

Wyoming Department of Education Required Virtual Education Course Syllabus

Campbell County School District # 1

Program Name	Campbell County Virtual School	Content Area	MA
Course ID	MA3V	Grade Level	3
Course Name	Math Plus Purple	# of Credits	
SCED Code		Curriculum Type	K12 Inc

COURSE DESCRIPTION

MATH PLUS PURPLE (3)

This research-based course focuses on computational fluency, conceptual understanding, and problem solving. This engaging course features new graphics, learning tools, and games; adaptive activities that help struggling students master concepts and skills before moving on; and more support for Learning Coaches to guide their students to success. This course emphasizes conceptual understanding of the mathematical operations: addition, subtraction, multiplication, and division. Students make connections between the operations, as well as practice through problem solving, to achieve fluency. The use of problem solving and representing problem situations with equations, which include symbols for unknown values, introduces algebraic thinking. The course addresses fractions through multiple representations, as well as solving real-world problems, which gives students the ability to connect the use of fractions with problem situations in a way that makes sense and creates deeper understanding. The course addresses geometry and measurement through introductory work on perimeter, area, and attributes of two-dimensional geometric figures, and applying measuring techniques to solving problems involving time, length, capacity, and mass. Throughout the course, problem solving connects individual mathematical skills and concepts in a useful and in-depth way. This course includes standards-based tasks, digital literacy skills, and assessment questions.

WYOMING CONTENT AND PERFORMANCE STANDARDS

STANDARD#	BENCHMARK (Standard/Indicator) Use the Standards and Benchmarks as Spreadsheets
3.OA.1	Interpret products of whole numbers, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each. For example, describe a context in which a total number of objects can be expressed as 5×7 .
3.OA.2	Interpret whole-number quotients of whole numbers, e.g., interpret $56 \div 8$ as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. For example, describe a context in which a number of shares or a number of groups can be expressed as $56 \div 8$.
3.OA.3	Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
3.OA.4	Determine the unknown whole number in a multiplication or division equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations $8 \times \diamond = 48$, $5 = \diamond \div 3$, $6 \times 6 = \diamond$.
3.OA.5	Apply properties of operations as strategies to multiply and divide.2 Examples: If $6 \times 4 = 24$ is known, then $4 \times 6 = 24$ is also known. (Commutative property of multiplication.) $3 \times 5 \times 2$ can be found by $3 \times 5 = 15$, then $15 \times 2 = 30$, or by $5 \times 2 = 10$, then $3 \times 10 = 30$. (Associative property of multiplication.) Knowing that $8 \times 5 = 40$ and $8 \times 2 = 16$, one can find 8×7 as $8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56$. (Distributive property.)
3.OA.6	Understand division as an unknown-factor problem. For example, find $32 \div 8$ by finding the number that makes 32 when multiplied by 8.
3.OA.7	Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 \div 5 = 8$) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

3.OA.8	Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.
3.OA.9	Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.
3.NBT.1	Use place value understanding to round whole numbers to the nearest 10 or 100.
3.NBT.2	Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.
3.NBT.3	Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9×80 , 5×60) using strategies based on place value and properties of operations.
3.NF.1	Understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size $1/b$.
3.NF.2	Understand a fraction as a number on the number line; represent fractions on a number line diagram. Understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size $1/b$. Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.
3.NF.3	<p>Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.- Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.</p> <ul style="list-style-type: none"> - Recognize and generate simple equivalent fractions, e.g., $1/2 = 2/4$, $4/6 = 2/3$. <p>Explain why the fractions are equivalent, e.g., by using a visual fraction model.</p> <ul style="list-style-type: none"> - Express whole numbers as fractions, and recognize fractions that are equivalent Full to whole numbers. Examples: Express 3 in the form $3 = 3/1$; recognize that $6/1 = 6$; locate $4/4$ and 1 at the same point of a number line diagram. - Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual fraction model.
3.MD.1	Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals Full in minutes, e.g., by representing the problem on a number line diagram.
3.MD.2	Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).6 Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.
3.MD.3	Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs. For example, draw a bar graph in which each square in the bar graph might represent 5 pets.
3.MD.4	Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.

3.MD.5	Recognize area as an attribute of plane figures and understand concepts of area measurement. - A square with side length 1 unit, called “a unit square,” is said to have “one square unit” of area, and can be used to measure area. A plane figure which can be covered without gaps or overlaps by n unit squares is said to have an area of n square units.	
3.MD.6	Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).	
3.MD.7	Relate area to the operations of multiplication and addition. - Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths. - Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning. - Use tiling to show in a concrete case that the area of a rectangle with whole- number side lengths a and $b + c$ is the sum of $a \times b$ and $a \times c$. Use area models to represent the distributive property in mathematical reasoning. - Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non- overlapping parts, applying this technique to solve real world problems.	
3.MD.8	Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.	
3.G.1	Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.	
3.G.2	Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.	
SCOPE AND SEQUENCE		
UNIT OUTLINE	STANDARD#	OUTCOMES OBJECTIVES/STUDENT CENTERED GOALS
Whole Number Sense	3.NBT.1	Unit 1: Whole Number Sense Order three or more whole numbers through 1,000. Identify the place value for each digit in whole numbers through 1,000. Compare whole numbers through 1,000. Round whole numbers through 1,000 to the nearest ten. Round whole numbers through 1,000 to the nearest hundred. Count aloud whole numbers through 1,000.
Whole Number Addition and Subtraction	3.OA.8 3.OA.9 3.NBT.2	Unit 2: Whole Number Addition and Subtraction Determine the sum or difference of two whole numbers. Recognize and solve a story problem in which two quantities are combined. Recognize and solve a story problem in which a quantity changes by addition or subtraction. Recognize and solve a story problem in which two quantities are compared by the use of addition or subtraction. Recognize and solve a story problem in which one quantity must be changed to equal another quantity. Identify odd and even numbers and describe their characteristics.

Whole Number Multiplication Sense	3.OA.1 3.OA.3 3.OA.5 3.OA.7 3.NBT.3	Unit 3: Whole Number Multiplication Sense Use an area model to explain multiplication. Explain and apply the associative property of multiplication. Explain and apply the distributive property of multiplication. Explain and apply the zero property of multiplication. Explain and apply the multiplication property of 1. Demonstrate automatic recall of multiplication facts. Use a model to explain multiplication as repeated addition of the same quantity. Explain and apply the commutative property of multiplication. Use objects or sketches to solve a multiplication problem.
Whole Number Multiplication	3.OA.3 3.NBT.3	Unit 4: Whole Number Multiplication Use multiplication to solve a story problem that involves equal groups. Create a story problem that can be represented by a multiplication number sentence. Use multiplication to solve a story problem that involves equal measures. Use objects or sketches to solve a multiplication story problem. Solve a multiplication problem involving a multidigit factor and a one-digit factor.
Whole Number Division Sense	3.OA.2 3.OA.5 3.OA.6 3.OA.7 3.OA.8	Unit 5: Whole Number Division Sense Demonstrate an understanding of the inverse relationship between multiplication and division. Use the inverse relationship of multiplication and division to compute and check results. Create a story problem that can be represented by a division number sentence. Explain and apply the division property of 1. Demonstrate an understanding of the effects of division on whole numbers. Use division to solve a story problem that involves equal measures. Recognize the meaning of the three symbols for division. Use objects or sketches to solve a division problem. Explain division as repeated subtraction. Explain the meaning of the \div symbol. Use division to solve a story problem that involves equal groups. Solve a story problem involving two or more operations. Demonstrate understanding that division by zero is undefined. Explain division as the sharing of a quantity into equal groups.

Algebra Thinking	3.OA.4 3.OA.9	<p>Unit 6: Algebra Thinking</p> <p>Recognize and describe a linear pattern, such as counting by 5s or multiplying 5 times a number to reach 100, by its rule. Determine a missing number in an equation or an inequality. Use a mathematical expression to represent a relationship between quantities. Solve a simple story problem that involves a function. Use a variable to represent an unknown number in an equation. Use an inequality to represent a relationship between quantities. Use an equation to represent a relationship between quantities. Extend a linear pattern, such as stating what number comes next in a series. Select the appropriate symbol to show an operation or a relationship that makes a number sentence true.</p>
Geometry	3.G.1 3.G.2	<p>Unit 7: Geometry</p> <p>Identify, describe, and classify a polygon according to the number of its sides. Identify attributes of isosceles, equilateral, and right triangles. Identify the measure of an angle in a geometric figure or an everyday object as greater than or less than a right angle. Identify attributes of parallelograms, rectangles, and squares. Identify right angles in geometric figures or everyday objects. Know how to define and sketch different quadrilaterals. Define and identify attributes of different quadrilaterals.</p>
		<p>Unit 8: Semester Review and Checkpoint</p> <p>Use an equation to represent a relationship between quantities. Demonstrate automatic recall of division facts. Select the appropriate symbol to show an operation or a relationship that makes a number sentence true. Determine a missing number in an equation or an inequality. Solve a simple story problem that involves a function. Solve a multiplication problem involving a multidigit factor and a one-digit factor. Use multiplication to solve a story problem that involves equal groups.</p> <p>Solve a division problem that has a multidigit dividend, a one-digit divisor, and no remainder. Use division to solve a story problem that involves equal groups. Extend a linear pattern.</p>

<p>Semester Review and Checkpoint</p>	<p>3.OA.2 3.OA.4 3.OA.5 3.OA.6 3.OA.7 3.OA.8 3.OA.9 3.NBT.1 3.NBT.2 3.NBT.3</p>	<p>problem that involves equal groups. Extend a linear pattern, such as stating what number comes next in a series. Explain and apply the associative property of multiplication. Identify right angles in geometric figures or everyday objects. Compare whole numbers through 1,000. Use the inverse relationship of multiplication and division to compute and check results.</p> <p>Identify, describe, and classify a polygon according to the number of its sides. Round whole numbers through 1,000 to the nearest ten or hundred. Demonstrate understanding that division by zero is undefined. Identify the place value for each digit in whole numbers through 1,000. Find the sum or difference of two whole numbers with sums and minuends up through 1,000. Use an area model to explain multiplication. Use objects or sketches to solve a division problem. Recognize the meaning of the three symbols for division. Use division to solve a story problem that involves equal measures. Order three or more whole numbers through 1,000. Identify odd and even numbers and describe their characteristics. Recognize and solve a story problem in which one quantity must be changed to equal another quantity. Use an inequality to represent a relationship between quantities. Explain and apply the commutative property of multiplication. Demonstrate automatic recall of multiplication facts. Use multiplication to solve a story problem that involves equal measures. Recognize and solve a story problem in which two quantities are compared by the use of addition or subtraction. Demonstrate an understanding of the inverse relationship between multiplication and division. Identify attributes of isosceles, equilateral, and right triangles. Identify attributes of parallelograms, rectangles, and squares. Know how to define and sketch different quadrilaterals. Use an area model to explain multiplication. Determine solid objects that could be combined to create a given solid object. Order three or more whole numbers through 10,000. Round numbers through 10,000. Classify common solid geometric figures. Identify the measure of an angle in a geometric figure or an everyday object as greater than or less than a right angle. Determine the sum or difference of two whole numbers. Identify and describe common solid geometric figures.</p>
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<p>Whole Numbers and Multiple Operations</p>	<p>3.OA.8</p>	<p>Unit 9: Whole Numbers and Multiple Operations Determine whether addition, subtraction, multiplication, or division is the appropriate operation to use to solve a story problem and solve the problem. Use the order of operations to evaluate an expression. Solve a story problem involving two or more operations.</p>
<p>Fractions and Probability</p>	<p>3.NF.1 3.NF.2 3.NF.3 3.MD.3 3.G.1</p>	<p>Unit 10: Fractions and Probability Recognize and determine equivalent fractions. Explain why . Compare and order unit fractions, such as $\frac{1}{4}$, and fractions with like denominators, such as $\frac{2}{5}$ and $\frac{4}{5}$, by using objects or sketches. Identify whether specific events are certain, likely, unlikely, or impossible. Solve one- and two-step "how many more" and "how many fewer" problems using information presented in scaled bar graphs. Use a sketch to represent a fraction. Use the results of a probability experiment to predict future events. Draw a scaled picture graph to represent a data set with several categories. Compare and order unit fractions, such as , and fractions with like denominators, such as and , by using objects or sketches. Demonstrate how fractions and whole numbers can be plotted on a number line. Explain that a fraction can be used to represent the relationship of a part to a whole and a rational number on the number line. Compare and order fractions with like denominators, such as and , and fractions with like numerators, such as and , using number lines, area models, and reasoning. Write the fraction represented by a drawing that shows parts of a whole or a rational number on the number line. Use concrete objects or given drawings to compare unit fractions. Identify and systematically record the possible outcomes for a simple event. Summarize and display the results of a probability experiment in a clear and organized way. Explain why $\frac{a}{a} = 1$. Draw a scaled bar graph to represent a data set with several categories. Recognize that the comparison of two fractions is only valid if the wholes are identical.</p>

<p>Measurement: Length and Time</p>	<p>3.MD.1 3.MD.4</p>	<p>Unit 11: Measurement: Length and Time Tell time to the nearest minute. Determine elapsed time to the nearest minute. Collect measurement data and display the data in a line plot. Solve word problems involving addition and subtraction of time intervals in minutes. Represent problems involving time intervals in minutes on a number line diagram. Estimate the length of an object to the nearest 1/2 inch and measure the length to the nearest 1/4 inch. Identify the appropriate metric or English units for measuring the length of an object. Estimate and measure the length of an object to the nearest centimeter. Identify the appropriate tools for measuring the length of an object.</p>
<p>Measurement: Capacity and Weight</p>	<p>3.MD.2</p>	<p>Unit 12: Measurement: Capacity and Weight Identify the appropriate tools for measuring liquid volume. Estimate and measure the weight of an object to the nearest ounce. Identify the appropriate metric and English units for measuring the mass or weight of an object. Estimate and measure liquid volume to the nearest cup. Estimate and measure the mass of an object to the nearest gram. Use a simple unit conversion, such as centimeters to meters, to solve a problem. Identify the appropriate metric and English units for measuring liquid volume. Solve a unit-conversion story problem by using multiplication or division. Estimate and measure liquid volume to the nearest liter. Write a simple unit conversion, such as inches to feet, as an expression or an equation. Identify the appropriate tools for measuring the weight or mass of an object.</p>

<p>Mathematical Reasoning</p>	<p>3.OA.8</p>	<p>Unit 13: Mathematical Reasoning</p> <p>Demonstrate when and how to break a multistep story problem into simpler steps. Use estimation to predict a solution to a story problem and to determine whether calculations are reasonable. Determine the answer to a story problem to a specific degree of accuracy, such as hundredths. Apply strategies and results from a simpler story problem to either a more complex problem or to a similar problem. Explain mathematical reasoning in a story problem by using words, numbers, symbols, charts, graphs, tables, diagrams, or models. Analyze a story problem by identifying the question, recognizing relevant information, and developing a solution strategy. Express the solution to a story problem clearly and logically with appropriate mathematical notation, terms, and accurate language. Explain the advantages of exact answers and approximate answers to story problems. Check the accuracy of a calculation in a story problem. Determine the answer to a story problem to a specific degree of accuracy, such as hundreds or tens.</p>
<p>Perimeter and Area</p>	<p>3.MD.5 3.MD.6</p>	<p>Unit 14: Perimeter and Area</p> <p>Use multiplication or division to solve a story problem involving rectangular area. Determine the perimeter of a polygon with whole-number side lengths. Interpret and use formulas to answer questions about quantities and their relationships. Given the whole-number perimeter of a polygon, students will find the whole-number length of an unknown side. Decompose composite figures formed by rectangles into non-overlapping rectangles to determine the area of the original figure using the additive property of area. Use a formula to find the area of a rectangle, a square, or a figure that can be divided into rectangles or squares. Demonstrate understanding that rectangles that have the same area can have different perimeters. Define and demonstrate understanding of the area of any plane figure. Given the perimeter of an everyday object in a story problem, find the whole-number length of an unknown side. Demonstrate understanding that rectangles that have the same perimeter can have different areas. Estimate or determine the number of squares required to cover the area of a solid figure. Estimate or determine the number of cubes required to fill a solid figure.</p>

<p>Semester Review and Assessment</p>	<p>3.NF.1 3.NF.2 3.NF.3 3.MD.3 3.OA.8 3.G.1</p>	<p>Unit 15: Semester Review and Assessment Demonstrate how fractions and whole numbers can be plotted on a number line. Draw a scaled bar graph to represent a data set with several categories. Express the solution to a story problem clearly and logically with appropriate mathematical notation, terms, and accurate language. Write and solve addition or subtraction number sentences to represent problem-solving situations with sums and minuends up through 1,000. Determine whether addition, subtraction, multiplication, or division is the appropriate operation to use to solve a story problem and solve the problem. Solve 1- and 2-step “how many more” and “how many fewer” problems using information presented in scaled bar graphs. Solve a story problem involving two or more operations. Explain mathematical reasoning in a story problem by using words, numbers, symbols, charts, graphs, tables, diagrams, or models. Write the fraction represented by a drawing that shows parts of a whole or a rational number on the number line. Compare and order unit fractions, such as $\frac{1}{2}$ and $\frac{1}{3}$, and fractions with like denominators, such as $\frac{2}{5}$ and $\frac{3}{5}$, by using objects or sketches.</p>
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