Wyoming Department of Education Required Virtual Education Course Syllabus

Niobrara County School District # 1

Program Name	Wyoming Virtual Academy	Content Area	MA
Course ID	D-MTH-112AV1-K	Grade Level	9-12
Course Name	Pre-Algebra - Semester 1	# of Credits	0.5
SCED Code	02051G0.5012	Curriculum Type	K12 Inc

COURSE DESCRIPTION

Generally offered first semester. In this course, students learn computational and problem-solving skills and the language of algebra. Students translate word phrases and sentences into mathematical expressions; analyze geometric figures; solve problems involving percentages, ratios, and proportions; graph different kinds of equations and inequalities; calculate statistical measures and probabilities; apply the Pythagorean theorem; and explain strategies for solving real-world problems. The textbook provides students with a ready reference and explanations that supplement the online material. Online lessons provide demonstrations of concepts, as well as interactive problems with contextual feedback.

WYOMING CONTENT AND PERFORMANCE STANDARDS

STANDARD#	BENCHMARK (Standard/Indicator) Use the Standards and Benchmarks as Spreadsheets
A-CED.1	Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions. Appendix A specification: Linear, and exponential (integer inputs only).
A-CED.4	Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions. Appendix A specification: Linear, and exponential (integer inputs only).
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.
A-REI.3	Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.
A-SSE.1a	Interpret expressions that represent a quantity in terms of its context.★ Interpret parts of an expression, such as terms, factors, and coefficients.
G-CO.1	Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.
G-CO.4	Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.
G-CO.5	Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.
G-CO.9	Prove theorems about lines and angles. Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.

G-CO.10	Prove theorems about triangles. Theorems include: measures of interior angles of a triangle sum to 180°; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.
N-Q.3	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. Appendix A specification: Foundation for work with expressions, equations and functions.
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. For example, we define $5^{1/3}$ to be the cube root of 5 because we want $[5^{1/3}]^3 = 5^{[(1/3) \times 3]}$ to hold, so $[5^{1/3}]^3$ must equal 5.
N-RN.4	

SCOPE AND SEQUENCE		
UNIT OUTLINE	**STANDARD#**	**OUTCOMES** **OBJECTIVES/STUDENT CENTERED GOALS**
Unit 1: The Basics Lesson 1: Semester Introduction		Identify a solution to a word problem when given a replacement set.
Unit 1: The Basics Lesson 10: Related Equations		Use inverse operations to write a related equation. Use inverse operations to solve an equation. Use inverse operations to write a related equation. Use inverse operations to write a related equation or inequality. Use inverse operations to solve an equation or inequality.
Unit 1: The Basics Lesson 11: Problem Solving		Write an equation for a word sentence. Write an equation for a word problem. Identify a solution to a word problem. Solve a word problem using related equations. Identify a solution to a word problem.
Unit 1: The Basics Lesson 12: Unit Review		Review the concepts and skills learned in the unit.
Unit 1: The Basics Lesson 13: Unit Test	A-SSE.1a , A-REI.1	
Unit 1: The Basics Lesson 2: Order of Operations		Use the order of operations to simplify a numerical expression.
Unit 1: The Basics Lesson 3: Variable Expressions		Write a variable expression for a word phrase. Evaluate a variable expression. Simplify a numerical expression
Unit 1: The Basics Lesson 4: Writing Expressions for Word Phrases		Write a variable expression for a word phrase. Write a word phrase for a variable expression.

Unit 1: The Basics Lesson 5: Your Choice		
Unit 1: The Basics Lesson 6: Comparing Expressions, Part 1		Use a less than, greater than, or equality symbol to compare two numerical expressions.
Unit 1: The Basics Lesson 7: Comparing Expressions, Part 2		Determine whether or not a value is a solution of an open sentence.
Unit 1: The Basics Lesson 8: Replacement Sets		Determine whether or not a value is a solution of an open sentence. Evaluate a variable expression with one or more unknowns. Find the solutions to an equation or inequality with a given replacement set.
Unit 1: The Basics Lesson 9: Your Choice		
Unit 2: Addition and Subtraction Lesson 1: Integers on a Number Line, Part 1		Determine the integer coordinate of a point on a number line. Find the opposite of an integer. Graph positive and negative integers on a number line. Compare positive and negative integers. Graph and compare positive and negative integers.
Unit 2: Addition and Subtraction Lesson 10: Your Choice		
Unit 2: Addition and Subtraction Lesson 11: Subtracting Decimals, Part 1		Simplify an expression involving subtraction of positive and negative numbers. Evaluate an expression involving subtraction of positive and negative numbers.
Unit 2: Addition and Subtraction Lesson 12: Subtracting Decimals, Part 2		Solve an equation involving subtraction of positive and negative decimals. Solve a word problem involving a difference of decimals.
Unit 2: Addition and Subtraction Lesson 13: Addition and Subtraction Properties		Use an addition property to evaluate an expression. Identify the commutative, associative, and opposite of a sum properties. Use transformations to solve addition and subtraction equations involving positive and negative numbers.
Unit 2: Addition and Subtraction Lesson 14: Equations Involving Addition and Subtraction		Use transformations to solve addition and subtraction equations involving positive and negative numbers. Use transformation by addition to find an equivalent equation. Use transformation by subtraction to find an equivalent equation.

Unit 2: Addition and Subtraction Lesson 15: Addition and Subtraction Applications		Solve a word problem involving addition of positive and negative numbers. Write an equation that can be used to solve a word problem involving subtraction of positive and negative numbers. Write an equation that can be used to solve a word problem involving addition and subtraction of positive and negative numbers.
Unit 2: Addition and Subtraction Lesson 16: Unit Review		Review the concepts and skills learned in the unit.
Unit 2: Addition and Subtraction Lesson 17: Unit Test	A-REI.1,	
Unit 2: Addition and Subtraction Lesson 2: Integers on a Number Line, Part 2		Find the absolute value of an integer. Solve a simple equation involving absolute value. Solve an inequality involving absolute value. Solve a simple equation and inequality involving absolute value.
Unit 2: Addition and Subtraction Lesson 3: Adding Integers		Add positive and negative integers. Simplify and evaluate expressions involving sums and differences of integers. Solve a simple equation and inequality involving absolute value. Evaluate simple expressions for integer values of the variables. Compare expressions involving addition of integers.
Unit 2: Addition and Subtraction Lesson 4: Subtracting Integers		Find the opposite of an integer. Subtract integers. Evaluate expressions involving a difference of integers. Simplify and evaluate expressions involving sums and differences of integers.
Unit 2: Addition and Subtraction Lesson 5: Discuss: Integers		Add positive and negative integers. Subtract integers.
Unit 2: Addition and Subtraction Lesson 6: Your Choice		
Unit 2: Addition and Subtraction Lesson 7: Decimals on a Number Line		Graph positive and negative decimals on a number line. Determine the decimal coordinate of a point on a number line. Graph positive and negative decimals on a number line. Compare positive and negative decimals. Put a set of decimals in order. Compare and order positive and negative decimals.
Unit 2: Addition and Subtraction Lesson 8: Adding Decimals, Part 1		Simplify an expression involving addition of positive and negative numbers. Evaluate an expression involving addition of positive and negative decimals.

		Simplify expressions involving addition of positive and negative decimals. Graph positive and negative decimals on a number line. Find the absolute value of an integer.
Unit 2: Addition and Subtraction Lesson 9: Adding Decimals, Part 2		Simplify expressions involving addition of positive and negative decimals. Compare and order positive and negative decimals. Compare two expressions involving addition of positive and negative decimals. Use transformations to solve addition and subtraction equations involving positive and negative numbers. Use related equations to solve an equation. Solve a word problem involving addition of positive and negative numbers. Write an equation that can be used to solve a word problem involving addition and subtraction of positive and negative numbers. Solve a word problem involving addition and subtraction of positive and negative numbers. Solve a word problem involving addition of decimals. Graph positive and negative decimals on a number line.
Unit 3: Multiplication and Division Lesson 1: Multiplying Integers and Decimals, Part 1		Multiply positive and negative numbers. Determine the sign of a product with three or more factors. Simplify an expression involving multiplication and division of positive and negative numbers.
Unit 3: Multiplication and Division Lesson 10: Multiplication and Division Applications, Part 2		Solve a literal equation for a given variable.
Unit 3: Multiplication and Division Lesson 11: Unit Review		Review the concepts and skills learned in the unit.
Unit 3: Multiplication and Division Lesson 12: Unit Test	N-Q.3, A-REI.1, A-REI.3, A-CED.4	
Unit 3: Multiplication and Division Lesson 2: Multiplying Integers and Decimals, Part 2		Simplify an expression involving multiplication of positive and negative numbers. Simplify an expression involving multiplication and division of positive and negative numbers. Evaluate an expression involving multiplication of signed integers and decimals.
Unit 3: Multiplication and Division Lesson 3: Dividing Integers and Decimals		Simplify an expression involving division of positive and negative numbers. Simplify an expression involving multiplication and division of positive and negative numbers. Evaluate an expression involving division of positive and negative numbers.

Unit 3: Multiplication and Division Lesson 4: Your Choice		
Unit 3: Multiplication and Division Lesson 5: Multiplication and Division Properties		Identify properties of equality. Use a property of equality to simplify an expression. Use a property of equality to solve an equation. Identify properties of equality and use them to solve an equation.
Unit 3: Multiplication and Division Lesson 6: Rounding and Estimation		Round a number to a specified place. Use rounding to estimate the value of an expression. Determine whether or not an answer to an equation or word problem is reasonable. Determine whether or not an answer to an equation or word problem is reasonable or not. Identify a reasonable answer to a given problem.
Unit 3: Multiplication and Division Lesson 7: Your Choice		
Unit 3: Multiplication and Division Lesson 8: Equations Involving Multiplication and Division		Use transformation by multiplication or division to solve an equation. Identify properties of equality and use them to solve an equation.
Unit 3: Multiplication and Division Lesson 9: Multiplication and Division Applications, Part 1		Use a formula to solve a word problem.
Unit 4: Fractions Lesson 1: Equivalent Fractions, Part 1		Write a proper fraction in lowest terms. Determine if two fractions are equivalent. Simplify a fraction that has a variable factor in the numerator or denominator.
Unit 4: Fractions Lesson 11: Your Choice		
Unit 4: Fractions Lesson 12: Multiplying and Dividing Mixed Numbers		Multiply fractions, mixed numbers, and integers. Divide fractions, mixed numbers, and integers. Multiply and divide fractions, mixed numbers, and integers.
Unit 4: Fractions Lesson 13: Equations with Fractions and Mixed Numbers, Part 1		Use transformations to solve an equation with mixed numbers or fractions. Use transformations to solve an addition or subtraction equation with mixed numbers or fractions.
Unit 4: FractionsLesson 14: Equations with Fractions and Mixed Numbers, Part 2		Use transformations to solve an equation with mixed numbers or fractions.Use transformations to solve a multiplication equation with mixed numbers or fractions.
Unit 4: Fractions Lesson 15: Unit Review		Review the concepts and skills learned in the unit.
Unit 4: Fractions Lesson 16: Unit Test	A-REI.3	

Unit 4: Fractions Lesson 2: Equivalent Fractions, Part 2		Solve an equation involving fractions. Solve a word problem involving fractions.
Unit 4: Fractions Lesson 3: Multiplying Fractions		Multiply fractions.
Unit 4: Fractions Lesson 4.10: Working with Improper Fractions and Mixed Numbers		Add or subtract proper fractions and mixed numbers. Convert a mixed number to an improper fraction. Add or subtract mixed numbers and improper fractions. Use transformations to solve an equation with mixed numbers or fractions.
Unit 4: Fractions Lesson 4: Dividing Fractions		Find the reciprocals of fractions. Find the reciprocal of fractions. Divide fractions.
Unit 4: Fractions Lesson 5: Discuss: Fractions		Write a proper fraction in lowest terms. Multiply fractions. Divide fractions
Unit 4: Fractions Lesson 6: Your Choice		
Unit 4: Fractions Lesson 7: Common Denominators		Find the LCD of a pair of fractions. Find equivalent fractions with a common denominator for a set of fractions. Find the LCD of a pair of fractions and find equivalent fractions with a common denominator for a set of fractions. Compare fractions.
Unit 4: Fractions Lesson 8: Adding and Subtracting Fractions, Part 1		Add proper fractions. Subtract proper fractions. Add or subtract proper fractions and mixed numbers.
Unit 4: Fractions Lesson 9: Adding and Subtracting Fractions, Part 2		Solve a word problem involving addition and subtraction of fractions.
Unit 5: Combined Operations Lesson 1: The Distributive Property		Use the distributive property and mental math to evaluate an expression.
Unit 5: Combined Operations Lesson 2: Like Terms		Identify like terms. Combine like terms. Identify and combine like terms.
Unit 5: Combined Operations Lesson 3: Expressions with Mixed Operations		Simplify and evaluate an expression with mixed operations. Simplify an expression with mixed operations. Evaluate an expression with mixed operations. Use the distributive property and mental math to evaluate an expression.
Unit 5: Combined Operations Lesson 4: Your Choice		

Unit 5: Combined Operations Lesson 5: Equations with Mixed Operations		Solve equations with mixed operations. Solve an equation that involves simplification.
Unit 5: Combined Operations Lesson 6: Error Analysis		Identify errors in a solution to an equation and a word problem. Correct errors in a solution to an equation and a word problem. Identify and correct errors in a solution to an equation and a word problem.
Unit 5: Combined Operations Lesson 7: Inequalities		Solve a simple inequality when given a replacement set. Solve an inequality in one variable. Graph the solution to an inequality in one variable on a number line.
Unit 5: Combined Operations Lesson 8: Unit Review		Review the concepts and skills learned in the unit.
Unit 5: Combined Operations Lesson 9: Unit Test	A-REI.1, A-REI.3	
Unit 6: Number Properties Lesson 1: Positive Exponents		Simplify a numerical expression involving positive exponents. Write a number as a power of a given number. Evaluate a variable expression involving positive exponents. Simplify a numerical expression and evaluate a variable expression involving exponents.
Unit 6: Number Properties Lesson 2: Factors and Primes		Find factors of a given number. Determine whether a number is prime or composite. Find the prime factorization of a number.
Unit 6: Number Properties Lesson 3: GCF and Relative Primes		Find factors of a given number. Find the prime factorization of a number. Find the common factors of two numbers. Determine whether two numbers are relatively prime. Find the GCF of two numbers. Determine whether two numbers are relatively prime or not.
Unit 6: Number Properties Lesson 4: Your Choice		
Unit 6: Number Properties Lesson 5: Negative Exponents		Simplify an expression involving negative exponents. Solve an equation involving negative exponents. Simplify an expression and solve an equation involving negative exponents.
Unit 6: Number Properties Lesson 6: Powers of Ten		Write a power of ten in standard form. Write a number in standard form as a power of ten. Multiply a decimal by a power of ten. Divide a decimal by a power of ten.

Unit 6: Number Properties Lesson 7: Unit Review		Review the concepts and skills learned in the unit.
Unit 6: Number Properties Lesson 8: Unit Test	A-CED.1, N.RN.1,	
Unit 7: Geometry Basics Lesson 1: Points, Lines, and Planes		Name a point. Name a plane. Name a line. Name a point, line, plane, ray, or angle.
Unit 7: Geometry Basics Lesson 10: Unit Review		Review the concepts and skills learned in the unit.
Unit 7: Geometry Basics Lesson 11: Unit Test	G-CO.1, G-CO.4, G-CO.5, G-CO.9, G-CO.10	
Unit 7: Geometry Basics Lesson 2: Rays and Angles		Name a ray. Name an angle. Name a point, line, plane, ray, or angle. Determine whether an angle is acute, right, or obtuse.
Unit 7: Geometry Basics Lesson 3: Parallel Lines and Transversals		Identify a pair of alternate interior and alternate exterior angles associated with a transversal that intersects parallel lines. Identify a pair of corresponding angles associated with a transversal that intersects parallel lines. Identify a pair of alternate interior or corresponding angles associated with a transversal that intersects parallel lines. Use properties to determine unknown angle measures associated with a transversal that intersects two parallel lines. Use properties to determine unknown angle measures associated with a transversal that intersects two parallel lines in a complex figure.
Unit 7: Geometry Basics Lesson 4: Discuss: Lines and Transversals		Determine the sum of the measures of same-side interior angles when a transversal intersects two parallel lines. Use same-side interior angles to determine whether two lines intersected by a transversal are parallel.
Unit 7: Geometry Basics Lesson 5: Your Choice		
Unit 7: Geometry Basics Lesson 6: Triangles		Use triangle properties to find missing angle measures in a triangle. Determine whether a triangle is acute, obtuse, or right.
Unit 7: Geometry Basics Lesson 7: Polygons		Determine whether a figure is a polygon. Determine whether a polygon is regular. Identify a polygon by the number of its sides. Classify a figure as a polygon or not.

		Name a polygon by its number of sides and determine if it is regular.
Unit 7: Geometry Basics Lesson 8: Circles		Name radii. Name chords. Name diameters. Find the radius or diameter when given the other. Name radii, chords and diameters of circles.
Unit 7: Geometry Basics Lesson 9: Transformations		Draw a reflection when given a figure and a line of reflection. Identify a reflection or rotation for a given image and preimage. Draw or identify a reflection. Draw a rotation of 90 or 180 degrees when given a figure and a center of rotation. Draw or identify a rotation of 90 or 180 degrees.
Unit 8: Semester Review and Test Lesson 1: Semester Review		
Unit 8: Semester Review and Test Lesson 2: Your Choice		
Unit 8: Semester Review and Test Lesson 3: Your Choice		
Unit 8: Semester Review and Test Lesson 4: Semester Test		