Window Rock Unified School District #8
CURRICULUM GUIDE
SY 2021-2022

SUBJECT: Algebra 1   **GRADE: 9**   **TIMELINE: Semester 1 - 1st Quarter**

STANDARD	CONTENT	OBJECTIVES *At the end of the lesson, I will be able to:*	ASSESSMENTS	RESOURCES	VOCABULARY

BIG IDEAS FOR THIS QUARTER:

- VARIABLE
- PROPERTIES
- EQUIVALENCE
- SOLVING EQUATIONS and INEQUALITIES

ESSENTIAL QUESTIONS:

01. How can you represent quantities, patterns and relationships?
02. How are properties related to Algebra?
03. How do you represent the relationship between quantities?
04. Can equations that appear to be different be equivalent?
05. How can you solve equations?
06. How do you represent relationships between quantities that are not equal?
07. Can inequalities that appear to be different be equivalent?

ESSENTIAL UNDERSTANDING:

01. Algebra uses symbols to represent quantities that are unknown or that vary.
02. When simplifying an expression, operations must be performed in the correct order.
03. Relationships that are always true for real numbers are called properties, which are rules used to rewrite and compare expressions.
04. Any real numbers can be added or subtracted using a number line model or using rules involving absolute value.
05. The rules for multiplying real numbers are related to the properties of real numbers and the definitions of operations.
06. The distributive property can be used to simplify the product of a number and a sum or difference.
07. Equivalent equations are equations that have the same solution/s.
08. You can find the solution of a one-step equation, two-step equations and multi-step equations using the properties of equality, inverse operations and properties of real numbers until you isolate the variable.
09. When you work with literal equations, use the properties of equality and inverse operations to isolate any particular variable.
10. An inequality is a mathematical sentence that uses an inequality symbol to compare the values of two expressions. You can use a number line to visually represent the values that satisfy the inequality.

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The Real Number System
 	
A1.N-RN.B. Use properties of rational and irrational numbers.
 	
• **A1.N-RN.B.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 non zero rational number and an irrational number is irrational.
	
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	KEY CONCEPTS
	
	• Real Numbers
	  - Rational Numbers
	  - Irrational Numbers
	• Properties of Real Numbers
	• Adding and Multiplying Real Numbers
	• Multiplying and Dividing Real Numbers
		Define rational and irrational numbers and explore their properties.
		
		Differentiate a rational number from an irrational number
		
		Identify types of numbers resulting from operations on rational and irrational numbers.
		
		Determine if an expression is rational or irrational.
		
		Determine whether rational numbers and irrational numbers are close under addition, subtraction, division or multiplication.
		
		Use the Order of Operations to evaluate expressions.
			NWEA Pre-Test
			
			Selected Response Assessment
			- Multiple Choice
			- True or False
			- Matching
			
			Constructed Response
			- Extended
			- Brief
			
			Lesson Quiz
			- Error Analysis
			- Reasoning
			- Problem Solving
			
			Practice and Problem Solving Exercises
			- STEM Problems
			
			STAR Math
			- Diagnostic Assessment
			
			AZM2 Practice Test Questions
				Prentice Hall Algebra 1
				
				STAR Math
				
				IXL.com
				
				Cumulative Review Materials
				
				Enrichment or Extension Activity Sheets
				
				Algebra 1 Consumables
				
				www.pearsonrealize.com
				
				www.khanacademy.org
				
				www.apexvs.com
				
				VIRTUAL NERD
				• https://www.youtube.com/channel/UCe73Uxnad_VYqYhQzLLD2IA
				
				Kutasoftware.com
					Real Numbers
					Rational Numbers
					Irrational Numbers
					Integers
					Whole Numbers
					Natural Numbers
					Terminating Decimal
					Repeating Decimal
					Radicals
					Radicand
					Square Roots
					Perfect Square
					Set
					Closure Property
					Absolute Value
					Additive Inverse
					Multiplicative Inverse
					Reciprocal

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Seeing Structure in Expressions
 	
A1.A-SSE.A. Interpret the structure of expressions.
 	
• **A1.A-SSE.A.1**
	Interpret expressions that represent the quantity in terms of its context. Interpret parts of an expression, such as terms, factors, and coefficients.
	  a. Interpret expressions by viewing one or more of their parts as a single entity.
	
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	KEY CONCEPTS
	• Order of Operations
	• Distributive Property
	  - Simplifying Expressions
	  - Rewriting Fraction Expressions
	  - Multiplication Property of -1
		Use the Order of Operations to evaluate expressions.
		
		Interpret parts of an expression such as terms, factors, and coefficients.
		
		Use the Distributive Property to simplify expressions.
		
		Simplify expressions involving exponents.
			Monitoring Progress Activities
			
			Constructed Response
			- Extended
			- Brief
			
			Selected Response Assessment
			- Multiple Choice
			- True or False
			- Matching
			
			Lesson Quiz
			- Error Analysis
			- Reasoning
			- Problem Solving
			
			Practice and Problem Solving Exercises
			- STEM Problems
			
			STAR Math
			- Diagnostic Assessment
				Prentice Hall Algebra 1
				
				www.pearsonrealize.com
				
				www.khanacademy.org
				
				www.apexvs.com
				
				VIRTUAL NERD
				- https://www.youtube.com/channel/UCe73Uxnad_VYqYhQzLLD2IA
				
				IXL.com
				
				Enrichment or Extension Activity Sheets
				
				Puzzles
				
				Algebra 1 Consumables
				
				AZM2 Practice Test
				
				www.mathworksheetsgo.com
				
				Kutasoftware.com
				
				Edugain.com
					Order of Operations
					Distributive Property
					Term
					Constant
					Coefficient
					Like terms
					Power
					Exponent
					Base
					Simplify
					Evaluate

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Creating Equations **A1.A-CED.A**. Create equations that describe numbers or relationships. • **A1.A.CED.A.1**	Create equations and inequalities in one variable and use them to solve problems. Include problem-solving opportunities utilizing real-world context. *Focus on linear, quadratic, exponential and piecewise-defined functions (limited to absolute value and step).* ---------------- **KEY CONCEPTS** • Properties of Equality • Inverse Operations • Solving Equations by Adding, Subtracting, Multiplying and Dividing	Create simple linear equations. Isolate variables to solve an equation Use the properties of equality and inverse operations to solve one-step and two-step equations. Solve equations involving addition, subtraction, multiplication, and division . Explain each step in solving an equation. Write and solve an equation representing a real-world situation.	**Practice and Problem Solving Exercises** - Reasoning - Standard Test Prep - STEM Problems **Lesson Quiz** - Error Analysis - Reasoning - Problem Solving **Constructed Response** - Extended - Brief **Personal Communication Assessment** - Oral Presentation - Think Aloud - Discussions	Prentice Hall Algebra 1 Holt Algebra 1 www.pearsonrealize.com www.khanacademy.org www.mathworksheet4kids.com www.apexvs.com www.mathworksheetsgo.com **VIRTUAL NERD** • https://www.youtube.com/channel/UCe73Uxnad_VYqYhQzLLD2IA	Equation Open Sentence Solution of an Equation Equivalent Equations Addition Property of Equality Subtraction Property of Equality Multiplication Property of Equality Division Property of Equality Inverse Operations Open Sentence Solution of an Equation
Creating Equations **A1.A-CED.A**. Create equations that describe numbers or relationships.	Create equations and inequalities in one variable and use them to solve problems. Include problem-solving	Isolate the variables in an equation by identifying the operations involved. Collect like terms to	**Practice and Problem Solving Exercises** - Reasoning - Standard Test Prep - STEM Problems	Prentice Hall Algebra 1 Cumulative Review Materials	Equation Open Sentence Solution of an Equation Equivalent

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• **A1.A.CED.A.1**
 	
ALSO
• A1.A-REI.B.3
• A1.A-REI.A.1
	opportunities utilizing real-world context.
	Focus on linear, quadratic, exponential and piecewise-defined functions (limited to absolute value and step).
	
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	KEY CONCEPTS
	
	• Properties of Equality
	• Solving Equations
	  - One-Step Equations
	  - Two-Step Equations
	  - Multi-Step Equations
		simplify the equation.
		
		Properly use the order of operations for solving an equation in one variable.
		
		Identify equations that have no solution or an infinite number of solutions.
		
		Solve equations with variables on both sides.
		
		Identify equations that are identities, with no solution or with infinitely many solutions
		
		Turn real-life problems into mathematical sentences and equations in one variable, and then solve the problem.
			Lesson Quiz
			- Error Analysis
			- Reasoning
			- Problem Solving
			
			AZM2 Practice Test
			
			Group Competition
			- Double Jeopardy
			
			Formative Performance Assessment Tasks:
			- **Project Making –** Create a calendar using one-step, two-step and multi-step equations whose solutions correspond to the dates of the calendar month you are creating
				Enrichment or Extension Activity Sheets
				
				Algebra 1 Consumables
				
				AZM2 Practice Test
				
				www.pearsonrealize.com
				www.khanacademy.org
				
				www.apexvs.com
				
				www.mathworksheetsgo.com
				
				VIRTUAL NERD
				• https://www.youtube.com/channel/UCe73Uxnad_VYqYhQzLLD2IA
				
				Kutasoftware
				
				Accuplacer Sample Test College Board
				
				WorksheetWorks.com
				
				Lesson Tutorials
					Equations
					Addition Property of Equality
					Subtraction Property of Equality
					Multiplication Property of Equality
					Division Property of Equality
					Inverse Operations
					Open Sentence
					Solution of an Equation

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A1.A-CED.A. Create equations that describe numbers or relationships.
 	
• **A1.A.CED.A.4**
 	
ALSO
• A1.A.CED.A.1
• A1.A-REI.A.1
	Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.
	
	KEY CONCEPTS
	
	• Rewriting Literal Equations
	• Rewriting Formulas
	  - Areas and Perimeters of Geometric Figures
	  - Distance Formula
	• Converting Temperatures
		Rewrite linear equations in two variables to solve for *x* or *y*.
		
		Solve linear equations in one variable that have coefficients represented by letters.
		
		Rearrange formulas to solve for a quantity of interest in a real-world problem.
			Practice and Problem Solving Exercises
			- Reasoning
			- STEM Problems
			
			Lesson Quiz
			- Error Analysis
			- Reasoning
			- Problem Solving
			
			Personal Communication Assessment
			- Oral Presentation
			- Think Aloud
			- Discussions
				Prentice Hall Algebra 1
				
				IXL.com
				
				Cumulative Review Materials
				
				Enrichment or Extension Activity Sheets
				
				www.pearsonrealize.com
				
				www.khanacademy.org
				
				www.apexvs.com
					Literal Equation
					Formula
					Variable
					Constant
					Circumference
					Area
					Perimeter
					Circumference

Reasoning with Equations and Inequalities **A1.REI.B** Solve equations and inequalities in one variable. • **A1.A-REI.B.3** **ALSO** • A1.A.CED.A.1 • A1.N-Q.A.2	Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters. ---------------- **KEY CONCEPTS** • Inequalities and their Graphs	Write, graph and identify solutions of inequalities. Use addition or subtraction to solve inequalities. Use multiplication or addition to solve inequalities. Solve a multistep	**Monitoring Progress Activities** **Practice and Problem Solving Exercises** - Reasoning - Standard Test Prep - STEM Problems **Mixed/Cumulative Review Activities** www.pearsonrealize.com	Prentice Hall Algebra 1 Enrichment or Extension Activity Sheets Puzzles Algebra 1 Consumables AZM2 Practice Test	Inequalities Solution Set Variable Equivalent Inequalities Properties of Inequality Compound Inequality Interval Notation

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	• Properties of Inequality
	• Solving Inequalities by Addition or Subtraction
	• Solving Inequalities by Multiplication of Division
	  - Rule on Multiplying or Dividing Inequalities
	• Solving Multi-Step Inequalities
	• Real-World Problem Solving
	• Compound Inequalities
	  - Writing a Compound Inequality
	  - Solving a Compound Inequality Involving **And**
	  - Solving a Compound Inequality Involving **Or**
	  - Using Interval Notation
		inequality by isolating the variable.
		
		Solve an inequality that involves collecting like terms.
		
		Create inequalities in one variable and use them to solve real-world problems.
		
		Solve and graph inequalities containing the word **And**.
		
		Solve and graph inequalities containing the word **Or**.
		
		Write an interval notation as an inequality and vice-versa.
			Personal Communication Assessment
			- Oral Presentation
			- Think Aloud
			- Discussions
			
			Selected Response Assessment
			- Multiple Choice
			- True or False
			- Matching
			
			Summative Test
			
			PBL
			- **Performance Task:** Problem Solving With Inequalities
				www.khanacademy.org
				
				www.apexvs.com
				
				www.mathworksheetsgo.com
				
				VIRTUAL NERD
				- https://www.youtube.com/channel/UCe73Uxnad_VYqYhQzLLD2IA
				
				Kutasoftware.com
				
				WorksheetWorks.com
				
				Lesson/Video Tutorials
				
				Graphic Organizers	