Bethlehem Lutheran School
Math Grade 3

In recognizing the need for understanding and mastering mathematical computations and concepts, the philosophy of the mathematics program is to involve each student in a learning program that blends mathematical skills with practical applications to their daily Christian lives.

State Standard 1

Students develop number sense and use of numbers and number relationships in problem-solving situations and communicate the reasoning used in solving these problems.

Classroom objectives

The student will:

1. ○ 1.1   Use objects and pictures to represent whole numbers, including odds and evens from 0 to 1000 and from 0 to 1000.
2. ○ 1.2   Apply equalities and inequalities with whole numbers 0 to 1000 using the symbols =, x, <, and >.
3. ○ 1.3   Use concrete materials (i.e. fraction strips) to compare and order fractions with like denominators, such as halves, thirds, fourths, eighths, and tenths.
4. ○ 1.4   Demonstrate different combinations of coins for change.
5. ○ 1.5   Use concrete materials to make change up to $1.00.
6. ○ 1.6   Read and write numerals from 0 to 10,000 in meaningful contexts.
7. ○ 1.7   Read and write the number words for selected numbers from zero to one thousand.
8. ○ 1.8   Order according to place value, i.e. given 9 ones, 5 tens, 4 hundreds, and 7 thousands, the student can write the number 7,459; given the number 7,459, the student can show 7 thousands, 4 hundreds, 5 tens, and 9 ones.
9. ○ 1.9   Identify place value through ten thousands.
10. ○ 1.10   Write four-digit numbers in expanded form.
11. ○ 1.11   Count forward from any even number by 2's and from any number by 10's and 100's.
12. ○ 1.12   Use ordinal positions for selected whole numbers greater than thirty-first.
13. ○ 1.13   Sequence selected whole numbers from 0 to 10,000.
14. ○ 1.14   Verify the commutative and associative properties of addition and multiplication of whole numbers.
15. ○ 1.15   Verify the multiplication properties of zero and one with whole numbers.
16. ○ 1.16   Estimate sums and differences first by rounding to the nearest ten and hundred prior to performing the operation and then use the estimate to determine the reasonableness of the solution.
17. ○ 1.17   Estimate products first by rounding to the nearest ten prior to performing the operation and then use the estimate to determine the reasonableness of the solution.

State Standard 2

Students use algebraic methods to explore, model, and describe patterns and functions involving numbers, shapes, data, and graphs in problem-solving situations and communicate the reasoning used in solving these problems.

Classroom objectives

The student will:

2.1   Reproduce, extend, create, and describe patterns, such as in common fractions, geometric shapes, money, measurement, addition, subtraction, and multiplication facts.

2.2   Find missing elements of patterns of multiples; given data, extend a table and plot points on a coordinate plane.

2.3   Identify a rule using addition or subtraction and solve a problem using the rule.

2.4   Determine how the change in one variable affects the change in the other by addition or subtraction.

State Standard 3

Students use data collection and analysis, statistics, and probability in problem-solving situations and communicate the reasoning used in solving these problems.

Classroom objectives

The student will:
3.1 Select the appropriate type of graph to use in various problem-solving situations.
3.2 Collect and display data using surveys, tallies, bar graphs, dot plots, pictographs, or tables.
3.3 Use a timeline to display a sequence of events.
3.4 Use various displays of data to interpret and draw conclusions.
3.5 Use survey data to make a prediction from various displays of data.
3.6 Predict the most likely outcome from spinners.
3.7 Solve problems using various strategies for making combinations.
3.8 Determine the number of outcomes using money and various coins.

State Standard 4

Students use geometric concepts, properties, and relationships in problem-solving situations and communicate the reasoning used in solving these problems.

Classroom objectives

The student will
4.1 Compare similarities and differences between the concepts of similarity and congruence.
4.2 Make a pattern by rotating, flipping, and sliding a two-dimensional figure.
4.3 Identify lines of symmetry of regular hexagons, pentagons, and octagons.
4.4 Identify points, lines, and line segments.
4.5 Recognize and identify hexagons, pentagons, and octagons.
4.6 Classify angles as obtuse, acute, or right.
4.7 Draw obtuse, acute, and right angles.

4.8 Measure the sides and perimeters of geometric shapes to the nearest inch and centimeter.
4.9 Measure the area of geometric figures using nonstandard units.
4.10 Draw a picture or diagram to solve a problem, i.e. use a number line to locate one half.
4.11 Investigate and predict geometric shapes by combining and subdividing groups of pattern blocks.
4.12 Investigate and predict the result of changing the lengths of sides of polygons.
4.13 Investigate and predict the geometric figures that result from cutting along the lines of symmetry.

State Standard 5

Students use a variety of tools and techniques to measure, apply the results in problem-solving situations, and communicate the reasoning used in solving these problems.

Classroom objectives

The student will
5.1 Tell time to the nearest five minutes using an analog and digital clock.
5.2 Estimate how long a minute is.
5.3 Estimate and measure the lengths of objects.
5.4 Estimate and measure the perimeter of an object with a ruler measured in U.S. customary and metric units.
5.5 Estimate and measure areas using non-standard units.
5.6 Estimate and measure the capacity of a container in cups, pints, quarts, gallons, and liters.
5.7 Measure temperatures in both Fahrenheit and Celsius scales.
5.8 Describe the units for measuring time, length, area, capacity, and temperature.
5.9 Compare objects according to the measurable attributes of length, area, capacity, weight, and temperature.
5.10 Order objects according to the measurable attributes of length, area, capacity, weight, and temperature.
5.11 Compare and order various times.
5.12 Use familiar objects as referents for measurement, i.e. the width of the index fingernail equals approx. one centimeter; ten pennies weigh approx. an ounce.

5.13 Select the appropriate units of measurement of time, length, area, capacity, weight, and temperature.

Standard 6

Students link concepts and procedures as they develop and use computational techniques, including estimation, mental arithmetic, paper-and-pencil, calculators, and computer, in problem-solving situations and communicate the reasoning used in solving these problems.

Classroom objectives

The student will:

6.1 Use concrete materials to demonstrate and verbally explain addition and subtraction of whole numbers with regrouping for up to four-digits.

6.2 Use concrete materials or pictures to demonstrate multiplication with regrouping of whole numbers.

6.3 Use concrete materials to demonstrate division of whole numbers with remainders as partitioning of sets.

6.4 Use paper-and-pencil to demonstrate the inverse relationship of addition and subtraction of whole numbers.

6.5 Use paper-and-pencil to demonstrate multiplication of whole numbers as repeated addition.

6.6 Use concrete materials to demonstrate addition and subtraction of proper fractions with common denominators of ten or less.

6.7 Use coins as models to add and subtract decimals in which sums and differences may exceed $1.00.

6.8 Demonstrate understanding of all basic multiplication and division facts (0-11).

6.9 Demonstrate automatic recall of all basic multiplication facts (0-11).

6.10 Continue automatic recall of basic addition and subtraction facts.

6.11 Use estimation techniques such as front-end rounding, rounding, and compatible numbers (numbers whose sum is 10, 100, 1,000 …) before performing operations.

6.12 Use paper-and-pencil to demonstrate the four basic operations of whole numbers including:
   a. addition and subtraction of four digits
   b. multiplication of two digits by one digit, regrouping included
   c. division of two digits by one-digit divisor obtaining one-digit quotients.

6.13 Given a real-world problem-solving situation, use the correct operation (addition, subtraction, or multiplication) and appropriate method (mental arithmetic, estimation, paper-and-pencil, calculator, or computer) to solve the problem.

6.14 Determine from real-world problems whether an estimated or exact sum, difference, or product is acceptable.