



Shakopee Area Catholic School
Math Standards and Benchmarks
Grade Level: 6

The students will apply skills of mathematical representations, communication and reasoning.

1. Assess the reasonableness of a solution by comparing the solution to appropriate graphical or numerical estimates by recognizing the feasibility of a solution in a given context.
2. Appropriately use examples and counterexamples to make and test conjectures, justify solutions and explain results.
3. Translate a problem described verbally or by tables, diagrams or graphs, into suitable mathematical language, solve the problem mathematically and interpret the results in the original context.
4. Support mathematical results by explaining why the steps in a solution are valid and why a particular solution method is appropriate.
5. Determine whether or not relevant information is missing from a problem.
6. Use accurately common logical words and phrases such as “and,” “or,” “if ...then...,” “unique,” “only if.”

The students will use positive and negative rational numbers, represented in a variety of ways, to quantify information and to solve real-world and mathematical problems.

1. Order and compare integers, fractions, decimals and mixed numbers with $>$, $<$, and $=$. Locate and compare positive and negative rational numbers on a number line.
2. Use rounding and estimation with integers, decimals and fractions to solve real-world and mathematical problems.

The students will be able to compute fluently and make reasonable estimates with positive and negative rational numbers in real-world and mathematical problems. The students will understand the meaning of arithmetic operations and factorization, and how they relate to one another. The students will be able to appropriately use calculators and other technologies to solve problems.

1. Determine the prime factorization of positive integers.
2. Determine the least common multiple and the greatest common divisor of whole numbers.
3. Use addition, subtraction, multiplication and division of multi-digit whole and decimal numbers to solve multi-step real-world and mathematical problems.
4. Multiply and divide, without a calculator, numbers containing up to three digits by numbers containing up to two digits, such as $347 \div 83$ or 4.91×9.2 .
5. Find quotients with remainders and be able to express the remainder in various ways depending on the context of the problem.
6. Use the relationship between moving the decimal point and the operations of multiplication or division by powers of 10 to simplify calculations.
7. Add, subtract, multiply and divide common fractions and mixed numbers as well as fractions where the common denominator equals one of the denominators.
8. Find, represent and use percentages in real-world and mathematical problems, including percentages greater than 100% and less than 1%.

9. Apply the correct order of operations and grouping symbols when using calculators and other technologies.
10. Know, use and translate calculator notational conventions to mathematical notation.
11. Understand that use of a calculator requires appropriate mathematical reasoning and does not replace the need for mental computation.

The students will demonstrate understanding of the rectangular coordinate system.

1. Demonstrate understanding of the four quadrants in a rectangular coordinate system by writing and plotting ordered pairs.

The students will apply the correct order of operation including addition, subtraction, multiplication, division and grouping symbols to simplify and evaluate numeric expressions.

1. Apply the correct order of operations including addition, subtraction, multiplication, division and grouping symbols to simplify and evaluate numeric expressions.

The students will represent data and use various measures associated with data to draw conclusions and identify trends.

1. Collect, organize and represent categorical and numerical data with tables and bar graphs.
2. Understand the differences and appropriate use of mean, median and mode.
3. Find the median and possible outliers.

The students will calculate and express probabilities numerically, and apply probability concepts to solve real-world and mathematical problems.

1. Generate and display data in graphs and tables to estimate experimental probabilities.
2. Represent all possible outcomes for a probability problem with tables, grids and tree diagrams to calculate probabilities and draw conclusions from the results.

The students will recognize the relationship between different representations of two- and three-dimensional shapes. Understand the effect of various transformations.

1. Create models of three-dimensional geometric shapes from two-dimensional representations.
2. Predict the position and orientation of simple geometric shapes under transformation such as reflections, rotations and translations.
3. Identify symmetries in three-dimensional shapes.

The students will identify a variety of simple geometric figures by name, calculate various quantities associated with them and use appropriate tools to draw them.

1. Use facts about angles including the relationship between complementary angles, supplementary angles and the angles within triangles to solve real-world and mathematical problems.
2. Classify triangles as equilateral, isosceles or scalene, and right, acute or obtuse.
3. Find the area and circumference of a circle given the radius or diameter using common approximations or pi where appropriate.
4. Measure, identify, and draw perpendicular and parallel lines, angles and rectangles by using appropriate tools such as straightedge, ruler, compass, protractor or software.

The students will make calculations of time, length, area and volume within standard measuring systems, using good judgment in choice of units.

1. Solve problems requiring conversion of units within the U.S. customary system, and within the metric system.

2. Express measures of time and distance as fractions, mixed numbers and decimals to solve real-world and mathematical problems.
3. Find the area and perimeter of rectangles, squares, triangles and parallelograms by measuring, using a grid or using a formula.