

Wyoming Department of Education Required Virtual Education Course Syllabus

BIG HORN COUNTY SCHOOL DISTRICT #1

Program Name	WYCA	Content Area	Mathematics
Course ID	CAMA79629	Grade Level	9, 10, 11, 12
Course Name	Algebra with Finance A	# of Credits	0.5
SCED Code	02155G0.5012	Curriculum Type	Connections Academy

COURSE DESCRIPTION

In the first semester of this course, the student will focus on data and its many uses in the real world. The student will begin by exploring ways to represent data through several types of graphs, and will then develop strategies for interpreting data, methods for collecting data, and techniques for analyzing and using data. The course concludes with a detailed study of probability and probability models.

WYOMING CONTENT AND PERFORMANCE STANDARDS

STANDARD #	BENCHMARK
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.REI.4	Solve quadratic equations in one variable.
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.*
S.ID.1	Represent data with plots on the real number line (dot plots, histograms, and box plots).*
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.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.IC.3	Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.*

SCOPE AND SEQUENCE

UNIT OUTLINE	STANDARD#	OUTCOMES
<p>Unit 1: Graphs</p> <p>In this unit, you will learn how to construct and evaluate four different types of graphs. You will learn how to determine the best type of graph to use in different situations, and the advantages and disadvantages of each type of graph.</p>	S.ID.1	<ul style="list-style-type: none"> • Interpret line graphs, bar graphs, pie charts, stem and leaf plots, pictographs, histograms, and cumulative frequency graphs • Construct bar graphs and pie charts • Construct and interpret linear graphs representing real-world situations
<p>Unit 2: Interpretation of Data</p> <p>In this unit, you will learn how to find the mean, median, and mode of data sets. You will then use median to construct box and whisker plots. This is followed by instructions on how to find the range, variance, and standard deviation of data sets. The unit concludes with a lesson on validity, and finally a discussion of the types of data used in graphs.</p>	S.ID.1; S.ID.2	<ul style="list-style-type: none"> • Use the five-number summary to interpret data sets • Analyze data by verifying its validity • Differentiate between qualitative and quantitative data
<p>Unit 3: Collection of Data</p> <p>In this unit, you will learn how to collect data by using a variety of methods. You will learn the strengths and weaknesses of each method, and how to use the methods to develop a case study.</p>	S.IC.3	<ul style="list-style-type: none"> • Collect data by using a questionnaire • Collect data by using interviews • Collect data by using observation • Collect data by using historical methods • Use all the data collection methods to develop a case study
<p>Unit 4: Uses of Data</p> <p>In this unit, you will learn how to combine data collection and interpretation methods for specific uses in various situations. You will learn how to make a scatterplot and find lines of best fit. You will also learn how data is used to make predictions. During this study, you will revisit the Algebra I concepts of the quadratic formula and exponential functions, which will be used to show exponential growth and decay. This unit also features an introduction to mathematical models and includes a discussion of biases in data collection.</p>	A.CED.1; A.CED.2; A.REI.4; F.LE.3; S.ID.6; S.ID.6a	<ul style="list-style-type: none"> • Create a scatterplot and develop a line of best fit • Identify quadratic equations • Identify exponential functions • Determine if a graph models exponential growth or decay • Recognize biases in collected data

<p>Unit 5: Probability In this unit, you will learn the basics of probability. The unit begins with an overview of probability of sample space and a discussion of the Fundamental Counting Principle. You will then learn how to construct tree diagrams and learn the difference between permutations and combinations. You will then learn how to calculate probabilities and how to determine the difference between independent and dependent events. Finally, you will learn the difference between theoretical and experimental probability and how to calculate the odds of an event.</p>	<p>S.ID.4</p>	<ul style="list-style-type: none"> •Determine the total number of possibilities of an event by using tree diagrams, permutations, combinations, and the Fundamental Counting Principle •Calculate theoretical probabilities, experimental probabilities, and odds •Recognize the difference between independent and dependent events
<p>Unit 6: Probability Models In this unit, you will learn about normal distributions and the empirical rule. You will see how standard deviations are used in normal distributions. You will learn about binomial models and the type of data that can fit such a model. The unit continues with a discussion of geometric models and concludes with a discussion about the reasonableness of these models.</p>		<ul style="list-style-type: none"> •Recognize when data is in the form of a normal distribution •Use normal distributions to make conclusions about future data •Determine the types of data used in a binomial model •Recognize data that follows a geometric model •Recognize when a type of model is reasonable