Wyoming Department of Education Required Virtual Education Course Syllabus

BIG HORN COUNTY SCHOOL DISTRICT #1

Program Name	WYCA	Content Area	Mathematics
Course ID	CAMA79273	Grade Level	9, 10, 11, 12
Course Name	Algebra 1 A, Part 1	# of Credits	0.5
SCED Code	02053G0.5011	Curriculum Type	Connections Academy

COURSE DESCRIPTION

This course includes the first half of the Algebra 1 A course content. In this course, the student will gain a foundational understanding of the real number system, expressions, equations, and inequalities. The student will solve simple and multi-step equations and inequalities and represent those solutions graphically. Throughout the course, problem solving, critical thinking, and real-world application of mathematical concepts will be required.

WYOMING CONTENT AND PERFORMANCE STANDARDS

STANDARD#	BENCHMARK
N.Q.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.
N.Q.2	Define appropriate quantities for the purpose of descriptive modeling.
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.*
A.CED.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
A.CED.3	Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.
A.CED.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.
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.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.
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.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).
A.REI.11	Explain why the x-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.
F.IF.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).
F.IF.2	Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.
F.IF.3	Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. For example, the Fibonacci sequence is defined recursively by f(0) = f(1) = 1, f(n+1) = f(n) + f(n-1) for n ≥ 1 (n is greater than or equal to 1).
F.IF.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 domain for the function.

F.IF.6	Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.
F.IF.7	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.
F.IF.7a	Graph linear and quadratic functions and show intercepts, maxima, and minima.
F.BF.1	Write a function that describes a relationship between two quantities.
F.BF.1a	Determine an explicit expression, a recursive process, or steps for calculation from a context.
F.BF.1b	Combine standard function types using arithmetic operations. For example, build a function that models the temperature of a cooling body by adding a constant function to a decaying exponential, and relate these functions to the model.
F.BF.1c	(+)Compose functions. For example, if T(y) is the temperature in the atmosphere as a function of height, and h(t) is the height of a weather balloon as a function of time, then T(h(t)) is the temperature at the location of the weather balloon as a function of time.
F.BF.2	Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the 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. Include recognizing even and odd functions from their graphs and algebraic expressions for them.
F.LE.1b	Recognize situations in which one quantity changes at a constant 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.
S.ID.6	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.
S.ID.6a	Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models.
S.ID.6b	Informally assess the fit of a function by plotting and analyzing residuals.
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.
S.IC.2	Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation. For example, a model says a spinning coin falls heads up with probability 0. 5. Would a result of 5 tails in a row cause you to question the model?
S.IC.4	Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling.
S.IC.6	Evaluate reports based on data.

SCOPE AND SEQUENCE

UNIT OUTLINE	STANDARD#	OUTCOMES
Unit 1: Ready, Set, Algebra In this unit, you will focus on new ways to think about and approach mathematics. You will learn how to set SMART goals, establish study strategies that reduce math anxiety, and review ways to be an active learner. In addition, this unit introduces the various resources that are available to you in your Algebra 1 course.		•Use strategies such as self-assessment and reflection in order to improve mathematical performance •Distinguish between effort-based and ability-based models of learning •Assess personal readiness for study and learning Use resources to assist with goal-setting and attainment
Unit 2: Foundational of Algebra This unit provides you with a solid foundation for the remainder of the Algebra 1 course. In this unit, you will begin with a review of many concepts from previous math courses, including variables, expressions, and real-number operations.		•Write and simplify expressions •Graph, order, and compare real numbers on a number line •Use properties of real numbers to simplify expressions •Add, subtract, multiply, and divide real numbers

Unit 3: Solving Equations In this unit, you will learn how to solve problems using a variety of problem-solving strategies including tables, graphs, and equations. This unit also includes instruction on solving one, two, or multi-step equations, a skill that is essential to your learning of higher-level mathematics. You will complete a variety of assessments in this unit, including Quick Checks, quizzes, and a unit test.	N.Q.1, A.CED.1, A.CED.2, A.CED.4, A.REI.1, A.REI.3, A.REI.10	• Use tables and graphs to solve a problem •Solve equations with one, two, or multiple steps •Solve equations with variables on both sides •Solve equations and formulas for a given variable, using them in real-world scenarios
Unit 4: Solving Inequalities In this unit, you will learn how to solve inequalities that require one or more steps. You will also learn how to graph the solutions to inequalities on the number line. Set notation will be introduced as a tool for expressing the solutions to inequalities. Finally, you will explore absolute value equations and inequalities, and the union and intersection of sets.	A.CED.1, A.REI.3	•Solve inequalities with one, two, or multiple steps •Graph the solutions to inequalities on the number line •Use set notation to express the solutions to inequalities •Solve and graph absolute value equations and inequalities •Find the intersection, union, and complements of sets
Unit 5: Semester A Review and Exam In this unit, you will have the opportunity to prepare for and take the semester exam. Since this is a comprehensive exam, it may be helpful to organize your notes in the order of the course outline before you begin to review. Using the test-taking strategies that you have previously learned can help you be successful with both objective and essay questions.		•Decide which strategies you will use to prepare for your exam •Organize your time and study materials •Review your notes, keywords and vocabulary terms, and all important concepts that may be covered on this exam