

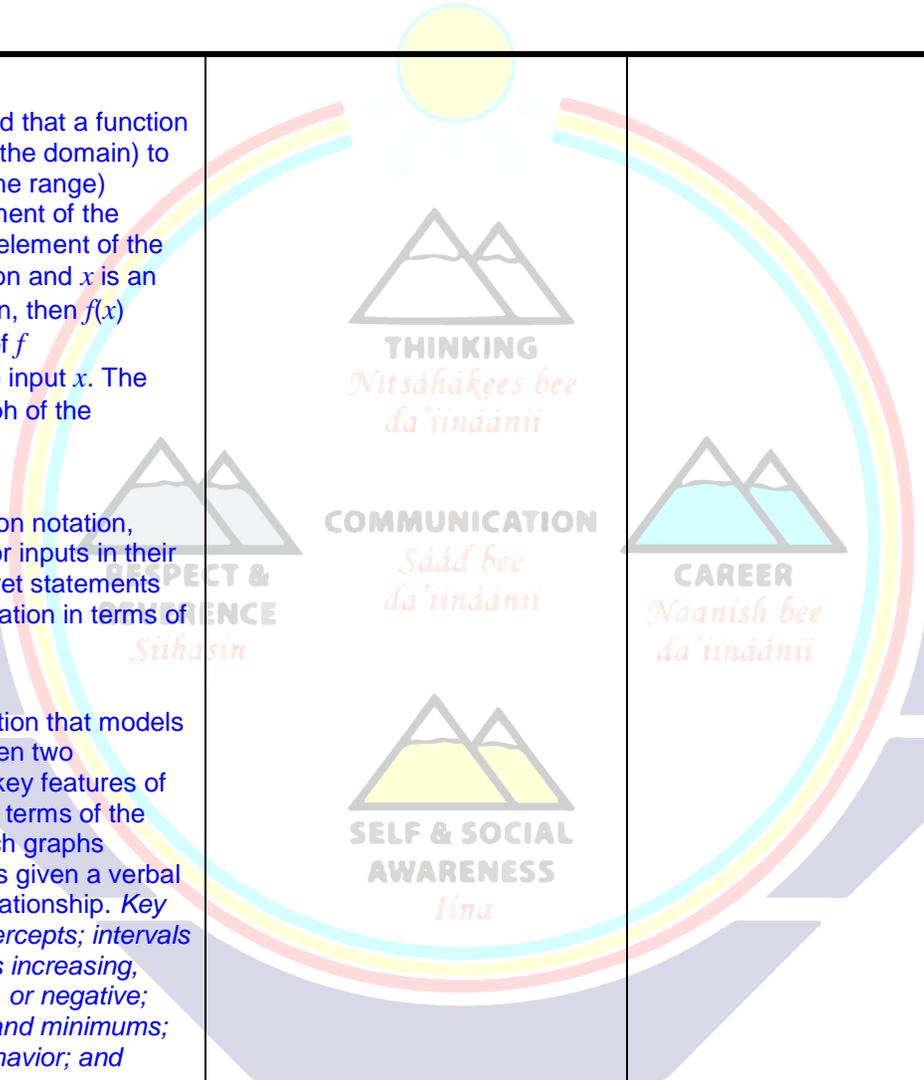
# Ganado Unified School District

## Algebra I

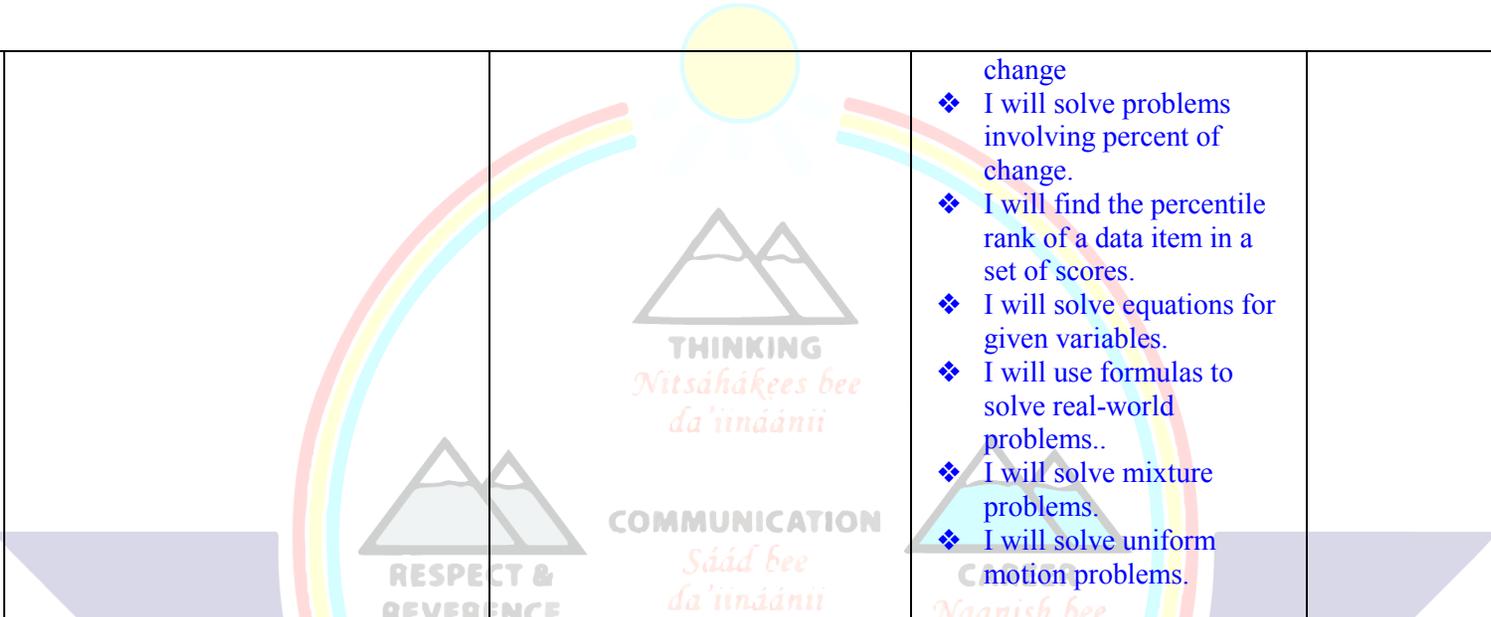
### PACING Guide SY 2018-2019

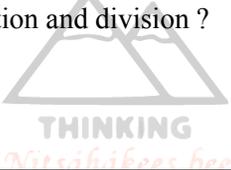
Timeline & Resources	AZ CCRS - Mathematics	Essential Questions HESS Matrix	Learning Goal	Vocabulary Content/Academic
<p><b>1<sup>st</sup> Quarter</b></p> <p><b>Glencoe Algebra 1 textbook: Chapter 1 to Chapter 5</b></p> <p><b>Aleks online integration</b></p>	<p><b>Chapter 1</b></p> <p>A-SSE.A.1. Interpret expressions that represent a quantity in terms of its context. ★</p> <p>a. Interpret parts of an expression, such as terms, factors, and coefficients.</p> <p>b. Interpret complicated expressions by viewing one or more of their parts as a single entity. <i>For example, interpret <math>P(1 + r)n</math> as the product of <math>P</math> and a factor not depending on <math>P</math>.</i></p> <p>A-SSE.A.1. Interpret expressions that represent a quantity in terms of its context. ★</p> <p>b. Interpret complicated expressions by viewing one or more of their parts as a single entity. <i>For example, interpret <math>P(1 + r)n</math> as the product of <math>P</math></i></p>	<p>How can I recognize and write rules for number patterns ?</p> <p><b>COMMUNICATION</b> <i>Sáád bee da'íináanii</i></p> <p><b>RESPECT &amp; REVERENCE</b> <i>Siihasin</i></p> <p><b>SELF &amp; SOCIAL AWARENESS</b> <i>Iina</i></p>	<ul style="list-style-type: none"> <li>❖ I will write verbal expressions.</li> <li>❖ I will write algebraic expressions for verbal expressions.</li> <li>❖ I will evaluate numerical expressions by using the order of operations.</li> <li>❖ I will evaluate algebraic expressions by using the order of operations.</li> <li>❖ I will recognize the properties of equality and identity.</li> <li>❖ I will recognize the Commutative and Associative Properties.</li> <li>❖ I will choose a level of accuracy appropriate to limitations on measurement when reporting quantities.</li> <li>❖ I will use the Distributive Property to</li> </ul>	<p>algebraic expression ,base, coefficient, coordinate system, dependent variable, domain, end behavior, equation, exponent, function, independent variable, intercept, like terms, line symmetry, mapping, ordered pair, order of operations, origin, power, range, reciprocal, relation, relative maximum, relative minimum, replacement set, simplest form, solution, term, variables, vertical line test</p>

	<p><i>and a factor not depending on P.</i></p> <p>N-Q.A.3. Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.</p> <p>A-CED.A.1. Create equations and inequalities in one variable and use them to solve problems. <i>Include equations arising from linear and quadratic functions, and simple rational and exponential functions.</i></p> <p>A-CED.A.2. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.</p> <p>A-REI.B.3. Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.</p> <p>A-REI.D.10. Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).</p>	 <p>THINKING <i>Nitsáhákees bee da'innáanii</i></p> <p>COMMUNICATION <i>Sáád bee da'innáanii</i></p> <p>RESPECT &amp; REVERENCE <i>Áshashin</i></p> <p>SELF &amp; SOCIAL AWARENESS <i>Iina</i></p>	<p>evaluate expressions.</p> <ul style="list-style-type: none"> <li>❖ I will use the Distributive Property to simplify expressions.</li> <li>❖ I will solve equations with one variable.</li> <li>❖ I will solve equations with two variables.</li> <li>❖ I will represent relations.</li> <li>❖ I will interpret graphs of relations.</li> <li>❖ I will determine whether a relation is a function..</li> <li>❖ I will find function values.</li> <li>❖ I will use technology to represent a function as a graph and as a table.</li> <li>❖ I will interpret intercepts, and symmetry of graphs of functions.</li> <li>❖ I will interpret positive, negative increasing and decreasing behavior, extrema, and behavior of graphs of functions.</li> </ul>	
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	<p>F-IF.A.1. Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If <math>f</math> is a function and <math>x</math> is an element of its domain, then <math>f(x)</math> denotes the output of <math>f</math> corresponding to the input <math>x</math>. The graph of <math>f</math> is the graph of the equation <math>y = f(x)</math>.</p> <p>F-IF.A.2. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.</p> <p>F-IF.B.4. For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. <i>Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.</i> ★</p>	 <p>THINKING <i>Nitsáhákees bee da'íinaánii</i></p> <p>COMMUNICATION <i>Sáád bee da'íinaánii</i></p> <p>SELF &amp; SOCIAL AWARENESS <i>Iina</i></p> <p>RESPECT &amp; CONFIDENCE <i>Siíhasin</i></p>	<p>CAREER <i>Naanish bee da'íinaánii</i></p>	
Chapter 2 F-BF 1. Write a function that	What are the advantages and disadvantages of using recursive	❖ I will translate sentences into equations.	consecutive integers, dimensional	

	<p>describes a relationship between two quantities.*  a. Determine an explicit expression, a recursive process, or steps for calculation from a context.</p>	<p>rule or an explicit rule in determining the nth rule of a sequence ?</p>  <p><b>THINKING</b>  <i>Nitsáhákees bee da'íináanii</i></p> <p><b>COMMUNICATION</b>  <i>Sáád bee da'íináanii</i></p> <p><b>RESPECT &amp; REVERENCE</b>  <i>Siihasin</i></p> <p><b>SELF &amp; SOCIAL AWARENESS</b>  <i>Iina</i></p>	<ul style="list-style-type: none"> <li>❖ I will translate equations into sentences.</li> <li>❖ I will use algebra tiles to solve addition, subtraction, and multiplication equations.</li> <li>❖ I will solve equations by using addition or subtraction.</li> <li>❖ I will solve equations by using multiplication and division.</li> <li>❖ I will use algebra tiles to solve multi-step equations.</li> <li>❖ I will solve equations involving more than one operation.</li> <li>❖ I will solve equations involving consecutive integers.</li> <li>❖ I will solve equations with the variable on each side.</li> <li>❖ I will solve equations involving grouping symbols.</li> <li>❖ I will evaluate absolute value expressions.</li> <li>❖ I will compare ratios.</li> <li>❖ I will solve proportions.</li> <li>❖ I will use a spreadsheet to investigate different metrics.</li> <li>❖ I will find the percent of</li> </ul>	<p>analysis, equivalent equations, extremes, formula, identity, literal equation, means, multi-step equations, number theory, percent of change, percent of decrease, percent of increase, proportion, rate ratio., scale, scale model, solve an equation, nit analysis, unit rate, weighted average</p>
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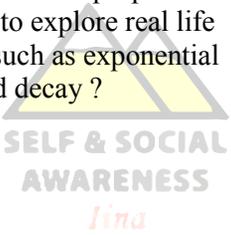
		 <p><b>THINKING</b> <i>Nitsáhákees bee da'inaánii</i></p> <p><b>COMMUNICATION</b> <i>Sáád bee da'inaánii</i></p> <p><b>RESPECT &amp; REVERENCE</b> <i>Siihas</i></p> <p><b>SELF &amp; SOCIAL AWARENESS</b> <i>lina</i></p>	<ul style="list-style-type: none"> <li>❖ change</li> <li>❖ I will solve problems involving percent of change.</li> <li>❖ I will find the percentile rank of a data item in a set of scores.</li> <li>❖ I will solve equations for given variables.</li> <li>❖ I will use formulas to solve real-world problems..</li> <li>❖ I will solve mixture problems.</li> <li>❖ I will solve uniform motion problems.</li> </ul>	
	F-BF 2. Write arithmetic and geometric sequences ... recursively and [arithmetic sequences] with an explicit formula, use them to model situations, and translate between the two forms.*	<p>What are the advantages and disadvantages of using recursive rule or an explicit rule in determining the nth rule of a sequence ?</p>	<ul style="list-style-type: none"> <li>❖ I will write arithmetic sequences.</li> <li>❖ I will write geometric sequences.</li> <li>❖ I will recognize arithmetic and geometric sequences and apply these sequences in real world problems.</li> </ul>	<p>Recursive rule Explicit rule</p>
	A-SSE 1. Interpret expressions that represent a quantity in terms of its context. a. Interpret parts of an expression, such as terms, factors, and coefficients.	<p>How do you write an expression to represent a real world situation ?</p>	<ul style="list-style-type: none"> <li>❖ I will recognize parts of an expression.</li> </ul>	<p>Variable Algebraic expression Order of operations Verbal model</p>
	A-CED 1. Create equations and inequalities in one variable and use	<p>How do you write equation and inequalities ?</p>	<ul style="list-style-type: none"> <li>❖ I will write equations and inequalities based on real-</li> </ul>	<p>Rate, unit rate Equation, inequality</p>

	them to solve problems. <i>Include equations arising from linear ... functions</i>		world situations. ❖ I will solve equations and inequalities.	
	A-REI.1. Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.	How do you solve equation using addition, subtraction, multiplication and division ? 	❖ I will verbally explain step-by-step procedures of equations. ❖ I will solve equations using appropriate mathematical properties justifying each step.	Inverse operations Equivalent equations Associative property Commutative property Identity Distributive property
Reading	Reading CCR 1: Read closely to determine what the text says explicitly and to make logical inferences from it.		Students will be able to read real-world situations and make inferences related to desired results.	
Writing	Writing CCR1: Using valid reasoning to support claims.			
<b>2<sup>nd</sup> Quarter</b>  Chapter 6 to 9 Aleks online integration	A-REI.1. Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.	How do solve equation with variable in both sides? 	● I will understands the principles of equality and apply these principles step by step in solving equations.	Cross product Scale model Literal equation
	A-REI.10. Understand that the graph of an equation in two variables is the set of all solutions plotted in the coordinate plane, often forming a curve (which could be a line).	How do you graph linear equations in two variables? 	● I will be able to reason and make interpretations of graphs, tables, and equations.	Linear equation Solution, graph of an equation in two variables x-and y-intercept slope and change of rate
	A-CED 2. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales	How do you represent function as tables, rules and graphs?  How do you use graph of a function to solve real-world problems ?	● I will understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain	Domain, range Dependent variable Independent variable Intercept and rate of change

			<ul style="list-style-type: none"> <li>exactly one element of the range</li> <li>I will model relationships based on real-world data.</li> </ul>	
F-IF 4. For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities and sketch graphs showing key features given a verbal description of the relationship. <i>Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative....*</i>	How do changes in linear equations and functions affects the graph ?	<p>THINKING <i>Nitsáhákees bee da'innáanii</i></p> <p>COMMUNICATION <i>Sáád bee da'innáanii</i></p> <p>RESPECT &amp; REVERENCE <i>Sti'haas</i></p> <p>CARE <i>Neenan da'innáanii</i></p>	<ul style="list-style-type: none"> <li>Given a graph, I will be able to interpret its features as they relate to real-world interpretations.</li> <li>Given real-world data as an expression or a table, I will be able to produce and interpret appropriate graphs, using technology when appropriate.</li> </ul>	Domain, range Dependent variable Independent variable Intercept and rate of change
F-LE 1. Distinguish between situations that can be modeled with linear functions [and with exponential functions]. a. Prove that linear functions grow by equal differences over equal intervals... over equal intervals.	How can you distinguish between real-world situation using linear, quadratic and exponential function ?	<p>SELF &amp; SOCIAL AWARENESS</p>	<ul style="list-style-type: none"> <li>I will be able to determine when a verbal description or table can be represented by a linear function.</li> </ul>	Slope and rate of change Slope-intercept form Quadratic equation/function Properties of exponents Exponential growth and decay ( graph )
b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another....	How can you distinguish between real-world situation using linear, quadratic and exponential function ?		<ul style="list-style-type: none"> <li>I will understand the slope of a linear equation represents rate of change and that the y-intercept is the starting point.</li> </ul>	Slope and rate of change Slope-intercept form y-intercept
F-LE 5. Interpret the parameters in a linear ... function in terms of a context.	How do you use the language of Math to model linear relationships in real-world situations ?		<ul style="list-style-type: none"> <li>I will understand the effects of m and b in the equation <math>y = mx + b</math> when analyzing real-</li> </ul>	Slope and rate of change Slope-intercept form y-intercept

		( slope and y-intercept)	world situations using a linear model.	
Reading	Reading CCR 1: Read closely to determine what the text says explicitly and to make logical inferences from it.		Students will be able to read real-world situations and make inferences related to desired results.	
Writing	Writing CCR1: Using valid reasoning to support claims.			
<b>3<sup>rd</sup> Quarter</b> <b>Chapter 10-12</b> Aleks online integration	AZ-HS.F-IF.A.1. Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If $f$ is a function and $x$ is an element of its domain, then $f(x)$ denotes the output of $f$ corresponding to the input $x$ . The graph of $f$ is the graph of the equation $y = f(x)$ . [From cluster: Understand the concept of a function and use function notation]	How do I use function and models to understand relationship?	<ul style="list-style-type: none"> <li>I will understand the definition of function as applied verbally, as a table, as an equation, as a graph, and as ordered pairs. I can use functional notation and differentiate functional notation from notation used to express equations.</li> </ul>	Domain and range Linear function Function notation Rate of change y-intercept constraints
	AZ-HS.F-IF.A.2. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context. [From cluster: Understand the concept of a function and use function notation]	What is functional notation ?	<ul style="list-style-type: none"> <li>I will use functional notation and use functional notation to evaluate and interpret real-world problems.</li> </ul>	Domain and range Linear function Function notation Rate of change y-intercept constraints
	AZ-HS.F-IF.B.5. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. For example, if the function $h(n)$ gives the number of person-hours it takes to assemble $n$ engines in a factory, then the positive integers would be an appropriate	How you apply concept of function to solve real-world problem ?	<ul style="list-style-type: none"> <li>I will be able to interpret graphs within the context of their real-world application and I will write equations and functions based on interpreting graphs of</li> </ul>	Domain and range Linear function Function notation Rate of change y-intercept constraints

	domain for the function. [From cluster: Interpret functions that arise in applications in terms of the context]		real-world situations.	
	AZ-HS.A-CED.A.3. Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods. [From cluster: Create equations that describe numbers or relationships]	<p>How do you solve system of linear equations and linear inequalities using various methods ?</p> <p>How do you interpret the graphs of the solutions</p>	<ul style="list-style-type: none"> <li>I will create equations and inequalities that model numbers and relationships in a real-world context.</li> </ul>	<p>System of linear equations</p> <p>System of linear inequalities</p> <p>Graph of system of linear equations</p> <p>Graph of a system of linear inequalities</p> <p>Solution system of linear equations</p> <p>Solution system of linear inequalities</p>
	AZ-HS.A-CED.A.4. Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law $V = IR$ to highlight resistance $R$ . [From cluster: Create equations that describe numbers or relationships]	<p>How do you rearrange formulas to highlights points of interest?</p>	<ul style="list-style-type: none"> <li>I will create equations and inequalities that model numbers and relationships in a real-world context.</li> </ul>	<p>Variable</p> <p>Literal equation</p> <p>Formula</p>
	AZ-HS.N-Q.A.1. Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays. [From cluster: Reason quantitatively and use units to solve problems]	<p>How do you use rate and unit rate to understand real-world problem?</p> <p>How do I consistently choose unit ?</p>	<ul style="list-style-type: none"> <li>I will choose units of measure consistently within a real-world context and I will make appropriate conversions between different units of measure.</li> </ul>	<p>Rate</p> <p>Unit rate</p>
	AZ-HS.N-Q.A.2. Define appropriate quantities for the purpose of descriptive modeling. [From cluster:	<p>How do you use rate and unit rate to model real-world problem?</p>	<ul style="list-style-type: none"> <li>I will be able to solve problems by evaluating models</li> </ul>	<p>Rate</p> <p>Unit rate</p>

	Reason quantitatively and use units to solve problems]		which use various quantities.	
	AZ-HS.F-LE.A.2. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table). [From cluster: Construct and compare linear, quadratic, and exponential models and solve problems]	How do you write linear and exponential function given various real-world data ? 	<ul style="list-style-type: none"> <li>I can write an equation based on real-world data from a table, a written description, or a graph.</li> </ul>	Properties of exponents Zero exponent Negative exponent Rate of change(slope) y-intercept
Reading	Reading CCR 1: Read closely to determine what the text says explicitly and to make logical inferences from it.		Students will be able to read real-world situations and make inferences related to desired results.	
Writing	Writing CCR1: Using valid reasoning to support claims.			
<b>4<sup>th</sup> Quarter</b> <b>Algebra 2 skills readiness using the power standards</b>	AZ-HS.N-RN 1. Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. <i>For example, we define <math>5^{1/3}</math> to be the cube root of 5 because we want <math>(5^{1/3})^3 = 5^{(1/3)3}</math> to hold, so <math>(5^{1/3})^3</math> must equal 5.</i>	How can I use the properties of exponents to explore real life problems such as exponential growth and decay ? 	I will apply properties of exponents to simplify expressions.	Exponential function Exponential decay Compound interest Exponential growth
	AZ-HS.N-RN 2. Rewrite expressions involving radicals and rational exponents using the properties of exponents.	How do you use zero and negative exponents?	I will use the language of exponents and radicals to express real world Ideas.	Zero exponent Negative exponents Scientific notation Growth factor, growth rate
	AZ-HS.A-APR.A.1. Understand that	How do you add, subtract and	I will use the operations of	Monomial

	<p>polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials. [From cluster: Perform arithmetic operations on polynomials]</p>	<p>multiply polynomial?</p>	<p>polynomials to model trends and determine solutions such as areas of real world problems.</p>	<p>Binomial Trinomial Polynomial Degree Leading coefficient</p>
	<p>AZ-HS.F-LE.A.1. Distinguish between situations that can be modeled with linear functions and with exponential functions. [From cluster: Construct and compare linear, quadratic, and exponential models and solve problems]</p>	<p>How do you graph quadratic function?</p>	<p>I will investigate real world problems such as suspension bridges using quadratic functions.</p>	<p>Quadratic function Symmetry Parabola Vertex Minimum value Maximum value</p>
	<p>AZ-HS.F-LE.A.2. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table). [From cluster: Construct and compare linear, quadratic, and exponential models and solve problems]</p>	<p>How do you graph quadratic function?</p>	<p>I will investigate real world problems such as suspension bridges using quadratic functions.</p>	<p>Quadratic function Symmetry Parabola Vertex Minimum value Maximum value</p>
	<p>AZ-HS.F-LE.A.3. Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function. [From cluster: Construct and compare linear, quadratic, and exponential models and solve problems]</p>	<p>How can I solve real world problems such as falling objects?</p>	<p>I will solve quadratic equations using the square root and completing the square.</p>	<p>Completing the square Quadratic equation</p>

