

Bethlehem Lutheran School
Math
Grade 5

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 Recognize place value, compare, order, read, write, and round numbers through trillions.
- 1.2 Solve problems by using trial and error or by simplifying the problem.
- 1.3 Read, write, compare, order, and round decimals through ten-thousandths; estimate sums and differences of decimals; add and subtract decimals.
- 1.4 Solve problems and determine if the answers are reasonable or solve problems working backwards.
- 1.5 Write equivalent fractions; compare and order fractions; write fractions and mixed numbers.
- 1.6 Solve problems using estimation.
- 1.7 Multiply and divide fractions and mixed numbers; write decimals as fractions and fractions as decimals; write decimals or fractions as percents; write percents as decimals or fractions; write ratios and equivalent ratios.

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 Identify, describe, analyze, extend, and create a wide variety of patterns in numbers, shapes, and data.
- 2.2 Describe patterns using mathematical language.
- 2.3 Solve problems and model real-world situations using patterns and functions.
- 2.4 Compare and contrast different types of functions.
- 2.5 Describe the connections among representations of patterns and function, including words, tables, graphs, and symbols.
- 2.6 Solve problems using patterns and logic.
- 2.7 Solve patterns by drawing pictures.

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 Solve problems by systematically collecting, organizing, describing, and analyzing data using surveys, tables, charts, and graphs.
- 3.2 Make valid inferences, decisions, and arguments based on data analysis.
- 3.3 Use counting techniques, experimental probability, or theoretical probability, as appropriate, to represent and solve problems involving uncertainty.
- 3.4 Solve problems by making and using a table or a tree diagram.
- 3.5 Solve problems using too much or too little information and solve open-ended problems.

- 3.6 Find the probability of an event occurring.
- 3.7 Solve problems by using line graphs or sampling techniques.
- 3.8 Interpret double bar graphs, pictographs, and circle graphs.
- 3.9 Find range, median, mode, and mean of numbers.

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 Connect various physical objects with their geometric representation.
- 4.2 Connect mathematical concepts from across the standard with their geometric representations.
- 4.3 Recognize, draw, describe, and analyze geometric shapes in one, two, and three dimensions.
- 4.4 Make, investigate, and test conjectures about geometric ideas.
- 4.5 Solve problems and model real-world situations using geometric concepts.
- 4.6 Identify, name, and classify lines, planes, and angles; draw and measure angles.
- 4.7 Locate coordinate points on a grid.
- 4.8 Identify geometric shapes according to their properties.
- 4.9 Find perimeter and circumference of a figure.
- 4.10 Find the area of a rectangle, square, or right triangle.
- 4.11 Solve problems using estimation or formulas.

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 students will

- 5.1 Understand and apply the attributes of length, capacity, weight, mass, time, temperature, perimeter, area, volume, and angle measurement in problem-solving situations.
- 5.2 Make and use direct and indirect measurements to describe and compare real-world phenomena.
- 5.3 Understand the structure and use of systems of measurements.
- 5.4 Describe the use of rates of change.
- 5.5 Select appropriate units, including metric and U.S. customary, and tools to measure to the degree of accuracy required to solve a given problem.
- 5.6 Accurately measure and estimate metric and U.S. customary measures of length, capacity, and mass.
- 5.7 Determine metric equivalents.
- 5.8 Identify, name, and classify lines, planes, and angles; draw and measure angles.
- 5.9 Locate coordinate points on a grid.
- 5.10 Identify geometric shapes according to their properties.
- 5.11 Find perimeter and circumference of a figure.
- 5.12 Find the area of a rectangle, square, or right triangle.
- 5.13 Solve problems using estimation or formulas.
- 5.14 Measure fractions of an inch.
- 5.15 Identify similar, congruent, and space figures.
- 5.16 Find volume of a rectangular prism.

Standard 6

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

Classroom objectives

The student will:

- 6.1 Model, explain, and use the four basic operations – addition, subtraction, multiplication, and division – in problem-solving situations.
- 6.2 Develop, use, and analyze algorithms.

- 6.3 Select and apply appropriate computational techniques to solve a variety of problems and determine whether the results are reasonable.
- 6.4 Add and subtract numbers with sums through 18; add three or more numbers.
- 6.5 Estimate sums to determine reasonableness of answers.
- 6.6 Add two or more numbers four digit or larger.
- 6.7 Solve problems by using a four-step plan and by determining if the answers are reasonable.
- 6.8 Estimate difference to 100,000; subtract numbers with four digits and larger; subtract money by making change.
- 6.9 Multiply up to four digit numbers by up to three digits numbers, estimate products up to 100,000.
- 6.10 Multiply and divide with money.
- 6.11 Divide to three-digit divisor and two-digit quotient.
- 6.12 Solve problems by choosing the correct operation or by interpreting the answers.
- 6.13 Solve multi-step problems and problems using estimation to estimate quotients.
- 6.14 Estimate decimal products; multiply decimals; divide decimals by whole numbers and decimal numbers.
- 6.15 Estimate quotients with decimals.
- 6.16 Add and subtract fractions and mixed numbers with the same or different denominators.
- 6.17 Solve problems by choosing the correct equations or by drawing a picture.