

St. Paul's Lutheran School, Oconomowoc, Wisconsin

MATH CURRICULUM PHILOSOPHY

God has created an orderly, systematic universe. Mathematics is a useful and unique God-given universal language that facilitates the ability to appreciate the created order God has given us and further advances the understanding of our modern, high-tech world. The development of mathematics abilities prepares students for lives of responsible Christian service to His church and the community.

In this curriculum writing effort, the National Math Standards and the Wisconsin State Standards have been incorporated with Integrating the Faith to provide a Christ-centered approach to the teaching of math. Bullet configurations identify the source of the learner outcome.

- Integrating the Faith
 - National Standards
 - State of Wisconsin Standards (Grades 4 & 8: Must be at mastery level by these grades)

BROAD GOALS

From a Christ-Centered Perspective, Students Will:

1. Know and understand numbers, how they relate to each other, and be fluent in using math computations correctly and accurately.
2. Analyze and find the unknown using patterns, relationships, functions, symbols, and graphs.
3. Observe and analyze two and three-dimensional shapes and demonstrate spatial reasoning.
4. Understand the measurable attributes of objects and apply the appropriate techniques, tools, and/or formulas to determine measurement.

5. Formulate a question and organize theoretical or experiential data to make predictions as to what the outcome will be.
6. Apply and adapt a variety of appropriate strategies to solve problems encountered in life.
7. Select and use various types of mathematical reasoning and methods of proof.
8. Communication: explain clearly and precisely mathematical processes to peers, teachers, & others.
9. Understand how mathematical ideas interconnect and build on one another to produce a complete set of skills
10. Create and use visual aides to organize, record, and communicate ideas to solve problems and interpret data.

St. Paul's Lutheran School Math Curriculum Scope and Sequence

LEARNER OUTCOMES FROM A CHRIST-CENTERED PERSPECTIVE, THE STUDENT IS EXPECTED TO:	JK	K	1	2	3	4	5	6	7	8
1. Know and understand numbers, how they relate to each other, and be fluent in using math computations correctly and accurately.										
K-2 Learner Outcomes										
➤ use one-to-one correspondence and language such as more than, same number as, or two less than to describe relative sizes of sets of concrete objects;	I	T	M	R						
➤ use sets of concrete objects to represent quantities given in verbal or written form (through 10);	I	T	M							
➤ use language such as before or after to describe relative position in a sequence of events or objects;	I	T	T	T						
➤ count by ones to 100.		I	T	M						
➤ place an object in a specified position.		I	T	M						
➤ compare and order whole numbers up to 99 (less than, greater than, or equal to) using sets of concrete objects and pictorial models;			I	M						
➤ create sets of tens and ones using concrete objects to describe, compare, and order whole numbers;		I	T	T						
➤ use words and numbers to describe the values of individual coins such as penny, nickel, dime, and		I	T	T						

quarter and their relationships;										
➤ read and write numbers to 99 to describe sets of concrete objects.			I	T						
➤ model and create addition and subtraction problem situations with concrete objects and write corresponding number sentences;		I	T	T						
➤ learn and apply basic addition facts (sums to 18) using concrete models.		I	T	M						
➤ compare and order whole numbers using place value;		I	T	T						
❑ Write an addition or subtraction sentence that describes a modeled situation.		I	R	R						
❑ Demonstrate the commutative, the associative, and the identity properties for addition.			I	T						
❑ Find the sum of three one-digit numbers.			I	T						
➤ use concrete models to represent, compare, and order whole numbers (through 999), read the numbers, and record the comparisons using numbers and symbols (>, <, =).				I						
➤ name fractional parts of a whole object (not to exceed twelfths) when given a concrete representation;			I	I						

LEARNER OUTCOMES FROM A CHRIST-CENTERED PERSPECTIVE, THE STUDENT IS EXPECTED TO:	JK	K	1	2	3	4	5	6	7	8
➤ name fractional parts of a set of objects (not to exceed twelfths) when given a concrete representation.			I	I						
➤ recall and apply basic addition facts (sums to 18);				I						
➤ select addition or subtraction and solve problems using two-digit numbers, whether or not regrouping is necessary;				I						
➤ determine the value of a collection of coins less than one dollar.			I	T						
➤ solve subtraction problems related to addition facts (fact families) such as $8 + 9 = 17$, $9 + 8 = 17$, $17 - 8 = 9$, and $17 - 9 = 8$.			I	T						
❑ Write a number sentence that describes the relationship between any pair of whole numbers.		I	I	T						
❑ Find the sum of three or four single-digit addends.				I						
❑ Round two-digit numbers to the nearest ten, and round three-digit numbers to the nearest ten and to the nearest hundred.				I						
➤ use multiple models to develop initial understandings of place value and the base-ten number system;			I	I						
➤ develop understanding of the relative position and magnitude of whole numbers and of ordinal and cardinal numbers and their connections;				I						
➤ develop a sense of whole numbers and represent and use them in flexible ways, including relating, composing, and decomposing numbers;				I						
➤ connect number words and numerals to the quantities they represent, using various physical models and representations;			I	I						
➤ understand and represent commonly used fractions, such as $1/4$, $1/3$, and $1/2$.			I	T						
➤ understand various meanings of addition and subtraction of whole numbers and the relationship between the two operations;			I	T						
➤ understand the effects of adding and subtracting whole numbers;		I	R	M						
➤ understand situations that entail multiplication and division, such as equal groupings of objects and sharing equally.				I						

LEARNER OUTCOMES FROM A CHRIST-CENTERED PERSPECTIVE, THE STUDENT IS EXPECTED TO:	JK	K	1	2	3	4	5	6	7	8
➤ develop and use strategies for whole-number computations, with a focus on addition and subtraction;		I	I	T						
➤ develop fluency with basic number combinations for addition and subtraction;			I	T						
➤ use a variety of methods and tools to compute, including objects, mental computation, estimation, paper and pencil, and calculators.		I	T	T						
3-5 Learner Outcomes										
• Use appropriate mathematical vocabulary, symbols, and notation with understanding based on prior conceptual work					I	T	T			
• Represent and explain whole numbers*, decimals, and fractions with physical materials					I	I	T			
• Represent and explain whole numbers*, decimals, and fractions with number lines and other pictorial models*						I	T			
• Represent and explain whole numbers*, decimals, and fractions with verbal descriptions						I	T			
• Represent and explain whole numbers*, decimals, and fractions with place-value concepts and notation						I	T			
• Represent and explain whole numbers*, decimals, and fractions with symbolic renaming (e.g., $43=40+3=30+13$)						I	T			
• Determine the number of things in a set by grouping and counting (e.g., by threes, fives, hundreds)					T	T	M			
• Determine the number of things in a set by combining and arranging (e.g., all possible coin combinations amounting to thirty cents)					T	T	T			
• Determine the number of things in a set by estimation, including rounding					I	T	T			
• Read, write, and order whole numbers*, simple fractions (e.g., halves, fourths, tenths, unit fractions*) and commonly-used decimals (monetary units)						I	T			
• Identify and represent equivalent fractions for halves, fourths, eighths, tenths, sixteenths							I			
• Add and subtract fractions with like denominators						I	T			
• compare two fractional quantities in problem-solving situations using a variety of methods, including common denominators;						I	T			
• identify prime factors of a whole number and common factors of a set of whole numbers;						I	T			

LEARNER OUTCOMES FROM A CHRIST-CENTERED PERSPECTIVE, THE STUDENT IS EXPECTED TO:	JK	K	1	2	3	4	5	6	7	8
➤ understand and use properties of operations, such as the distributive property of multiplication over addition.						I	T			
6-8 Learner Outcomes										
• Use reasoning abilities to identify relationships								T	T	T
• Read, represent, and interpret various rational numbers* (whole numbers*, integers*, decimals, fractions, and percents) with verbal descriptions, geometric models*, and mathematical notation (e.g., expanded*, scientific*, exponential*)								I	T	T
• Perform and explain operations on rational* numbers (add, subtract, multiply, divide, raise to a power, extract a root, take opposites and reciprocals, determine absolute value)								I	T	T
• Generate and explain equivalencies among fractions, decimals, and percents								T	T	T
• Model* and solve problems involving number-theory concepts such as prime* and composite numbers								I	T	T
• Model* and solve problems involving number-theory concepts such as divisibility and remainders								T	T	T
• Model* and solve problems involving number-theory concepts such as greatest common factors								T	M	M
• Model* and solve problems involving number-theory concepts such as least common multiples								T	M	M
• Recognize and use generalized properties and relations, including additive and multiplicative property of equations and inequalities								T	M	M
• Recognize and use generalized properties and relations, including commutative and associative properties of addition and multiplication								T	M	M
• Recognize and use generalized properties and relations, including distributive* property								I	T	M
• Recognize and use generalized properties and relations, including inverses* and identities* for addition and multiplication transitive* property								I	T	M
➤ compare and order fractions, decimals, and percents efficiently and find their approximate locations on a number line;								T	M	M
2. Analyze and find the unknown using patterns, relationships, functions, symbols, and graphs.										
K-2 Learner Outcomes										
➤ use patterns to predict what comes next, including cause-and-effect relationships;		I	T	T						
➤ use patterns to skip count by twos, fives, and tens.		I	T	T						

LEARNER OUTCOMES FROM A CHRIST-CENTERED PERSPECTIVE, THE STUDENT IS EXPECTED TO:	JK	K	1	2	3	4	5	6	7	8
➤ find patterns in numbers, including odd and even;			I	T						
❑ Make estimates before making measurements, performing computations, and solving word problems.		I	T	T						
➤ find patterns in numbers such as in a 100s chart;		I	T	T						
➤ use patterns in place value to compare and order whole numbers through 999;				I						
➤ use patterns to develop strategies to remember basic addition facts;			I	T						
➤ select or develop an appropriate problem-solving strategy including drawing a picture, looking for a pattern, systematic guessing and checking, or acting it out in order to solve a problem;		I	T	T						
➤ sort, classify, and order objects by size, number, and other properties;		I	T	T						
➤ recognize, describe, and extend patterns such as sequences of sounds and shapes or simple numeric patterns and translate from one representation to another;				I						
➤ analyze how both repeating and growing patterns are generated.				I						
➤ illustrate general principles and properties of operations, such as the commutative property of addition, using specific numbers;			I	T						
➤ use concrete, pictorial, and verbal representations to develop an understanding of invented and conventional symbolic notations.			I	T						
➤ model situations that involve the addition and subtraction of whole numbers, using objects, pictures, and symbols.			I	T						
➤ describe qualitative change, such as a student's growing taller;		I	T	T						
➤ describe quantitative change, such as a student's growing two inches in one year.		I	T	T						
3-5 Learner Outcomes										
• Use reasoning abilities to perceive patterns					T	T	T			
• Use reasoning abilities to identify relationships					I	T	T			
• Use reasoning abilities to formulate questions for further exploration					I	T	T			
• Use reasoning abilities to justify strategies					I	T	T			
• Use letters, boxes, or other symbols to stand for any number, measured quantity, or object in simple situations (e.g., $N + 0 = N$ is true for any number)					I	T	T			

LEARNER OUTCOMES FROM A CHRIST-CENTERED PERSPECTIVE, THE STUDENT IS EXPECTED TO:	JK	K	1	2	3	4	5	6	7	8
<ul style="list-style-type: none"> Use the vocabulary, symbols, and notation of algebra accurately (e.g., correct use of the symbol "="; effective use of the associative property of multiplication) 					I	T	M			
<ul style="list-style-type: none"> Recognize variability in simple functional* relationships by describing how a change in one quantity can produce a change in another (e.g., number of bicycles and the total number of wheels) 						I	T			
<ul style="list-style-type: none"> Use simple equations in a variety of ways, including using them to represent problem situations 					T	T	T			
<ul style="list-style-type: none"> Use simple equations in a variety of ways, including solving them by different methods (e.g., use of manipulatives, guess and check strategies, recall of number facts) 					T	T	T			
<ul style="list-style-type: none"> Use simple equations in a variety of ways, including recording and describing solution strategies 					T	T	T			
<ul style="list-style-type: none"> Recognize and use generalized properties and relationships of arithmetic (e.g., commutative property, inverse relationship of multiplication and division) 					I	T	T			
<ul style="list-style-type: none"> make generalizations from patterns or sets of examples and non-examples; 					T	T	T			
<ul style="list-style-type: none"> justify why an answer is reasonable and explain the solution process. 					T	T	T			
<ul style="list-style-type: none"> investigate how a change in one variable relates to a change in a second variable; 					I	T	T			
6-8 Learner Outcomes										
<ul style="list-style-type: none"> Use reasoning abilities to perceive patterns 								T	T	T
<ul style="list-style-type: none"> Express order relationships among rational numbers using appropriate symbols (>, <, ≥, ≤,) 								T	M	M
<ul style="list-style-type: none"> Apply proportional thinking in a variety of problem situations that include, but are not limited to ratios and proportions (e.g., rates, scale drawings*, similarity*) 								T	T	M
<ul style="list-style-type: none"> Apply proportional thinking in a variety of problem situations that include, but are not limited to percents, including those greater than 100 and less than one (e.g., discounts, rate of increase or decrease, sales tax) 								I	T	M

LEARNER OUTCOMES FROM A CHRIST-CENTERED PERSPECTIVE, THE STUDENT IS EXPECTED TO:	JK	K	1	2	3	4	5	6	7	8
• Work with algebraic expressions in a variety of ways, including using appropriate symbolism, including exponents* and variables*								I	T	T
• Work with algebraic expressions in a variety of ways, including evaluating expressions through numerical substitution								I	T	M
• Work with algebraic expressions in a variety of ways, including generating equivalent expressions								I	T	T
• Work with algebraic expressions in a variety of ways, including adding and subtracting expressions								I	T	M
• Use linear equations and inequalities in a variety of ways, including writing them to represent problem situations and to express generalizations								I	T	T
• Use linear equations and inequalities in a variety of ways, including solving them by different methods (e.g., informally, graphically, with formal properties, with technology)								I	T	T
• Use linear equations and inequalities in a variety of ways, including writing and evaluating formulas (including solving for a specified variable)								I	T	M
• Use linear equations and inequalities in a variety of ways, including using them to record and describe solution strategies								I	T	T
3. Observe and analyze two and three-dimensional shapes and demonstrate spatial reasoning.										
K-2 Learner Outcomes										
➤ describe and identify an object by its attributes using informal language;		I	T	T						
➤ compare two objects based on their attributes;		I	T	M						
➤ sort objects according to their attributes and describe how those groups are formed.		I	T	T						
➤ describe and compare real-life objects or models of solids;		I	T	T						
➤ recognize shapes in real-life objects or models of solids;		I	T	M						
➤ describe, identify, and compare circles, triangles, and rectangles including squares.	I	T	T	M						
➤ identify circles, triangles, and rectangles, including squares, and describe the shape of balls, boxes, cans, and cones;		I	T	T						
➤ combine geometric shapes to make new geometric shapes using concrete models.		I	T	T						
☐ Identify congruent figures and lines of symmetry.			I	T						
➤ identify attributes of any shape or solid;		I	T	T						

LEARNER OUTCOMES FROM A CHRIST-CENTERED PERSPECTIVE, THE STUDENT IS EXPECTED TO:	JK	K	1	2	3	4	5	6	7	8
➤ use attributes to describe how two shapes or two solids are alike or different;	I	T	M	M						
➤ cut geometric shapes apart and identify the new shapes made.		I	T	T						
➤ recognize, name, build, draw, compare, and sort two- and three-dimensional shapes;		I	T	T						
➤ describe attributes and parts of two- and three-dimensional shapes;		I	T	T						
➤ investigate and predict the results of putting together and taking apart two- and three-dimensional shapes.				I						
➤ describe, name, and interpret relative positions in space and apply ideas about relative position;		I	T	T						
➤ describe, name, and interpret direction and distance in navigating space and apply ideas about direction and distance;				I						
➤ find and name locations with simple relationships such as "near to" and in coordinate systems such as maps.				I						
➤ recognize and apply slides, flips, and turns;				I						
➤ recognize and create shapes that have symmetry.			I	I						
➤ create mental images of geometric shapes using spatial memory and spatial visualization;				I						
➤ recognize and represent shapes from different perspectives		I	I	T						
➤ recognize geometric shapes and structures in the environment and specify their location.		I	T	T						
3-5 Learner Outcomes										
• Describe two-and three-dimensional figures (e.g., circles, polygons, trapezoids, prisms, spheres) by naming them					I	T	T			
• Describe two-and three-dimensional figures (e.g., circles, polygons, trapezoids, prisms, spheres) by comparing, sorting, and classifying them					I	T	T			
• Describe two-and three-dimensional figures (e.g., circles, polygons, trapezoids, prisms, spheres) by drawing and constructing physical models to specifications						I	T			
• Describe two-and three-dimensional figures (e.g., circles, polygons, trapezoids, prisms, spheres) by identifying their properties (e.g., number of sides or faces, two- or three-dimensionality, equal sides, number of right angles)					I	T	T			

LEARNER OUTCOMES FROM A CHRIST-CENTERED PERSPECTIVE, THE STUDENT IS EXPECTED TO:	JK	K	1	2	3	4	5	6	7	8
<ul style="list-style-type: none"> Describe two-and three-dimensional figures (e.g., circles, polygons, trapezoids, prisms, spheres) by predicting the results of combining or subdividing two-dimensional figures 						I				
<ul style="list-style-type: none"> Describe two-and three-dimensional figures (e.g., circles, polygons, trapezoids, prisms, spheres) by explaining how these figures are related to objects in the environment 					T	T	T			
<ul style="list-style-type: none"> Use physical materials and motion geometry (such as slides, flips, and turns) to identify properties and relationships, including but not limited to symmetry, congruence, or similarity 					T	T	T			
<ul style="list-style-type: none"> Identify and use relationships among figures, including but not limited to position (e.g., parallel, perpendicular) 					T	T	T			
<ul style="list-style-type: none"> Use simple two-dimensional coordinate systems to find locations on maps and to represent points and simple figures 					I	T	T			
<ul style="list-style-type: none"> use concrete objects or pictures to make generalizations about determining all possible combinations; 					I	T	T			
<ul style="list-style-type: none"> identify prime and composite numbers using concrete models and patterns in factor pairs. 						I	T			
<ul style="list-style-type: none"> use critical attributes to define geometric shapes or solids. 						I	T			
<ul style="list-style-type: none"> sketch the results of translations, rotations, and reflections; 						I	T			
<ul style="list-style-type: none"> The student is expected to locate and name points on a coordinate grid using ordered pairs of whole numbers. 					T	T	M			
<ul style="list-style-type: none"> ➤ describe location and movement using common language and geometric vocabulary; 					T	T	T			
6-8 Learner Outcomes										
<ul style="list-style-type: none"> Describe special and complex two- and three-dimensional figures (e.g., rhombus, polyhedron, cylinder) and their component parts (e.g., base, altitude, and slant height) by 								T	M	M
<ul style="list-style-type: none"> naming, defining, and giving examples 								T	M	M
<ul style="list-style-type: none"> comparing, sorting, and classifying them 								M	M	M

LEARNER OUTCOMES FROM A CHRIST-CENTERED PERSPECTIVE, THE STUDENT IS EXPECTED TO:	JK	K	1	2	3	4	5	6	7	8
<ul style="list-style-type: none"> identifying and contrasting their properties (e.g., symmetrical*, isosceles, regular) 								M	M	M
<ul style="list-style-type: none"> drawing and constructing physical models to specifications 								T	T	M
<ul style="list-style-type: none"> Identify and use relationships among the component parts of special and complex two- and three-dimensional figures (e.g., parallel sides, congruent* faces). 								M	M	M
<ul style="list-style-type: none"> Identify three-dimensional shapes from two-dimensional perspectives and draw two-dimensional sketches of three-dimensional objects preserving their significant features 								I	T	T
<ul style="list-style-type: none"> Perform transformations* on two-dimensional figures and describe and analyze the effects of the transformations on the figures 								I	T	T
<ul style="list-style-type: none"> Locate objects using the rectangular coordinate system* 								I	T	M
<ul style="list-style-type: none"> ➤ use geometric models to represent and explain numerical and algebraic relationships; 								I	T	T
4. Understand the measurable attributes of objects and apply the appropriate techniques, tools, and/or formulas to determine measurement.										
K-2 Learner Outcomes										
<ul style="list-style-type: none"> ➤ compare and order two or three concrete objects according to length (shorter or longer), capacity (holds more or holds less), or weight (lighter or heavier); 	I	I	T	M						
<ul style="list-style-type: none"> ➤ find concrete objects that are about the same as, less than, or greater than a given object according to length, capacity, or weight. 		I	T	T						
<ul style="list-style-type: none"> ➤ compare situations or objects according to temperature such as hotter or colder; 		I	T	T						
<ul style="list-style-type: none"> ➤ compare events according to duration such as more time than or less time than; 			I	T						
<ul style="list-style-type: none"> ➤ sequence events; 	I	I	T	T						
<ul style="list-style-type: none"> ➤ read a calendar using days, weeks, and months. 	I	I	T	T						
<ul style="list-style-type: none"> ➤ estimate and measure length, capacity, and weight of objects using nonstandard units; 		I	T	T						
<ul style="list-style-type: none"> ➤ describe the relationship between the size of the unit and the number of units needed in a measurement. 				I						
<ul style="list-style-type: none"> ➤ recognize temperatures such as a hot day or a cold day; 	I	I	T	M						
<ul style="list-style-type: none"> ➤ describe time on a clock using hours and half hours; 		I	T	T						

LEARNER OUTCOMES FROM A CHRIST-CENTERED PERSPECTIVE, THE STUDENT IS EXPECTED TO:	JK	K	1	2	3	4	5	6	7	8
➤ order three or more events by how much time they take.				I						
➤ measure length, capacity, and weight using concrete models that approximate standard units;		I	T	T						
➤ describe activities that take approximately one second, one minute, and one hour.		I	T	T						
➤ identify concrete models that approximate standard units of length, capacity, and weight;			I	T						
❑ Measure objects using both nonstandard units and standard units (cm, in. and ft.).		I	I	T						
➤ recognize the attributes of length, volume, weight, area, and time;			I	T						
➤ compare and order objects according to these attributes;				I						
➤ understand how to measure using nonstandard and standard units;		I	T	T						
➤ select an appropriate unit and tool for the attribute being measured.		I	T	T						
➤ measure with multiple copies of units of the same size, such as paper clips laid end to end;		I	T	T						
➤ use repetition of a single unit to measure something larger than the unit, for instance, measuring the length of a room with a single meter stick;				I						
➤ use tools to measure;		I	T	T						
➤ develop common referents for measures to make comparisons and estimates.				I						
3-5 Learner Outcomes										
• Recognize and describe measurable attributes*, such as length, liquid capacity, time, weight (mass), temperature, volume, monetary value, and angle size, and identify the appropriate units to measure them					I	I	T			
• Demonstrate understanding of basic facts, principles, and techniques of measurement, including appropriate use of arbitrary* and standard units (metric and US Customary)					I	T	T			
• Demonstrate understanding of basic facts, principles, and techniques of measurement, including appropriate use and conversion of units within a system (such as yards, feet, and inches; kilograms and grams; gallons, quarts, pints, and cups)					I	I	T			

LEARNER OUTCOMES FROM A CHRIST-CENTERED PERSPECTIVE, THE STUDENT IS EXPECTED TO:	JK	K	1	2	3	4	5	6	7	8
<ul style="list-style-type: none"> Demonstrate understanding of basic facts, principles, and techniques of measurement, including judging the reasonableness of an obtained measurement as it relates to prior experience and familiar benchmarks 					I	T	T			
<ul style="list-style-type: none"> Read and interpret measuring instruments (e.g., rulers, clocks, thermometers) 					T	T	M			
<ul style="list-style-type: none"> Determine measurements directly* by using standard tools to these suggested degrees of accuracy length to the nearest half-inch or nearest cm 					I	T	T			
<ul style="list-style-type: none"> Determine measurements directly* by using standard tools to these suggested degrees of accuracy weight (mass) to the nearest ounce or nearest 5 grams 					I	I	I			
<ul style="list-style-type: none"> Determine measurements directly* by using standard tools to these suggested degrees of accuracy temperature to the nearest 5 					I	T	T			
<ul style="list-style-type: none"> Determine measurements directly* by using standard tools to these suggested degrees of accuracy time to the nearest minute 					T	T	T			
<ul style="list-style-type: none"> Determine measurements directly* by using standard tools to these suggested degrees of accuracy monetary value to dollars and cents 					T	T	M			
<ul style="list-style-type: none"> Determine measurements directly* by using standard tools to these suggested degrees of accuracy liquid capacity to the nearest fluid ounce 					I	I	T			
<ul style="list-style-type: none"> Determine measurements by using basic relationships (such as perimeter and area) and approximate measurements by using estimation techniques 					I	T	T			
<ul style="list-style-type: none"> measure volume using concrete models of cubic units; 					I	T	T			
<ul style="list-style-type: none"> estimate volume in cubic units. 					I	T	T			
<ul style="list-style-type: none"> describe numerical relationships between units of measure within the same measurement system such as an inch is one-twelfth of a foot. 							I			
6-8 Learner Outcomes										
<ul style="list-style-type: none"> Identify and describe attributes* in situations where they are not directly* or easily measurable (e.g., distance, area of an irregular figure, likelihood of occurrence) 								I	T	T

LEARNER OUTCOMES FROM A CHRIST-CENTERED PERSPECTIVE, THE STUDENT IS EXPECTED TO:	JK	K	1	2	3	4	5	6	7	8
<ul style="list-style-type: none"> Demonstrate understanding of basic measurement facts, principles, and techniques including approximate comparisons between metric and US Customary units (e.g., a liter and a quart are about the same; a kilometer is about six-tenths of a mile) 								T	M	M
<ul style="list-style-type: none"> Demonstrate understanding of basic measurement facts, principles, and techniques including knowledge that direct measurement* produces approximate, not exact, measures 								M	M	M
<ul style="list-style-type: none"> Demonstrate understanding of basic measurement facts, principles, and techniques including the use of smaller units to produce more precise measures 								M	M	M
<ul style="list-style-type: none"> Determine measurement directly* using standard units (metric and US Customary) with these suggested degrees of accuracy lengths to the nearest mm or 1/16 of an inch 								M	M	M
<ul style="list-style-type: none"> Determine measurement directly* using standard units (metric and US Customary) with these suggested degrees of accuracy weight (mass) to the nearest 0.1 g or 0.5 ounce 								M	M	M
<ul style="list-style-type: none"> Determine measurement directly* using standard units (metric and US Customary) with these suggested degrees of accuracy liquid capacity to the nearest ml 								M	M	M
<ul style="list-style-type: none"> Determine measurement directly* using standard units (metric and US Customary) with these suggested degrees of accuracy angles to the nearest degree 								M	M	M
<ul style="list-style-type: none"> Determine measurement directly* using standard units (metric and US Customary) with these suggested degrees of accuracy temperature to the nearest C or F 								M	M	M
<ul style="list-style-type: none"> Determine measurement directly* using standard units (metric and US Customary) with these suggested degrees of accuracy elapsed time to the nearest second 								M	M	M
<ul style="list-style-type: none"> Determine measurements indirectly using conversion of units within a system (e.g., quarts to cups, millimeters to centimeters) 								T	M	M
<ul style="list-style-type: none"> Determine measurements indirectly using ratio and proportion (e.g., similarity*, scale drawings*) 								I	T	M
<ul style="list-style-type: none"> Determine measurements indirectly using geometric formulas to derive lengths, areas, volumes of common figures (e.g., perimeter, circumference, surface area) 								I	T	M

LEARNER OUTCOMES FROM A CHRIST-CENTERED PERSPECTIVE, THE STUDENT IS EXPECTED TO:	JK	K	1	2	3	4	5	6	7	8
<ul style="list-style-type: none"> Determine measurements indirectly using the Pythagorean* relationship geometric relationships and properties for angle size (e.g., parallel lines and transversals; sum of angles of a triangle; vertical angles*) 									I	T
<ul style="list-style-type: none"> use common benchmarks to select appropriate methods for estimating measurements; 								M	M	M
<ul style="list-style-type: none"> solve simple problems involving rates and derived measurements for such attributes as velocity and density. 								I	T	M
5. Formulate a question and organize theoretical or experiential data to make predictions as to what the outcome will be.										
K-2 Learner Outcomes										
<ul style="list-style-type: none"> identify, describe, and extend concrete and pictorial patterns in order to make predictions and solve problems; 		I	T	T						
<ul style="list-style-type: none"> collect and sort data; 		I	T	M						
<ul style="list-style-type: none"> identify events as certain or impossible such as drawing a red crayon from a bag of green crayons. 			I	M						
<ul style="list-style-type: none"> identify, describe, and extend patterns to make predictions and solve problems. 		I	T	T						
<ul style="list-style-type: none"> read a thermometer to gather data; 			I	T						
<ul style="list-style-type: none"> use data to describe events as more likely or less likely such as drawing a certain color crayon from a bag of seven red crayons and three green crayons. 			I	T						
<ul style="list-style-type: none"> pose questions and gather data about themselves and their surroundings; 		I	T	M						
<ul style="list-style-type: none"> sort and classify objects according to their attributes and organize data about the objects; 		I	T	M						
<ul style="list-style-type: none"> represent data using concrete objects, pictures, and graphs 		I	T	T						
<ul style="list-style-type: none"> describe parts of the data and the set of data as a whole to determine what the data show. 			I	T						
<ul style="list-style-type: none"> discuss events related to students' experiences as likely or unlikely. 		I	T	T						
3-5 Learner Outcomes										
<ul style="list-style-type: none"> Determine if future events are more, less, or equally likely, impossible, or certain to occur 					I	T	T			
<ul style="list-style-type: none"> describe the shape and important features of a set of data and compare related data sets, with an emphasis on how the data are distributed; 						I	T			

LEARNER OUTCOMES FROM A CHRIST-CENTERED PERSPECTIVE, THE STUDENT IS EXPECTED TO:	JK	K	1	2	3	4	5	6	7	8
➤ use measures of center, focusing on the median, and understand what each does and does not indicate about the data set;						I	T			
➤ compare different representations of the same data and evaluate how well each representation shows important aspects of the data.					I	T	T			
➤ propose and justify conclusions and predictions that are based on data and design studies to further investigate the conclusions or predictions.					I	T	T			
6-8 Learner Outcomes										
• Use reasoning abilities to formulate questions for further exploration								T	T	T
• Determine measurements indirectly using estimation								T	T	M
• Extract, interpret, and analyze information from organized and displayed data by using frequency and distribution, including mode* and range*								I	T	M
• Extract, interpret, and analyze information from organized and displayed data by using central tendencies* of data (mean* and median*)								I	T	M
• Extract, interpret, and analyze information from organized and displayed data by using indicators of dispersion (e.g., outliers*)								I	T	M
• Use the results of data analysis to make predictions								M	M	M
• Use the results of data analysis to develop convincing arguments								M	M	M
• Use the results of data analysis to draw conclusions								M	M	M
• Determine the likelihood of occurrence of simple events by using a variety of strategies to identify possible outcomes (e.g., lists, tables, tree diagrams*)								M	M	M
• Determine the likelihood of occurrence of simple events by conducting an experiment								M	M	M
• Determine the likelihood of occurrence of simple events by designing and conducting simulations*								T	T	M
• Determine the likelihood of occurrence of simple events by applying theoretical notions of probability (e.g., that four equally likely events have a 25% chance of happening)								I	T	M
➤ use conjectures to formulate new questions and plan new studies to answer them.								M	M	M
➤ understand and use appropriate terminology to describe complementary and mutually exclusive events;								I	T	M

LEARNER OUTCOMES FROM A CHRIST-CENTERED PERSPECTIVE, THE STUDENT IS EXPECTED TO:	JK	K	1	2	3	4	5	6	7	8
6. Apply and adapt a variety of appropriate strategies to solve problems encountered in life.										
K-2 Learner Outcomes										
➤ identify mathematics in everyday situations;		I	T	M						
➤ generate a list of paired numbers based on a real-life situation such as number of tricycles related to number of wheels;			I	T						
➤ identify patterns in a list of related number pairs based on a real-life situation and extend the list;			I	T						
➤ use tools such as real objects, manipulatives, and technology to solve problems.		I	T	T						
➤ build new mathematical knowledge through problem solving;		I	T	T						
➤ solve problems that arise in mathematics and in other contexts;		I	T	T						
➤ apply and adapt a variety of appropriate strategies to solve problems;			I	T						
3-5 Learner Outcomes										
• Connect mathematical learning with other subjects, personal experiences, current events, and personal interests					I	T	T			
• use mathematics as a way to understand other areas of the curriculum (e.g., measurement in science, map skills in social studies)					T	T	T			
• In problem-solving situations involving money, add and subtract decimals					T	M	R			
➤ build new mathematical knowledge through problem solving;					T	T	T			
➤ monitor and reflect on the process of mathematical problem solving.					I	T	T			
6-8 Learner Outcomes										
• Use reasoning abilities to evaluate strategies								M	M	M
• Analyze non-routine* problems by modeling*, illustrating, guessing, simplifying, generalizing, shifting to another point of view, etc.								M	M	M
• In problem-solving situations, select and use appropriate computational procedures with rational numbers such as calculating mentally								M	M	M
• In problem-solving situations, select and use appropriate computational procedures with rational numbers such as estimating								M	M	M

LEARNER OUTCOMES FROM A CHRIST-CENTERED PERSPECTIVE, THE STUDENT IS EXPECTED TO:	JK	K	1	2	3	4	5	6	7	8
<ul style="list-style-type: none"> In problem-solving situations, select and use appropriate computational procedures with rational numbers such as creating, using, and explaining algorithms* using technology (e.g., scientific calculators, spreadsheets) 								I	T	T
<ul style="list-style-type: none"> Work with data in the context of real-world situations by formulating questions that lead to data collection and analysis 								T	T	T
<ul style="list-style-type: none"> Work with data in the context of real-world situations by designing and conducting a statistical investigation 								T	T	T
<ul style="list-style-type: none"> Work with linear and nonlinear patterns* and relationships in a variety of ways, including using them as models of real-world phenomena 								I	T	T
<ul style="list-style-type: none"> Work with linear and nonlinear patterns* and relationships in a variety of ways, including describing a real-world phenomenon that a given graph might represent 								I	T	T
<ul style="list-style-type: none"> use visual tools such as networks to represent and solve problems; 								M	M	M
<ul style="list-style-type: none"> build new mathematical knowledge through problem solving; 								T	T	T
<ul style="list-style-type: none"> solve problems that arise in mathematics and in other contexts; 								T	T	T
<ul style="list-style-type: none"> apply and adapt a variety of appropriate strategies to solve problems; 								T	T	T
7. Select and use various types of mathematical reasoning and methods of proof.										
K-2 Learner Outcomes										
<ul style="list-style-type: none"> recognize reasoning and proof as fundamental aspects of mathematics; 			I	T						
<ul style="list-style-type: none"> make and investigate mathematical conjectures; 			I	T						
<ul style="list-style-type: none"> select and use various types of reasoning and methods of proof. 			I	T						

LEARNER OUTCOMES FROM A CHRIST-CENTERED PERSPECTIVE, THE STUDENT IS EXPECTED TO:	JK	K	1	2	3	4	5	6	7	8
3-5 Learner Outcomes										
<ul style="list-style-type: none"> In problem-solving situations involving whole numbers, select and efficiently use appropriate computational procedures such as recalling the basic facts of addition, subtraction, multiplication, and division 					T	T	M			
<ul style="list-style-type: none"> In problem-solving situations involving whole numbers, select and efficiently use appropriate computational procedures such as using mental math (e.g., $37+25$, 40×7) 					I	T	T			
<ul style="list-style-type: none"> In problem-solving situations involving whole numbers, select and efficiently use appropriate computational procedures such as estimation 					I	T	T			
<ul style="list-style-type: none"> In problem-solving situations involving whole numbers, select and efficiently use appropriate computational procedures such as selecting and applying algorithms* for addition, subtraction, multiplication, and division 					I	T	T			
<ul style="list-style-type: none"> In problem-solving situations involving whole numbers, select and efficiently use appropriate computational procedures such as using a calculator 					T	T	T			
6-8 Learner Outcomes										
<ul style="list-style-type: none"> Use reasoning abilities to evaluate information 								M	M	M
<ul style="list-style-type: none"> Use reasoning abilities to test reasonableness of results 								T	T	T
<ul style="list-style-type: none"> Compare several sets of data to generate, test, and, as the data dictate, confirm or deny hypotheses 								I	T	T
<ul style="list-style-type: none"> ➤ recognize reasoning and proof as fundamental aspects of mathematics; 										I

LEARNER OUTCOMES FROM A CHRIST-CENTERED PERSPECTIVE, THE STUDENT IS EXPECTED TO:	JK	K	1	2	3	4	5	6	7	8
8. Explain clearly and precisely mathematical processes to peers, teachers, & others.										
K-2 Learner Outcomes										
➤ explain why a given part is half of the whole.		I	T	T						
➤ describe one object in relation to another using informal language such as over, under, above, and below;		I	T	M						
➤ use appropriate language to describe part of a set such as three out of the eight crayons are red.			I	T						
○ Orally identify halves, thirds, and fourths of regions.		I	T	T						
➤ describe time on a clock using hours and minutes.		I	T	T						
➤ explain and record observations using objects, words, pictures, numbers, and technology;		I	T	T						
➤ relate informal language to mathematical language and symbols.		I	T	T						
➤ organize and consolidate their mathematical thinking through communication;		I	T	T						
➤ communicate their mathematical thinking coherently and clearly to peers, teachers, and others;		I	T	T						
➤ analyze and evaluate the mathematical thinking and strategies of others;				I						
➤ use the language of mathematics to express mathematical ideas precisely.				I						
3-5 Learner Outcomes										
• Communicate mathematical ideas in a variety of ways, including words, numbers, symbols, pictures, charts, graphs, tables, diagrams, and models*					T	T	T			
➤ organize and consolidate their mathematical thinking through communication;					I	T	T			
6-8 Learner Outcomes										
• Use reasoning abilities to defend work								I	T	T
• Communicate logical arguments clearly to show why a result makes sense								I	T	T
• Develop effective oral and written presentations that include appropriate use of technology								I	T	T
• Develop effective oral and written presentations that include the conventions of mathematical discourse (e.g., symbols, definitions, labeled drawings)								T	T	M
• Develop effective oral and written presentations that include mathematical language								T	T	M
• Develop effective oral and written presentations that include clear organization of ideas and procedures								T	T	M
• Develop effective oral and written presentations that include understanding of purpose and audience								T	T	M

LEARNER OUTCOMES FROM A CHRIST-CENTERED PERSPECTIVE, THE STUDENT IS EXPECTED TO:	JK	K	1	2	3	4	5	6	7	8
<ul style="list-style-type: none"> • Explain mathematical concepts, procedures, and ideas to others who may not be familiar with them 								T	T	T
<ul style="list-style-type: none"> ➤ organize and consolidate their mathematical thinking through communication; 								T	T	T
<ul style="list-style-type: none"> ➤ communicate their mathematical thinking coherently and clearly to peers, teachers, and others; 								T	T	T
<ul style="list-style-type: none"> ➤ analyze and evaluate the mathematical thinking and strategies of others; 								T	T	T
<ul style="list-style-type: none"> ➤ use the language of mathematics to express mathematical ideas precisely. 								T	T	T
9. Understand how mathematical ideas interconnect and build on one another to produce a complete set of skills										
K-2 Learner Outcomes										
<ul style="list-style-type: none"> ➤ recognize and use connections among mathematical ideas; 			I	T						
<ul style="list-style-type: none"> ➤ understand how mathematical ideas interconnect and build on one another to produce a coherent whole; 			I	T						
<ul style="list-style-type: none"> ➤ recognize and apply mathematics in contexts outside of mathematics. 		I	T	T						
6-8 Learner Outcomes										
<ul style="list-style-type: none"> • Use reasoning abilities to justify statements 								M	M	M
<ul style="list-style-type: none"> • Read and understand mathematical texts and other instructional materials and recognize mathematical ideas as they appear in other contexts 								T	M	M
<ul style="list-style-type: none"> ➤ recognize and apply geometric ideas and relationships in areas outside the mathematics classroom, such as art, science, and everyday life. 								T	T	T
<ul style="list-style-type: none"> ➤ recognize and use connections among mathematical ideas; 								T	T	T
<ul style="list-style-type: none"> ➤ understand how mathematical ideas interconnect and build on one another to produce a coherent whole; 								T	T	T
<ul style="list-style-type: none"> ➤ recognize and apply mathematics in contexts outside of mathematics. 								T	T	T
10. Create and use visual aides to organize, record, and communicate ideas to solve problems and interpret data.										
K-2 Learner Outcomes										
<ul style="list-style-type: none"> ➤ identify, extend, and create patterns of sounds, physical movement, and concrete objects. 		I	T	T						

LEARNER OUTCOMES FROM A CHRIST-CENTERED PERSPECTIVE, THE STUDENT IS EXPECTED TO:	JK	K	1	2	3	4	5	6	7	8
➤ construct graphs using real objects or pictures in order to answer questions;		I	T	T						
➤ use information from a graph of real objects or pictures in order to answer questions.		I	T	T						
➤ share a whole by separating it into equal parts and use appropriate language to describe the parts such as three out of four equal parts;		I	T	T						
➤ describe and identify objects in order to sort them according to a given attribute using informal language;		I	T	T						
➤ use organized data to construct real object graphs, picture graphs, and bar-type graphs.		I	T	T						
➤ model, create, and describe multiplication situations in which equivalent sets of concrete objects are joined;				I						
➤ model, create, and describe division situations in which a set of concrete objects is separated into equivalent sets.				I						
➤ construct picture graphs and bar-type graphs;		I	T	T						
➤ draw conclusions and answer questions based on picture graphs and bar-type graphs;		I	T	T						
➤ use a problem-solving model that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness;				I						
○ Locate on a graph in a coordinate plane the point whose coordinates are a given pair of numbers between 0 and 15.				I						
➤ create and use representations to organize, record, and communicate mathematical ideas;		I	T	T						
➤ select, apply, and translate among mathematical representations to solve problems;				I						
3-5 Learner Outcomes										
• Work with data in the context of real-world situations by formulating questions that lead to data collection and analysis					I	T	T			
• Work with data in the context of real-world situations by determining what data to collect and when and how to collect them					I	T	T			
• Work with data in the context of real-world situations by collecting, organizing, and displaying data					I	T	T			

LEARNER OUTCOMES FROM A CHRIST-CENTERED PERSPECTIVE, THE STUDENT IS EXPECTED TO:	JK	K	1	2	3	4	5	6	7	8
• Work with data in the context of real-world situations by drawing reasonable conclusions based on data					T	T	T			
• Describe a set of data using high and low values, and range*					T	T	T			
• Describe a set of data using most frequent value (mode*)						I	T			
• Describe a set of data using middle value of a set of ordered data (median*)						I	T			
• In problem-solving situations, read, extract, and use information presented in graphs, tables, or charts					T	T	T			
• Work with simple linear patterns and relationships in a variety of ways, including recognizing and extending number patterns					I	T	T			
• Work with simple linear patterns and relationships in a variety of ways, including describing them verbally					T	T	T			
• Work with simple linear patterns and relationships in a variety of ways, including representing them with pictures, tables, charts, graphs					T	T	T			
• Work with simple linear patterns and relationships in a variety of ways, including recognizing that different models* can represent the same pattern or relationship					T	T	T			
• use tables of related number pairs to make line graphs;						I	T			
• describe characteristics of data presented in tables and graphs including the shape and spread of the data and the middle number;							T			
• graph a given set of data using an appropriate graphical representation such as a picture or line.					I	T	T			
➤ create and use representations to organize, record, and communicate mathematical ideas;					I	T	T			
6-8 Outcomes										
• Work with data in the context of real-world situations by using technology to generate displays, summary statistics*, and presentations								T	T	T
• Organize and display data from statistical investigations using appropriate tables, graphs, and/or charts (e.g., circle, bar or line for multiple sets of data)								T	T	T

LEARNER OUTCOMES FROM A CHRIST-CENTERED PERSPECTIVE, THE STUDENT IS EXPECTED TO:	JK	K	1	2	3	4	5	6	7	8
<ul style="list-style-type: none"> Organize and display data from statistical investigations using appropriate plots (e.g., line*, stem-and-leaf*, box*, scatter*) 								T	T	T
<ul style="list-style-type: none"> Work with linear and nonlinear patterns* and relationships in a variety of ways, including representing them with tables, with graphs, and with algebraic expressions, equations, and inequalities 								I	T	T
<ul style="list-style-type: none"> Work with linear and nonlinear patterns* and relationships in a variety of ways, including describing and interpreting their graphical representations (e.g., slope*, rate of change, intercepts*) 								I	T	T
<ul style="list-style-type: none"> ➤ create and use representations to organize, record, and communicate mathematical ideas; 								T	T	T
<ul style="list-style-type: none"> ➤ select, apply, and translate among mathematical representations to solve problems; 								T	T	T
<ul style="list-style-type: none"> ➤ use representations to model and interpret physical, social, and mathematical phenomena. 								T	T	T
11. Analyze and evaluate the work of others										
3-5 Learner Outcomes										
<ul style="list-style-type: none"> Explain solutions to problems clearly and logically in oral and written work and support solutions with evidence 										
6-8 Learner Outcomes										
<ul style="list-style-type: none"> Evaluate presentations and statistical analyses from a variety of sources for credibility of the source 								I	T	T
<ul style="list-style-type: none"> Evaluate presentations and statistical analyses from a variety of sources for techniques of collection, organization, and presentation of data 								I	T	T
<ul style="list-style-type: none"> Evaluate presentations and statistical analyses from a variety of sources for inferences 								I	T	T
<ul style="list-style-type: none"> Evaluate presentations and statistical analyses from a variety of sources for possible sources of bias 								I	T	T
<ul style="list-style-type: none"> ☐ Distinguish between useful and misleading graphs and between useful and misleading statistics. 								I	T	M