

# Wyoming Department of Education Required Virtual Education Course Syllabus

## BIG HORN COUNTY SCHOOL DISTRICT #1

Program Name	WYCA	Content Area	Mathematics
Course ID	CAMA86300	Grade Level	6
Course Name	Middle School Math 6 A	# of Credits	0.5
SCED Code	02036G0.5012	Curriculum Type	Connections Academy

### COURSE DESCRIPTION

Throughout this course, the student will engage in group and individual learning activities using a consumable textbook and intelligent, adaptive software as the basis for content. The student will learn to approach a problem by decomposing or composing objects and numbers. The student will examine the relationships between numbers and shapes and use area models to solve problems. The student will strengthen his or her skills with fraction operations and then use decimal operations to solve volume and surface area problems. The student will investigate different ways in which quantities can be related to each other. He or she will learn about ratios and proportional relationships and use various models such as double number lines, ratio tables, and graphs to reason about these relationships. Finally, the student will learn about percents, unit rates, and conversion rates.

### WYOMING CONTENT AND PERFORMANCE STANDARDS

STANDARD#	BENCHMARK
6.RP.1	Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."
6.RP.2	Understand the concept of a unit rate $a/b$ associated with a ratio $a:b$ with $b \neq 0$ ( $b$ not equal to zero), and use rate language in the context of a ratio relationship. For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is $3/4$ cup of flour for each cup of sugar." "We paid \$75 for 15 hamburgers, which is a rate of \$5 per hamburger." (Expectations for unit rates in this grade are limited to non-complex fractions.)
6.RP.3	Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.
6.RP.3a	Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.
6.RP.3b	Solve unit rate problems including those involving unit pricing and constant speed. For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?
6.RP.3c	Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means $30/100$ times the quantity); solve problems involving finding the whole given a part and the percent.
6.RP.3d	Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.
6.NS.1	Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. For example, create a story context for $(2/3) \div (3/4)$ and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that $(2/3) \div (3/4) = 8/9$ because $3/4$ of $8/9$ is $2/3$ . (In general, $(a/b) \div (c/d) = ad/bc$ .) How much chocolate will each person get if 3
6.NS.2	Fluently divide multi-digit numbers using the standard algorithm.
6.NS.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
6.NS.4	Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor. For example, express $36 + 8$ as $4(9 + 2)$ .
6.EE.2b	Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. For example, describe the expression $2(8 + 7)$ as a product of two factors; view $(8 + 7)$ as both a single entity and a sum of two terms.
6.EE.3	Apply the properties of operations to generate equivalent expressions. For example, apply the distributive property to the expression $3(2 + x)$ to produce the equivalent expression $6 + 3x$ ; apply the distributive property to the expression $24x + 18y$ to produce the equivalent expression $6(4x + 3y)$ ; apply properties of operations to $y + y + y$ to produce the equivalent expression $3y$ .
6.G.1	Find area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.
6.G.2	Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = lwh$ and $V = bh$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.
6.G.4	Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.

### SCOPE AND SEQUENCE

UNIT OUTLINE	STANDARD#	OBJECTIVES
<p><b>Unit 1: Factors and Area</b></p> <p>In this unit you will compose and decompose shapes, using properties of arithmetic and the additive property of area. You will also review the connection of multiplication with area. They look for commonalities between numbers, specifically least common multiples and greatest common factors.</p>	6.EE.2b, 6.NS.4, 6.EE.3, 6.G.1	<ul style="list-style-type: none"> <li>Apply the Distributive Property to compose and decompose numerical expressions</li> <li>Calculate areas of a variety of triangles, quadrilaterals, and complex geometric shapes and other shapes found in the real world</li> <li>Use prime factorization and tables to organize factors and multiples</li> <li>Use the greatest common factor (GCF) and least common multiple (LCM) to solve real-world and mathematical problems</li> </ul>
<p><b>Unit 2: Positive and Rational Numbers</b></p> <p>In this unit you will order positive rational numbers written in different forms. You will also review using models for fraction multiplication, and then they use models to develop an understanding of division of a fraction by a fraction.</p>	6.NS.1	<ul style="list-style-type: none"> <li>Identify and order rational numbers written in different forms using benchmark and equivalent fractions</li> <li>Use models to multiply and divide fractions</li> <li>Calculate quotients of fractions and interpret the remainders</li> </ul>

<p><b>Unit 3: Decimals and Volume</b></p> <p>In this unit you will determine the volume of rectangular prisms with fractional and decimal side lengths. You will also review decimal operations. Finally, you will use nets to calculate surface area of prisms and pyramids.</p>	<p>6.NS.2, 6.NS.3, 6.G.2, 6.G.4</p>	<ul style="list-style-type: none"> <li>• Classify polygons and polyhedra</li> <li>• Calculate volumes of right rectangular prisms and composite solids</li> <li>• Calculate sums and differences of decimals</li> <li>• Determine the surface area of prisms and pyramids using nets, drawings, and measurements</li> <li>• Apply the standard algorithm for division</li> </ul>
<p><b>Unit 4: Ratios</b></p> <p>In this unit you will learn about ratios and use ratio reasoning to determine equivalent ratios. You will compare additive and multiplicative relationships and make quantitative and qualitative comparisons. You will also use ratio reasoning to solve real-world and mathematical problems with double number lines, tables, proportional statements, and graphs.</p>	<p>6.RP.1, 6.RP.3, 6.RP.3a</p>	<ul style="list-style-type: none"> <li>• Differentiate between additive and multiplicative reasoning</li> <li>• Apply qualitative and quantitative reasoning to decide which of two or more ratios in a given situation is greater</li> <li>• Apply a variety of strategies to determine equivalent ratios</li> <li>• Analyze graphs of proportional and non-proportional relationships</li> </ul>
<p><b>Unit 5: Percents</b></p> <p>In this unit you will use their knowledge of fractions and decimals and their basic understanding of percents to write and compare rational numbers written in these three different forms. You will use estimation, benchmark percents, and ratio strategies to solve percent problems, including determining the whole given the part and percent and determining the part of a whole.</p>	<p>6.RP.3c</p>	<ul style="list-style-type: none"> <li>• Calculate percents</li> <li>• Analyze the relationships between percents, fractions, and decimals</li> <li>• Apply strategies for determining reasonableness of percent calculations</li> <li>• Apply a variety of strategies to determine a part of a whole and to determine the whole in a variety of percent problems, including problems about money, area, and volume</li> </ul>
<p><b>Unit 6: Unit Rates and Conversions</b></p> <p>In this unit you will use conversion rates and ratio reasoning to convert within and between systems of measurement. You will also explore unit rates and their representations and use unit rates and ratio reasoning to solve problems.</p>	<p>6.RP.2, 6.RP.3b, 6.RP.3d</p>	<ul style="list-style-type: none"> <li>• Apply ratio reasoning and strategies to convert units of measurement</li> <li>• Use models to estimate unit rates</li> <li>• Solve problems with unit rates using a variety of models including tables and graphs</li> </ul>