Ganado Unified School District #20 (Algebra 1/9th Grade)

Time Line & Resources (Identify textbook, page number or website link & etc.)	AZ College and Career Readiness Standard	Essential Question (HESS Matrix)	Learning Goal	Vocabulary (Content/Academic)
References:	Standards for Mathematical			
McGraw Hill Reveal Algebra 2020 ALEKS Online Learning Algebra 1 Coach Triumphant Learning	 Practices (<i>These will be applied in all units of study.</i>) 1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments 	COMMUNIC STICIN		
Workbook -supplementary resources	 Construct viable arguments and critique the reasoning of others. Model with mathematics. Use appropriate tools strategically. Attend to precision. Look for and make use of structure. Look for and express regularity in repeated reasoning. 	SELF & SIDCIAL AMARENIESS		

PACING Guide SY 2022-2023 Therron Todacheenie on behalf of GHS Math Dept.

Module 1					
Module 1:	N.RN.3 – Explain why sum or	How can mathematical	-write and evaluate numerical	Absolute value	
Expressions	product of two rational numbers is	expressions be	expressions.	Accuracy	
	rational; that the sum of a rational	represented and	-write and evaluate algebraic	Additive identity	
Lesson 1-1	number and an irrational number is	evaluated?	expressions.	Additive inverses	
Numerical Expressions	irrational; and that product of a		-apply the properties of real	Algebraic expression	
Losson 1 2	nonzero rational number and an	A 4	numbers to simplify	Base	
Algebraic Expressions	irrational number is irrational.		expressions.	Closed	
	N.Q.2 – Define appropriate		-simplify expressions by	Coefficient	
Lesson 1-3	quantities for the purpose of	THERE AND A REAL PROPERTY.	using the Distributive	Constant term	
Properties of Real	descriptive modeling.	CONTRACTOR OF STREET	Property.	Define a variable	
Numbers	N.Q.3 – Choose a level of accuracy		-evaluate absolute value	Descriptive modeling	
Lesson 1-4	appropriate to limitations on		expressions.	Equivalent-	
Distributive Property	measurement when reporting	CHARGE AND	-use quantities for the purpose	expressions	
1000	quantities.	COMMUNICATION	of descriptive modeling, and	Evaluate	
Lesson 1-5	A.SSE.1 - Interpret expressions that	and a line of the second se	report solutions with an	Exponent	
Absolute Value	represent a quantity in terms of its	and the second second	appropriate level of accuracy.	Like terms	
Absolute value	context.			Metric	
Lesson 1-6	A.SSE.2 – Use the structure of an	10000 CT 11		Multiplicative-	
Descriptive Modeling	expression to identify ways to			identity	
and Accuracy	rewrite it.		1 Filmer	Multiplicative-	
				inverses	
		SELF & BOCIAL		Numerical expression	
		A MARENESS		Reciprocals	
				Simplest form	
				Term	
				Variable	
				Variable term	
Module 2					
Module 2: Equations	N.Q.1 – Use units as a way to	How can writing and	-create and interpret equations	Constraint	
in One Variable	understand problems and to guide	solving equations help	that describe relationships.	Dimensional analysis	
	the solution of multi-step problems;	you solve problems in	-solve equations by using	Equation	
Lesson 2-1	choose and interpret units	the real world?	addition, subtraction,	Equivalent equations	
writing and Interpreting	consistently in formulas; choose and		multiplication, and division.	Formula	
Едианоно				Identity	

	interpret the scale and the origin in		-solve multi-step equations	Literal equation
Lesson 2-2	graphs and data displays.		and equations for specific	Multi-step equation
Solving One-Step	A.CED.1 – Create equations and		lettered coefficients by	Proportion
Equations	inequalities in one variable and use	-	applying properties of	Solution
Lesson 2-3	them to solve problems.		equality.	Solve an equation
Solving Multi-Step	A.CED.3 – Represent constraints by		-solve equations with the	_
Equations	equations or inequalities, and by	COM0000	variable on each side by	
Lesson 2-1	systems of equations and/or		applying the properties of	
Solving Equations with	inequalities, and interpret solutions		equality and the Distributive	
the Variable on Each	as viable or non-viable options in a		Property.	
Side	modeling context.	THERE AND	-solve absolute value	
Lamon 2 E	A.CED.4 – Rearrange formulas to		equations.	
Lesson 2-5 Solving Equations	highlight a quantity of interest, using		-solve equations involving	
Involving Absolute Value	the same reasoning as in solving		proportions.	
8	equations.	COMMANDAL STICK	-solve equations for specific	
Lesson 2-6	A.REI.1 – Explain each step in	Communications 2	variables and convert units of	
Solving Proportions	solving a simple equation as		measure by applying the	
Lesson 2-7	following from the equality of		properties of equality.	
Using Formulas	numbers asserted at the previous			
	step, starting from the assumption	A		
	that the original equation has a	44	1 million	
	solution. Construct a viable			
	argument to justify a solution	CALL IN THE PROPERTY AND		
	method.	and point of		
	A.REI.3 – Solve linear equations	WHICH HEIRESS		
	and inequalities in one variable,			
	including equations with coefficients			
	represented by letters.			
			17	
		Module 3		
Module 3: Relations	N.Q.1 – Use units as a way to	Why are representations	-represent relations with	Continuous function
and Functions	understand problems and to guide	of relations an functions	graphs, ordered pairs, tables,	Decreasing
T 21	the solution of multi-step problems;	useful?	and mappings.	Dependent variable
Lesson 5-1 Representing Relations	choose and interpret units			Discrete function
Kepi esenting Kelations	consistently in formulas; choose and			Domain

Lesson 3-2	interpret the scale and the origin in		-determine whether a relation	End behavior
Functions	graphs and data displays.		is a function and find function	Extrema
Losson 3 3	A.REI.10 – Understand that the		values.	Function
Linearity and Continuity	graph of an equation in two		-identify linear and nonlinear	Function notation
of Graphs	variables is the set of all its solutions		functions and continuous and	Increasing
	plotted in coordinate plane, often		discrete functions.	Independent variable
Lesson 3-4	forming a curve (which could be a		-identify intercepts of	Line symmetry
Intercepts of Graphs	line).		functions and solve equations	Linear equation
Lesson 3-5	F.IF.1 – Understand that a function		by graphing.	Linear function
Shapes of Graphs	from one set (called the domain) to	())	-identify symmetry, extrema,	Mapping
	another set (called the range) assigns	THERE ARE A	and end behavior of	Negative
Lesson 3-6	to each element of the domain		functions.	Nonlinear function
Sketching Graphs and Comparing Functions	exactly one element of the range. If f		-sketch graphs of functions	Positive
Comparing Functions	is a function and x is an element of		and compare two or more	Range
	its domain, then $f(x)$ denotes the	COMMANDER STICK	functions.	Relation
	output of <i>f</i> corresponding to the	communication Z		Relative maximum
	input x . The graph of f is the graph		CARGER	Relative minimum
	of equation $y = f(x)$.			Root
	F.IF.2 – Use function notation,			Scale
	evaluate functions for inputs in their	- A		x-intercept
	domains, and interpret statements			y-intercept
	that use function notation in terms of			zero
	context	A REAL PROPERTY AND A REAL PROPERTY AND A		
	F.IF.4 – For function that models a	SELF & SUCINE .		
	relationship between two quantities,	101111111111111111111111111111111111111	() . Mail	
	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.		3	
	F.IF.5 – Relate the domain of a	1		
	function to its graph and, where			
	applicable, to the quantitative			
	relationship it describes.			
	F.IF.9 – Compare properties of two			
	functions each represented in a			

different way (algebraically, graphically, numerically in tables, or by verbal descriptions).		
Μο	dule 4	
Module 4: Linear and NonlinearF.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 	an a function tell out the ship that it nts? -graph linear functions by using tables and intercepts. -find and interpret the rate of change and slopes of lines. -graph equations in slope- intercept form. -identify the effects of transformations of the graphs of linear functions. -write and graph equations of arithmetic sequences. -graph piecewise-defined and step functions. -identify the effects of transformations of the graphs of absolute value functions.	Absolute value function Arithmetic sequence Common difference Constant function Dilation Family of graphs Greatest integer function Identity function Interval n^{th} term of an arithmetic sequence Parameter Parent function Piecewise-defined function Piecewise-linear function Rate of change Reflection Sequence Slope Step function Term of a sequence Transformation Vertex

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Module 5: Creating	A.CED.2 – Create equations in two	What can a function tell	-create linear equations in	Best-fit line,
Linear Equations	or more variables to represent	you about the	slope-intercept form.	Bivariate data
	relationships between quantities;	relationship that it	-create linear equations in	Causation
Lesson 5-1	graphs equations on coordinate axes	represents?	point-slope form and standard	Correlation
Writing Equations in Slong-Intercent Form	with labels and scales.		form.	coefficient
Slope-Intercept Form	A.CED.3 – Represent constraints by		-use scatter plots to make and	Inverse functions
Lesson 5-2	equations or inequalities, and by		evaluate predictions.	Inverse relations
Writing Equations in	systems of equations and/or		-determine whether a	Line of fit
Standard and Point-	inequalities, and interpret solutions		situation illustrates correlation	Linear extrapolation
Slope Forms	as viable or nonviable options in a		or causation.	Linear interpolation
Lesson 5-3	modeling context.		-use best-fit lines and	Linear regression
Scatter Plots and Lines of	F.BF.4a – Solve an equation of the		correlation coefficients to	Negative correlation
Fit	form $f(x) = c$ for a simple function f		determine how well linear	No correlation
Tanan 5.4	that has an inverse and write an		functions fit sets of data.	Parallel lines
Lesson 5-4 Correlation and	expression for the inverse.		-find inverses of functions.	Perpendicular lines
Causation	S.ID.6a – Fit a function to the data;			Positive correlation
	use functions fitted to data to solve			Residual
Lesson 5-5	problems in the context of the data.			Scatter plot
Linear Regression	Use given functions or choose a			trend
Lesson 5-6	function suggested by the context.			
Inverses of Linear	Emphasize linear, quadratic, and			
Functions	exponential models.			
	S.ID.6c – Fit a linear function for a			
	scatter plot that suggests a linear			
	association.			
	S.ID.7 – Interpret the slope (rate of			
	change) and the intercept (constant			
	term) of a linear model in the			
	context of the data.			
	S.ID.8 – Compute (using			
	technology) and interpret the			
	correlation coefficient of a linear fit.			
	S.ID.9 – Distinguish between			
	correlation and causation.			
		Module 6		

the intersection of the corresponding half-planes.	
Module 7	
NotationA.CED.5 - Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions 	iations

Lesson 7-4 Elimination Using Multiplication Lesson 7-5 Systems of Inequalities	A.REI.6 - Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables. A.REI.11 - Explain why the <i>x</i> -coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions. A.REI.12 - Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.			
	nan-planes.			
	I	Module 8		
Module 8: Exponents and Roots	A.SSE.2 - Use the structure of an expression to identify ways to rewrite it.	How do you perform operations and represent real-world situations	- apply the multiplication properties of exponents to simplify expressions.	Cube root Exponential equation Index
Lesson 8-1 Multiplication Properties of Exponents	A.SSE.3c - Use the properties of exponents to transform expressions for exponential functions.	with exponents?	- apply the division properties of exponents to simplify expressions.	Monomial Negative exponent n^{th} root
Lesson 8-2 Division Properties of Exponents	N.RN.1 - Explain how the definition of the meaning of rational exponents follows from extending the		- apply the properties of zero and negative exponents to simplify expressions.	Perfect cube Perfect square Principal square root

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Lesson 8-3 Negative Exponents Lesson 8-4 Ration Exponents Lesson 8-5 Simplifying Radical Expressions Lesson 8-6 Operations with Radical Expressions Lesson 8-7 Exponential Equations	 properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. N.RN.2 - Rewrite expressions involving radicals and rational exponents using the properties of exponents. N.RN.3 - Explain why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational. 		 apply the properties of rational exponents to simplify expressions. simplify radical expressions. perform operations with radical expressions. solve exponential equations. 	Radicand Rational exponent Square root
	1	Module 9		
Module 9:	A.SSE.3c - Use the properties of	When and how can	- graph exponential functions.	Asymptote
Exponential	exponents to transform expressions	exponential functions	- identify the effects of	Common ratio
Functions	for exponential functions.	represent real-world	transformations of the graphs	Compound interest
Losson 0 1	F.IF.3 - Recognize that sequences	situations?	of exponential functions.	Explicit formula
Exponential Functions	are functions, sometimes defined		- create exponential	Exponential decay
L'Aponentiur i unctions	recursively, whose domain is a		functions and solve problems	functions
Lesson 9-2	subset of the integers.		involving exponential growth	Exponential function
Transformations of	F.IF. /e - Graph exponential and		and decay.	Exponential growth
Exponential Functions	logarithmic functions, snowing		- use the properties of	functions
Lesson 9-3	trigonometric functions, showing		exponents to transform	Geometric sequence
Writing Exponential	trigonometric functions, snowing		expressions for exponential	recursive formula
Functions	FIE P L L C C C C C C C C C C		iunctions.	
	F.IF.8D - Use the properties of		- write and graph equations of	
Lesson 9-4 Transforming	for exponential functions		geometric sequences.	
Exponential Expressions	E DE 2 Write enitherestic and		- write arithmetic and	
	F.DF.2 - Write arithmetic and		geometric sequences	
Lesson 9-5	geometric sequences both		recursively.	
Geometric Sequences	recursively and with an explicit			
1	tormula, use them to model			

Lesson 9-6	situations, and translate between the			
Recursive Formulas	two forms.			
	F.BF.3 - Identify the effect on the			
	graph of replacing $f(x)$ by $f(x)$			
	+k, k f(x), f(kx), and f(x + k) for			
	specific values of k (both positive			
	and negative); find the value			
	of k given the graphs.			
	Experiment with cases and illustrate			
	an explanation of the effects on the			
	graph using technology.			
	F.LE.1c - Recognize situations in			
	which a quantity grows or decays by			
	a constant percent rate per unit			
	interval relative to another.			
	F.LE.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).			
	F.LE.5 - Interpret the parameters in			
	a linear or exponential function in			
	terms of a context.			
		Module 10		
Module 10:	A.SSE.1a - Interpret parts of an	How can you perform	- add and subtract	Binomial
Polynomials	expression, such as terms, factors,	operations on	polynomials by combining	Degree of a
	and coefficients.	polynomials and use	like terms.	monomial
Lesson 10-1 Adding and Subtracting	A.SSE.2 - Use the structure of an	them to represent real-	- multiply polynomials by	Degree of polynomial
Polynomials	expression to identify ways to	world situations?	monomials.	Difference of two
	rewrite it.		- multiply polynomials by	squares
Lesson 10-2	A.APK.1 - Understand that		polynomials.	Factoring
Multiplying Polynomials	polynomials form a system		- multiply binomials by	Factoring by
by Monomials	analogous to the integers, namely,		applying special patterns.	grouping

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Lesson 10-3 Multiplying Polynomials Lesson 10-4 Special Products Lesson 10-5 Using the Distributive Property Lesson 10-6 Factoring Quadratic Trinomials Lesson 10-7 Factoring Special Products	they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials. A.REI.5 - Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.		 factor polynomials by using the Distributive Property. factor trinomials into two binomials. factor polynomials by applying special patterns. 	Leading coefficient Perfect square trinomials Polynomial Prime polynomial Quadratic expression Standard form of a polynomial Trinomial
		Module 11		
Quadratic Functions Lesson 11-1 Graphing Quadratic Functions Lesson 11-2 Transformations of Quadratic Functions Lesson 11-3 Solving Quadratic Equations by graphing Lesson 11-4 Solving Quadratic Equations by factoring	 A.SSE.1a Interpret parts of all expression, such as terms, factors, and coefficients. A.SSE.3a - Factor a quadratic expression to reveal the zeros of the function it defines. A.SSE.3b - Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines. A.CED.1 - Create equations and inequalities in one variable and use them to solve problems. A.CED.2 - Create equations in two or more variables to represent relationships between quantities; 	different methods to analyze quadratic functions and solve quadratic equations?	 analyze and graph quadratic functions. identify the effects of transformations of the graphs of quadratic functions. write quadratic equations and solve them by graphing. solve quadratic equations by factoring and by using the Square Root Property. solve quadratic equations by completing the square. solve quadratic equations by using the Quadratic Formula. solve systems of linear and quadratic equations. 	Coefficient of determination Completing the square Curve fitting Discriminant Double root Maximum Minimum Parabola Quadratic equation Quadratic function Standard form of a quadratic function Vertex form
Lesson 11-5	graph equations on coordinate axes with labels and scales.		- model data with linear, exponential, and quadratic functions.	

Solving Quadratic	A.REI.1 - Explain each step in	- combine standard function	
Equations by Completing	solving a simple equation as	types.	
the Square	following from the equality of		
Lesson 11-6	numbers asserted at the previous		
Solving Quadratic	step, starting from the assumption		
Equations by Using the	that the original equation has a		
Quadratic Formula	solution. Construct a viable		
Losson 11-7	argument to justify a solution		
Solving Systems of	method.		
Linear and Quadratic	A.REI.4 - Solve quadratic equations		
Equations	in one variable.		
T	A.REI.7 - Solve a simple system		
Lesson 11-8 Modeling and Curve	consisting of a linear equation and a		
Fitting	quadratic equation in two variables		
	algebraically and graphically		
Lesson 11-9	A.REI.10 - Understand that the		
Combining Functions	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).		
	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.		
	F.IF.5 - Relate the domain of a		
	function to its graph and, where		
	applicable, to the quantitative		
	relationship it describes.		
	F.IF.7a - Graph linear and quadratic		
	functions and show intercepts,		
	maxima, and minima.		

F.IF.8a - Use the process of		
factoring and completing the square		
in a quadratic function to show		
zeros, extreme values, and symmetry		
of the graph, and interpret these in		
terms of a context.		
F.IF.9 - Compare properties of two		
functions each represented in a		
different way (algebraically,		
graphically, numerically in tables, or		
by verbal descriptions).		
F.BF.1b - Combine standard		
function types using arithmetic		
operations		
F.BF.3 - Identify the effect on the		
graph of replacing $f(x)$ by $f(x)$		
+k, k f(x), f(kx), and f(x + k) for		
specific values of k (both positive		
and negative); find the value		
of <i>k</i> given the graphs. Experiment		
with cases and illustrate an		
explanation of the effects on the		
graph using technology.		
F.LE.1 - Distinguish between		
situations that can be modeled with		
linear functions and with		
exponential functions.		
F.LE.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.		
F.LE.5 - Interpret the parameters in		
a linear or exponential function in		
terms of a context.		

	S.ID.6a - Fit a function to the data; use functions fitted to data to solve problems in the context of the data.						
Module 12							
Module 12: Statistics	N.Q.1 - Use units as a way to	How do you summarize	- represent sets of data using	Bar graphs			
Lesson 12-1 Measures of Center	understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and	and interpret data?	measures of center and percentiles. - represent data using dot plots, histograms, and bar	Bias Box plot Categorical data Conditional relative			
Lesson 12-2 Representing Data	interpret the scale and the origin in graphs and data displays.		graphs. - analyze data collection and	frequency Distribution			
Lesson 12-3 Using Data	S.ID.1 - Represent data with plots on the real number line (dot plots, bistograms, and hey plots)		representation methods to determine bias or identify micloading information	Do plot Extreme values			
Lesson 12-4 Measures of Spread	S.ID.2 - Use statistics appropriate to the shape of the data distribution to		- represent sets of data using measures of spread.	summary Histogram			
Lesson 12-5 Distributions of Data	compare center (median, mean) and spread (interquartile range, standard		- analyze the shapes of distributions to determine	Interquartile range Joint frequencies			
Lesson 12-6 Comparing Sets of Data	data sets. S.ID.3 - Interpret differences in		identify extreme data points. - use statistics appropriate to	Linear transformation Lower quartile Measurement data			
Lesson 12-7 Summarizing Categorical Data	shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers). S.ID.5 - Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.		the shapes of the distributions to compare the measures of center and spread of two data sets. - summarize and interpret categorical data using frequency tables.	Measures of center Median Measures of spread Negatively skewed Distribution Outlier Percentile Population Positively skewed distribution Relative frequency			