

Wyoming Department of Education Required Virtual Education Course Syllabus

BIG HORN COUNTY SCHOOL DISTRICT #1

Program Name	WYCA	Content Area	Mathematics
Course ID	CAMA79666	Grade Level	9, 10, 11, 12
Course Name	Explorations in Mathematics B	# of Credits	0.5
SCED Code	02003G0.5022	Curriculum Type	Connections Academy

COURSE DESCRIPTION

This is the second of two courses that comprise Explorations in Mathematics. This course is designed to provide the student with a solid mathematics foundation. The student will be introduced to the properties of equality to solve one-step and multi-step equations. Then, the student will explore absolute value and how to compare values using absolute value. The student will examine the applications of one-step and multiple step equations. Finally, the student will be introduced to probability and statistics concepts including direct and inverse variation, mean, median, mode, counting principle, permutations, and combinations.

WYOMING CONTENT AND PERFORMANCE STANDARDS

STANDARD#	BENCHMARK
A.SSE.1	Interpret expressions that represent a quantity in terms of its context.*
A.SSE.1a	Interpret parts of an expression, such as terms, factors, and coefficients.*
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.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.2	Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.
A.REI.3	Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.
S.ID.2	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.*
S.ID.4	Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.*
S.CP.2	Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent.*
S.CP.3	Understand the conditional probability of A given B as $P(A \text{ and } B)/P(B)$, and interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A, and the conditional probability of B given A is the same as the probability of B.*
S.CP.4	Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities. For example, collect data from a random sample of students in your school on their favorite subject among math, science, and English. Estimate the probability
S.CP.5	Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations. For example, compare the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer.*
S.MD.1	(+)Define a random variable for a quantity of interest by assigning a numerical value to each event in a sample space; graph the corresponding probability distribution using the same graphical displays as for data distributions.*
S.MD.2	(+)Calculate the expected value of a random variable; interpret it as the mean of the probability distribution.*
S.MD.5	(+)Weigh the possible outcomes of a decision by assigning probabilities to payoff values and finding expected values.*
S.MD.6	(+)Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).*
S.MD.7	(+)Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).*

SCOPE AND SEQUENCE

UNIT OUTLINE	STANDARD#	OUTCOMES
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<p>Unit 1: Integers and Solving Equations In this unit, you will explore the addition, subtraction, multiplication, and division properties of equality and use these properties to solve simple and one-step equations. You will be introduced to the concept of absolute values of integers in order to compare two or more integers. Then, you will learn how to add, subtract, multiply, and divide integers. You will solve simple equations using the reflexive, symmetric, transitive, and substitution properties of equality. Finally, you will expand your knowledge of one-step equations skills to solve real-world application problems and multi-step equations.</p>	<p>A.SSE.1; A.SSE1a; A.CED.1; A.REI.1; A.REI.2; A.REI.3</p>	<ul style="list-style-type: none"> •Learn how to use the Addition and Subtraction Property of Equality •Practice solving simple equations using the Addition and Subtraction Property of Equality •Use the Multiplication and Division Property of Equality to solve simple equations •Understand the importance of using the Multiplication and Division Property of Equality •Understand what the absolute value of an integer is •Compare two or more integers •Learn to add and subtract integers •Practice adding and subtracting integers •Learn to multiply integers •Understand how to divide integers •Practice multiplying and dividing integers •Learn how to use the reflexive, symmetric, transitive, and substitution property of equality to solve simple equations •Practice using the reflexive, symmetric, transitive, and substitution property of equality to solve simple equations •Use the Addition, Subtraction, Multiplication, or Division Property of Equality to solve one-step equations •Learn the applications of one-step equations •Use one-step equations to solve application problems •Learn how to solve multi-step equations •Practice solving multiple-step equations •Learn how to use multiple-step equations to solve application problems •Practice using multiple-step equations to solve application problems
<p>Unit 2: Probability and Statistics In this unit, you will be introduced to and solve equations using the concepts of direct and inverse variation. You will learn the measures of central tendency including mean, median, mode, and range, and determine these measures in a data set. You will expand on the measures of central tendency by calculating the quartiles of an ordered data set. Then, you will explore some common concepts of probability including the counting principle, permutations, combinations, and probability of simple events. At the end of the unit, you will calculate real-world probability problems.</p>	<p>S.ID.2; S.ID.4; S.CP.2; S.CP.3; S.CP.4; S.CP.5; S.MD.1; S.MD.2; S.MD.5; S.MD.6; S.MD.7</p>	<ul style="list-style-type: none"> •Understand constant of variation •Use constant of variation to solve problems involving direct variation •Discover what inverse variation means •Use inverse variation to solve equations •Learn the definitions of the mean and mode of a data set •Find the mean and mode of a data set •Discover the median of a set of ordered data •Understand what the quartiles are •Learn what box-and-whisker plots are •Draw the box-and-whisker plot of a data set •Understand what the counting principle is •Find the total number of possible outcomes in multiple events •Gain an understanding of permutations •Find the total number of permutations of n objects •Look at the factorial of a number •Learn the meaning of combinations •Find the number of combinations of list of objects •Understand how to find the probability of simple events •Practice finding the probability of simple events •Use the counting principle to calculate probability •Work with permutations to calculate probability •Look at combinations used to calculate probability
<p>Unit 3: Explorations in Mathematics B Final In this unit, you will have the opportunity to prepare for and take the final 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.</p>		<ul style="list-style-type: none"> •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 •Review your notes, keywords, formulas, and all important concepts that may be covered on this exam