 1 day

Unit 6 Rational Functions and Relations

Estimated Unit Time Frames	Big Ideas	Essential Questions	Concepts (Know)	Competencies (Do)	Lessons/ Suggested Resources	Vocabulary	Standards/ Eligible Content
17 Days	Numbers, measures, expressions, equations, and inequalities can represent mathematical situations and structures in many equivalent forms.	How can we show that algebraic properties and processes are extensions of arithmetic properties and processes, and how can we use algebraic properties and processes to solve problems?	Polynomial functions and equations	Extend algebraic properties and processes to quadratic exponential and polynomial expressions and equations and to matrices, and apply them to solve real world problems.	Rational Expressions Objectives: SWBA to simplify rational expressions. SWBA to simplify Complex fractions. SWBA to multiply and divide rational expressions. Suggested Text-Glencoe Algebra 2 (2010) Section 9-1 (pgs 553-561) Pearson Algebra 2 Section 8-4 (Pg. 527-533)	Rational expression Simplest form Complex Fractions	2.1.A2.B-Use factoring to create equivalent forms of polynomials 2.8.A2.B-Evaluate and simplify algebraic expressions; solve and graph, quadratic, exponential, and logarithmic equations; and, solve and graph systems of equations and inequalities. 2.8.A2.E-Use combinations of symbols and numbers to create expressions, equations, and inequalities in two or more variables, systems of equations and inequalities, and functional relationships that model problem situations. 2.8.A2.F-Interpret the results of solving equations, inequalities, systems of equations, and systems of inequalities in the context of the situation that motivated the model.

Numbers, measures, expressions, equations, and inequalities can represent	How can we show that algebraic properties and processes are extensions of arithmetic properties and processes, and how can we use algebraic properties and	Polynomial functions and equations	Extend algebraic properties and processes to quadratic exponential and polynomial	Adding and Subtracting Rational Expressions Objectives: SWBA to determine the	Rational Expressions Complex fraction	A2.1.2.2-Simplify expressions involving polynomials. A2.1.2.2.1-Factor algebraic expressions, including difference of squares and trinomials. Note: Trinomials limited to the form ax2+bx+c where a is not equal to 0. A2.1.2.2.2-Simplify rational algebraic expressions. A2.1.3.1-Write and/or solve non-linear equations using various methods. A2.1.3.1.2-Solve equations involving rational and/or radical expressions 2.1.A2.B-Use factoring to create equivalent forms of polynomials A2.1.2.2-Simplify expressions involving polynomials.
						A2.1.3.1-Write and/or solve non-linear equations using various methods. A2.1.3.1.2-Solve equations involving
measures, expressions, equations, and	algebraic properties and processes are extensions of arithmetic properties and	functions and	properties and processes to quadratic	Rational Expressions	Expressions Complex	to create equivalent forms of polynomials A2.1.2.2-Simplify
				Suggested Text-Glencoe Algebra 2 (2010) Section 9-2 (pgs 562- 568) Pearson Algebra 2 Section 8-5 (Pg. 534- 541)		

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Relations and	How do you explain the	Polynomial	Represent a	Graphing Rational	Rational	2.8.A2.D
functions are	benefits of multiple methods	functions and	polynomial	Functions	function	Demonstrate an
mathematical	of representing polynomial	equations	function in multiple			understanding and
relationships that	functions (tables, graphs,		ways, including	Objectives:	Vertical	apply properties of
can be represented	equations, and contextual		tables, graphs,		asymptote	functions (domain,
and analyzed	situations)?		equations, and	SWBA to graph rational	1	range, inverses) and
using words,			contextual	functions with vertical	TT . 1 1	characteristics of
tables, graphs, and			situations, and	and horizontal	Horizontal	families of functions (
equations.			make connections	asymptotes.	asymptote	linear, polynomial,
			among			rational, exponential
			representations;	SWBA to graph rational	Oblique	and logarithmic).
			relate the solution	functions with oblique	asymptote	A2.2.1 Patterns,
			of the associated	asymptotes and point		Relations and
			polynomial	discontinuity.	Continuous	Functions
			equation to each	,	Graph	A2.2.1.1 Analyze
			representation.	Suggested Text-	Grapii	and/or use patterns or
			_ ^	Glencoe Algebra 2		relations.
				(2010)	Discontinuous	A2.2.1.1.3 Determine
				Section 9-3 (pgs 569-	graph	the domain, range or
				575)		inverse of a
				,	Point	relation.
				Pearson Algebra 2	discontinuity	
				Section 8-3 (Pg. 515-	discontinuity	
				523)		
				(22)	Removable	
					discontinuity	
					Non-removable	
					discontinuity	
There are some	How do you explain the	Polynomial	Represent a	Solving Rational	Rational	2.8.A2.B-Evaluate and
mathematical	benefits of multiple methods	functions and	polynomial	Equations and	equation	simplify algebraic
relationships that	of representing polynomial	equations	function in multiple	Inequalities	1	expressions; solve and
are always true	functions (tables, graphs,		ways, including		W-:-1-41	graph, quadratic,
and these	equations, and contextual		tables, graphs,		Weighted	exponential, and
relationships are	situations)?		equations, and	Objectives:	average	logarithmic equations;
used as the rules	· · · · · · · · · · · · · · · · · · ·		contextual	3		and, solve and graph
of arithmetic and			situations, and	SWBA to solve rational	Rational	systems of equations
algebra and are			make connections	equations	inequality	and inequalities.
useful for writing			among			2.8.A2.E-Use
equivalent forms			representations;	SWBA to solve rational		combinations of
of expressions and			relate the solution	inequalities.		symbols and numbers
solving equations			of the associated	moquanties.		to create expressions,
and inequalities.			polynomial	Suggested Text-		equations, and
and inequalities.			equation to each	Buggested Text-		inequalities in two or
						more variables,
			representation.			more variables,

	Glencoe Algebra 2 (2010) Section 9-6 (pgs 594- 602) Pearson Algebra 2 Section 8-6 (Pg. 542- 548) (Pgs 550-551)	systems of equations and inequalities, and functional relationships that model problem situations. 2.8.A2.F-Interpret the results of solving equations, inequalities, systems of equations, and systems of inequalities in the context of the situation that motivated the model. A2.1.3.1-Write and/or solve non-linear equations using various methods. A2.1.3.1.2-Solve equations involving rational and/or radical expressions				
Review Unit 6 Common Assessment Rational Functions and Relations Duration: 1 day						

Test Unit 6 Common Assessment Rational Functions and Relations Duration: 1 day

Unit 7 Families oF Functions

Estimated Unit Time Frames	Big Ideas	Essential Questions	Concepts (Know)	Competencies (Do)	Lessons/ Suggested Resources	Vocabulary	Standards/ Eligible Content
17 Days	Families of functions exhibit properties and behaviors that can be recognized across representations.	How do you explain the benefits of multiple methods of representing polynomial functions (tables, graphs, equations, and contextual situations)?	Polynomial functions and equations	Represent a polynomial function in multiple ways, including tables, graphs, equations, and contextual	Relations and Functions Objectives: SWBA to analyze relations and functions.	One to one function Onto function Discrete relation	2.8.A2.D-Demonstrate an understanding and apply properties of functions (domain, range, inverses) and characteristics of families of functions

Functions transform combined composed create new functions mathemat real world situations. Families of functions properties behaviors be recogn across representa Functions transform combined composed create new functions mathemat real world situations.	How do you explain the benefits of multiple methods of representing polynomial functions (tables, graphs, equations, and contextual situations)? tions. can be ed, and to // in ical and	Polynomial functions and equations Polynomial functions and equations Represent a polynomial function in multiple ways, including tables, graphs, equations, and contextual situations, and make connections among representations; relate the solution of the associated polynomial equation to each representation.	Suggested Text Glencoe Algebra 2 (2010) Section 2-1 (pgs. 61-67) Pearson Algebra 2 (2012) Section 2-1 (Pg. 60-67) Linear Relations and Functions Objectives: SWBA to identify linear relations and functions. SWBA to write linear equations in standard form. Suggested Text Glencoe Algebra 2 (2010) Section 2-2 (Pgs. 69-74) Pearson Algebra 2 (2012) Section 2-3 (Pg. 74-80)	Continuous relation Vertical line test Independent variable Dependent Variable Function notation Linear relation Nonlinear relation Linear equation Linear function Standard form y-intercept x-intercept	(linear, polynomial, rational, exponential, logarithmic). A2.2.1 Patterns, relations and functions A2.2.1.1-Analyze and/or use patterns or relations. A2.2.1.1.1- Analyze a set of data for the existence of a pattern and represent the pattern with a rule algebraically and /or graphically. A2.2.1.1.3- determine domain, range, or inverse of a relation. 2.8.A2.D-Demonstrate an understanding and apply properties of functions (domain, range, inverses) and characteristics of families of functions (linear, polynomial, rational, exponential, logarithmic). A2.2.1 Patterns, relations and functions A2.2.1.1-Analyze and/or use patterns or relations. A2.2.1.1.1- Analyze a set of data for the existence of a pattern and represent the pattern with a rule algebraically and /or graphically.
Families of functions properties behaviors	exhibit benefits of multiple methods and of representing polynomial	Polynomial Represent a functions and equations function in multiple ways, including	Parent Functions and Transformations ple Objectives:	Bivariate data	2.3.A2.E-Describe how a change in the value of one variable in formulas affects the

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	be recognized	equations, and contextual		tables, graphs,	GM/DA : 1 ::6		value of the
	across	situations)?		equations, and	SWBA to identify and	Scatter plot	measurement.
	representations.			contextual	use parent functions	_	2.8.A2.D-Demonstrate
				situations, and	•	D-4 -1-4	an understanding and
	Functions can be			make connections	SWBA to describe	Dot plot	apply properties of
	transformed,			among	transformations of		functions (domain,
	combined, and			representations;	functions.	Positive	range, inverses) and
	composed to			relate the solution		correlation	characteristics of
	create new			of the associated			families of functions
	functions in			polynomial	Suggested Text	NT	(linear, polynomial,
				equation to each		Negative	rational, exponential,
	mathematical and			representation.	Glencoe Algebra 2	correlation	logarithmic).
	real world			representation	(2010)		A2.2.1.1-Analyze
	situations.				Section 2-7 (pgs 109-	Line of fit	and/or use patterns or
					116)		relations.
					110)	Prediction	A2.2.1.1.4-Identify
					Pearson Algebra 2 (2012)		and/or determine the
					Section 2-6 (Pg. 99-106)	equation	
					Section 2-6 (Fg. 99-106)		characteristics of an
						Regression line	exponential, quadratic,
							or polynomial function
						Correlation	(e.g., intervals of
							increase/decrease,
						coefficient	intercepts, zeros, and
							asymptotes).
							A2.2.2.Describe
							and/or determine
							families of functions.
							A2.2.2.1-Identify or
							describe the effect of
							changing parameters
							within a family of
							functions
	Families of	How do you explain the	Polynomial	Represent a	Graphing Linear and	Linear	2.8.A2.D-Demonstrate
1	functions exhibit	benefits of multiple methods	functions and	polynomial	Absolute Value	inequality	an understanding and
	properties and	of representing polynomial	equations	function in multiple	Inequalities	1	apply properties of
	behaviors that can	functions (tables, graphs,	- quantions	ways, including	inequalities	Boundary	functions (domain,
	be recognized	equations, and contextual		tables, graphs,	Objectives:	Doundary	range, inverses) and
	across	situations)?		equations, and	Sojecuves.		characteristics of
	representations.	Situations):		contextual	SWBA to graph linear		families of functions
	representations.			situations, and	inequalities.		(linear, polynomial,
					mequanties.		
	Functions can be			make connections	CW/D A to cm111		rational, exponential,
	transformed,			among	SWBA to graph absolute		logarithmic).
	combined, and			representations;	value inequalities		A2.2.1 Patterns,
	composed to			relate the solution	G		relations and functions
				of the associated	Suggested Text		

create new functions in mathematical and real world situations.			polynomial equation to each representation.	Glencoe Algebra 2 (2010) Section 2-8 (pgs.117-121) Pearson Algebra 2 (2012) Section 2-8 (Pg. 114- 120)		A2.2.1.1-Analyze and/or use patterns or relations. A2.2.1.1.1-Analyze a set of data for the existence of a pattern and represent the pattern with a rule algebraically and /or graphically.
Families of functions exhibit properties and behaviors that can be recognized across representations. Functions can be transformed, combined, and composed to create new functions in mathematical and real world situations.	How do you explain the benefits of multiple methods of representing polynomial functions (tables, graphs, equations, and contextual situations)?	Polynomial functions and equations	Represent a polynomial function in multiple ways, including tables, graphs, equations, and contextual situations, and make connections among representations; relate the solution of the associated polynomial equation to each representation.	Special Functions Objectives: SWBA to write and graph piecewise defined functions. SWBA to write and graph step functions. SWBA to graph and analyze Greatest Integer Functions. Suggested Text Glencoe Algebra 2 (2010) Section 2-6 (pgs.101-106) Section 2-8 (pgs.117-121) Pearson Algebra 2 (2012) Page 90	Piece-wise defined function Piece-wise linear function Step function Greatest integer function	2.8.A2.D-Demonstrate an understanding and apply properties of functions (domain, range, inverses) and characteristics of families of functions (linear, polynomial, rational, exponential, logarithmic). A2.2.1 Patterns, relations and functions A2.2.1.1-Analyze and/or use patterns or relations. A2.2.1.1.1-Analyze a set of data for the existence of a pattern and represent the pattern with a rule algebraically and /or graphically.
Families of functions exhibit properties and behaviors that can be recognized across representations. Functions can be transformed,	How do you explain the benefits of multiple methods of representing polynomial functions (tables, graphs, equations, and contextual situations)?	Polynomial functions and equations	Represent a polynomial function in multiple ways, including tables, graphs, equations, and contextual situations, and make connections among representations;	Special Functions Objectives: SWBA to graph and analyze Absolute Value Functions Suggested Text		2.8.A2.D-Demonstrate an understanding and apply properties of functions (domain, range, inverses) and characteristics of families of functions (linear, polynomial, rational, exponential, logarithmic).

 1	<u> </u>	1	T		T	
combined, and			relate the solution	Glencoe Algebra 2		A2.2.1 Patterns,
composed to			of the associated	(2010)		relations and functions
create new			polynomial	Section 2-6 (pgs.101-		A2.2.1.1-Analyze
functions in			equation to each	106)		and/or use patterns or
mathematical and			representation.			relations. A2.2.1.1.1-
real world				Pearson Algebra 2 (2012)		Analyze a set of data
situations.				Section 2-7 (Pg. 107-		for the existence of a
				113)		pattern and represent
						the pattern with a rule
						algebraically and /or
						graphically.
Mathematical	How do quadratic equations	Quadratic	Represent a	Quadratic Functions and	Quadratic	2.8.A2.B Evaluate
functions are	and their graphs and/or	functions and	quadratic function	Relations/ Graphing	function	and simplify algebraic
relationships that	tables help us interpret	equations.	in multiple ways,	Quadratic Functions		expressions, for
assign each	events that occur in the		including tables,		Quadratic term	example:
member of one set	world around us?		graphs, equations,	Objectives:	2	products/quotients of
(domain) to a			and contextual		T *	polynomials,
unique member of			situations, and	SWBA to graph	Linear term	logarithmic expressions
another set			make connections	quadratic functions.		and complex fractions;
(range), and the			among		Constant term	and solve and graph
relationship is			representations;	SWBA to find and		linear, quadratic,
recognizable			relate the solution	interpret the maximum	Parabola	exponential, and
across			of the associated	and minimum value of a	1 4140014	logarithmic equations
representations.			quadratic equation	quadratic function	A · C	and inequalities, and
			to each		Axis of	solve and graph
			representation.	SWBA to write a	symmetry	systems of equations
				quadratic function in		and inequalities.
				vertex form	Vertex	2.8.A2.D
				•		Demonstrate an
				SWBA to transform	Maximum value	understanding and
				graphs of quadratic		apply properties of
				functions in vertex form	Minimum value	functions (domain,
				G . 15	willinum value	range, inverses) and
				Suggested Text		characteristics of
				Glencoe Algebra 2		families of functions (
				(2010)		linear, polynomial,
				Chapter 5 -Section 5-1		rational, exponential
				(pgs 249-257)		and logarithmic)
				Section 5-7 (pgs 305-		2.8.A2.E Use
				310)		combinations of
				D Alb 2 (2012)		symbols and numbers
				Pearson Algebra 2 (2012)		to
				Section 4-1 (Pg. 194-		create expressions,
				201)		equations, and
		1				inequalities in two or

			more variables,
			systems of equations
			and inequalities, and
			functional relationships
			that model problem
			situation.
			2.11.A2.A Determine
			the maximum and
			minimum values of a
			function over a specific
			interval.
			A2.2.1 Patterns,
			Relations and
			Functions
			A2.2.2 Applications of
			Functions of
			A2.2.1.1 Analyze and/or use patterns or
			relations.
			A2.2.2.1 Create,
			interpret, and/or use
			polynomial
			exponential and/or
			logarithmic functions
			and their equations,
			graphs or tables.
			A2.2.1.1.4 Identify
			the characteristics of
			an exponential,
			quadratic, or
			polynomial function.
			A2.2.2.1.3
			Determine, use and/or
			interpret maximum and
			minimum values over
			specified interval of a
			graph of a polynomial,
			exponential,
			logarithmic function.
			A2.2.2.1.4 Translate a
			polynomial,
			exponential or
			logarithmic function
			from one

	representation to another (graph table and equation).						
Review Unit 7 Common Assessment Families of Functions Duration: 1 Day							
Test Unit 7 Common Assessment Families of Functions Duration: 1 Day							

Unit 8 Data Analysis and Probability

Estimated Unit Time Frames	Big Ideas	Essential Questions	Concepts (Know)	Competencies (Do)	Lessons/ Suggested Resources	Vocabulary	Standards/ Eligible Content
18 Days	Bivariate data can be modeled with mathematical functions that approximate the data well and help us make predictions based on the data.	How can we use univariate and bivariate data to analyze relationships and make predictions?	Analysis of one and two variable (univariate and bivariate) data	Display, analyze, and make predictions using univariate and bivariate data.	The Counting Principle Objectives: SWBA to use the Fundamental Counting Principle to find outcomes involving independent and dependent events. SWBA to count permutations. SWBA to count combinations. Suggested Text- Glencoe Algebra 2 (2010) Section 0-4 (pgs P9-P11) Pearson Algebra 2 Section 11-1 (Pg. 674-680)	Outcome Sample space Event Fundamental Counting Principle Factoral	2.7.A2.A Use probability to predict the likelihood of an outcome in an experiment. A2.2.3 Data Analysis A2.2.3.2 Apply probability to practica situations. A.2.2.3.2.1 Use combinations and permutations, and the Fundamental Counting Principle to solve problems

Bivariate data can be modeled with mathematical functions that approximate the data well and help us make predictions based on the data.	How can we use univariate and bivariate data to analyze relationships and make predictions?	Analysis of one and two variable (univariate and bivariate) data	Display, analyze, and make predictions using univariate and bivariate data.	Permutations and Combinations Objectives: SWBA to solve problems involving permutations and combinations. SWBA to count permutations. SWBA to count combinations Suggested Text- Glencoe Algebra 2 (2010) Section 0-5 (pgs P12-P14) Pearson Algebra 2 Section 11-1 (Pg. 674-680)	Permutation Linear Permutation Combination	2.7.A2.A Use probability to predict the likelihood of an outcome in an experiment. A2.2.3 Data Analysis A2.2.3.2 Apply probability to practical situations. A.2.2.3.2.1 Use combinations and permutations, and the Fundamental Counting Principle to solve problems.
Bivariate data can be modeled with mathematical functions that approximate the data well and help us make predictions based on the data.	How can we use univariate and bivariate data to analyze relationships and make predictions?	Analysis of one and two variable (univariate and bivariate) data	Display, analyze, and make predictions using univariate and bivariate data.	Probability of Compound (Multiple) Events SWBA to find the probability of the event A and B. SWBA to find the probability of the event A or B. Pearson Algebra 2 Section 11-3 (Pg. 688-693)	Dependent events Independent events Mutually exclusive	2.7.A2.A Use probability to predict the likelihood of an outcome in an experiment. A2.2.3 Data Analysis A2.2.3.2 Apply probability to practical situations. A.2.2.3.2.1 Use combinations and permutations, and the Fundamental Counting Principle to solve problems
Degree and direction of linear association between two	How do you differentiate between two independent events and two dependent events and how do you	Compound probabilities: addition and multiplication rules	Distinguish between independent and dependent events in order to calculate	Conditional Probability Objectives :	Conditional probability	2.7.A2.A Use probability to predict the likelihood of an outcome in an experiment.

	variables is neasurable	calculate the probabilities for each situation?		compound probabilities within real world situations.	SWBA to find probabilities of events given the occurrence of other events. SWBA to use contingency tables to find conditional probabilities Suggested Text- Glencoe Algebra 2 (2010) Section 12 -3 (pgs 759-763)	Contingency table Relative frequency	2.7.A2.E Use probability to make judgments about the likelihood of various outcomes. A2.2.3 Data Analysis A2.2.3.2 Apply probability to practical situation A.2.2.3.2.3 Use probabilities for independent and dependent events or compound events to predict outcomes
		H 1:00 4:4		District 1	Pearson Algebra 2 Section 11-4 (Pg. 696-702)	D 1 137	27.42.4 U
di	Degree and lirection of linear association between two	How do you differentiate between two independent events and two dependent events and how do you	Compound probabilities: addition and multiplication	Distinguish between independent and dependent events in	Probability and Probability Distributions Suggested Text-Glencoe	Probability Success	2.7.A2.A Use probability to predict the likelihood of an outcome in an
Va	variables is measurable	calculate the probabilities for each situation?	rules	order to calculate compound probabilities within	Algebra 2 (2010) Section 12-4 (pgs 764-771)	Failure	experiment. 2.7.A2.E Use probability to make
				real world situations.	Pearson Algebra 2 Section 11-2	Sample space	judgments about the likelihood of various outcomes.
					(Pg. 681-687)	Random variable	A2.2.3 Data Analysis A2.2.3.2 Apply
					Concept Byte 11-3 (Pgs. 694-695)	Probability distribution	probability to practical situation .
					Objectives: SWBA to find	Uniform distribution	A.2.2.3.2.3 Use probabilities for independent and
					probabilities by using combinations and permutations.	Relative – frequency graph	dependent events or compound events to predict outcomes

	Degree and direction of linear association between two variables is measurable	How do you differentiate between two independent events and two dependent events and how do you calculate the probabilities for each situation?	Probability and Odds	Determine odds as probability and probability as odds.	SWBA to create and use graphs to probability distributions Probability and Odds SWBA to convert a probability to odds. SWBA to convert odd to probability. SWBA to use odds to determine the probability of an event SWBA to use probability to determine the odds for an event. Glencoe "Advanced Mathematical Concepts (2004) Section 13-3 (Pgs. 852-858) http://www.pdesas.org/ Content/ble/Content/ Content/6188/LessonPlan	Discrete probability distribution Theoretical probability Expected value Probability Odds	2.7.A2.A Use probability to predict the likelihood of an outcome in an experiment. 2.7.A2.E Use probability to make judgments about the likelihood of various outcomes. A2.2.3 Data Analysis A2.2.3.2 Apply probability to practical situation A2.2.3.2.2 Use odds to find probability and/or probability to find odds A.2.2.3.2.3 Use probabilities for independent and dependent events or compound events to predict outcomes			
Review Unit 8 Common Assessment Data Analysis and Probability Duration: 1 day										
	Test Unit 8 Common Assessment Data Analysis and Probability Duration: 1 day									
	Unit 9 Sequence and Series									

Estimated	Big Ideas	Essential Questions	Concepts	Competencies	Lessons/ Suggested	Vocabulary	Standards/ Eligible
Unit Time Frames			(Know)	(Do)	Resources	,	Content
11 Days	Patterns exhibit relationships that can be extended, described, and generalized.	How can we show that algebraic properties and processes are extensions of arithmetic properties and processes, and how can we use algebraic properties and processes to solve problems?	Polynomial functions and equations	Extend algebraic properties and processes to quadratic exponential and polynomial expressions and equations and to matrices, and apply them to solve real world problems.	Sequences and Series/ Sequences as Functions Suggested Text- Objectives : SWBA to relate arithmetic sequences to linear functions. SWBA to relate geometric sequences to exponential functions. Glencoe Algebra 2 (2010) Section 11-1 (pgs 681- 687) Pearson Algebra 2 Section 9-1 (Pg. 564- 571)	Sequence Term Finite sequence Infinite sequence Arithmetic sequence Common difference Geometric sequence Common ratio	2.8.A2.C-Recognize, describe and generalize patterns using sequences and series to predict long-term outcomes A2.2.1.1-Analyze and/or use patterns or relations. A2.2.1.1.2-Identify and/or extend a pattern as either an arithmetic or geometric sequence (e.g., given a geometric sequence, find the 20th term).
	Patterns exhibit relationships that can be extended, described, and generalized.	How can we show that algebraic properties and processes are extensions of arithmetic properties and processes, and how can we use algebraic properties and processes to solve problems?	Polynomial functions and equations	Extend algebraic properties and processes to quadratic exponential and polynomial expressions and equations and to matrices, and apply them to solve real world problems.	Arithmetic Sequences and Series Objectives: SWBA to use arithmetic sequences . SWBA to find the sum of arithmetic series Suggested Text-Glencoe Algebra 2 (2010) Section 11-2 (pgs 688-695)	Arithmetic means Series Arithmetic series Partial sum Sigma notation	2.8.A2.C-Recognize, describe and generalize patterns using sequences and series to predict long-term outcomes A2.2.1.1-Analyze and/or use patterns or relations. A2.2.1.1.2-Identify and/or extend a pattern as either an arithmetic or geometric sequence (e.g., given a geometric sequence, find the 20th term).

	Patterns exhibit relationships that can be extended, described, and generalized.	How can we show that algebraic properties and processes are extensions of arithmetic properties and processes, and how can we use algebraic properties and processes to solve problems?	Polynomial functions and equations	Extend algebraic properties and processes to quadratic exponential and polynomial expressions and equations and to matrices, and apply them to solve real world problems.	Pearson Algebra 2 Section 9-2 (Pg. 572- 577) Section 9-4 (Pg. 587- 593) Geometric Sequences and Series Objectives: SWBA to use geometric sequences. SWBA to find sums of geometric series Suggested Text- Glencoe Algebra 2 (2010) Section 11-3 (pgs 696- 702) Pearson Algebra 2 Section 9-3 (Pg. 580- 686) Section 9-5 (Pgs. 595- 601)	Geometric means Geometric series	2.8.A2.B-Evaluate and simplify algebraic expressions; solve and graph, quadratic, exponential, and logarithmic equations; and, solve and graph systems of equations and inequalities. 2.8.A2.C-Recognize, describe and generalize patterns using sequences and series to predict long-term outcomes A2.2.1.1-Analyze and/or use patterns or relations. A2.2.1.1.2-Identify and/or extend a pattern as either an arithmetic or geometric sequence (e.g., given a geometric sequence, find the 20th term).					
	Review Unit 9 Common Assessment Sequence and Series Duration: 1 day											
			Test Unit 9 Common Assessment Sequence and Series Duration: 1 day									
		Test	Unit 9 Common Ass	sessment Sequence ar	nd Series Duration: 1 day							
_		ear, we will have at leas	t 6 days schedule	ed for the use of t	he Classroom Diagno							
these date	es have not been		t 6 days schedule need to be adjust	ed for the use of t ments to the day	he Classroom Diagno to day schedule whe							