

Evaluate solutions using mental math and estimation to determine if they are reasonable.

Connect mathematical problem solving to real life situations.

Select and use appropriate tools, including manipulatives, calculators, & other technology.

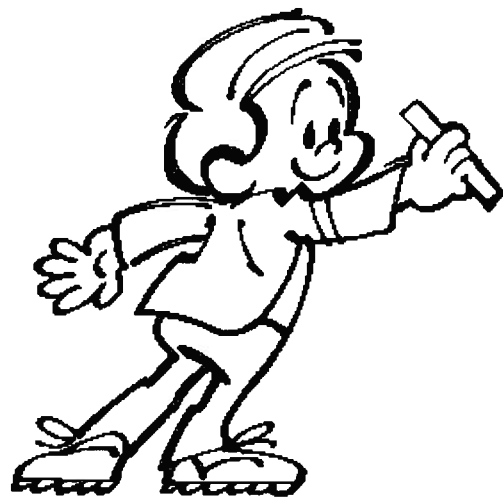
Read, interpret, and create graphs. **Example:** Keep a record for two weeks of what beverage your family has with dinner. Graph the results. Compare your results with others in the class.

2. Predict, describe, and test the probability of outcomes with a value ranging from zero to 1 (impossible, unlikely, likely, certain). **Example:** Predict the outcome of flipping a coin 15 times. How many heads and how many tails will occur? Now flip a coin 15 times and record the results. How close were you?

3. In the process of investigating, pose questions and make predictions, as well as collect, organize, and represent data to answer those questions, including the use of tables, charts, bar, line, and pie graphs, and stem-and-leaf plots. **Example:** Without asking anyone, predict how many students and teachers are left-handed in your school. Gather, organize, and display the appropriate data to test your predictions.

4. In real-life situations, use a data set to determine mean, median, mode, and range where appropriate, and compare across data sets. They will discuss the concept of representativeness of a sample within the context of a given example. **Example:** Keep a record of how many minutes per day you watch TV. Record this over 10 days (data set). Find the mean (average number of minutes), median (the middle of the data set), mode (number that appears most often) and the range (lowest to highest) of minutes watched. Describe what each value (mean, median, mode, and range) means and what they tell about your TV watching.

Galesburg Fifth Grade Academic Expectations for Mathematics



The teachers and administrators who work with fifth grade students have developed a very specific curriculum in mathematics. Assisted by consultants, our educators have specifically identified what fifth grade students are expected to know and be able to do in the area of mathematics at the end of fifth grade. This curriculum has been named Fifth Grade Academic Expectations. It defines each of the Performance Skills on the Fifth Grade Report Card.

**Community Unit School District #205
285 S. Farnham Street
Galesburg, IL 61401**

If you have questions, please feel free to contact your child's teacher.

This project was funded by Federal Grants.

Performance Skill: Number Sense

Students are expected to:

1. In the context of solving a variety of multi-step problems across the curriculum with whole numbers, fractions, decimals, and currency, students will:

Select from a variety of strategies to solve problems.

Explain strategies and solutions orally or in written form, or both.

Evaluate solutions using mental math and computation estimation to determine if they are reasonable.

Connect mathematical problem solving to real life situations.

Select and use appropriate tools, including manipulatives, calculators, and other technology. **Example:** Tanya started a summer business of putting on birthday parties for children. The neighbors loaned her square card tables to seat the children for cake. She wanted to borrow as few tables as possible and she wanted the tables together in a rectangle. Only one child could sit on each side of a table. Her first party had 18 children. How many tables did she need?

2. Develop a greater understanding of fractions and decimals by:

Using manipulatives to build conceptual knowledge.

Using addition and subtraction with decimals, like denominators.

Describing and modeling the relationships among fractions, decimals, and percents, using concrete materials, drawings, symbols, and technology including comparing and ordering fractions and decimals.

Developing conceptual understanding of multiplication of fractions. **Example:** Twelve children are at a party. Each child is to have $\frac{3}{4}$ of a pizza. How many pizzas need to be ordered? If each child eats $\frac{3}{4}$ of a pizza,

what percentage of a pizza did each child eat?

3. Develop an understanding of multiplication by:

Solving problems with whole numbers, fractions, and decimals.

Progressing to 3-digit by 2-digit multiplication.

Developing meaning for factors and multiples. Becoming familiar with factor and multiple relationships.

Example: Miriam donated 120 cans of juice and 90 packs of cheese crackers for the school picnic. Each student is to receive the same number of cans of juice and the same number of packs of crackers. What is the largest number of students that can come to the picnic and share the food equally? How many cans of juice and how many packs of crackers will each student receive? Explain your answer.

4. Develop an understanding of division by:

Demonstrating a knowledge that division is the inverse of multiplication.

Using division with one- and two-digit divisors, emphasizing place value and the distributive property.

Using models to understand the concept of remainder in context.

Example: Gina has 353 buttons and is putting them in baggies, 13 to a bag. How many baggies will be filled?

Performance Skill: Measurement

Students are expected to:

1. In the context of solving multi-step problems across the curriculum with measurement:

Communicate about math verbally and in writing.

Apply estimation and mental math strategies to determine if results are reasonable.

Select and use a variety of measurement and technology tools to aid in the problem-solving process.

Select a variety of strategies to solve problems involving measurement.

Apply measurement in real life situations.

Employ estimation and reasoning strategies to explore open-ended situations. **Example:**

Pretend that you are building your own home. Select a shape for the house that will give you the largest area for a given perimeter. If you had a choice of a circle, an oval, and a square, which shape do you think has the largest area for a given perimeter? Test several shapes by drawing floor plans on graph paper and counting the squares. Give each shape a perimeter of 32 squares, count the squares of area and record them.

2. Demonstrate knowledge of currency in a variety of situations by:

Solving multi-step problems with money.

Counting money and making change.

Using savings and banking concepts. **Example:** You are offered several soft drinks, ranging in price from \$.35 to \$.65. Select five soft drinks and compute the total cost paying with a ten dollar bill. Draw a picture representing the correct change.

3. Demonstrate knowledge of measurement in a variety of situations by:

Applying the concepts of area, perimeter, volume, weight, and capacity.

Comparing measurement through estimation or calculation.

Describing relationships between perimeter and area, volume and capacity.

Solving multi-step problems with elapsed time and time lines.

Carrying out simple unit conversions with metric system or within the English system.

Selecting and applying appropriate standard units (metric and English) and tools to esti-

mate and accurately measure length, area, volume, weight, time, temperature and angles.

Example: Students are asked to build rectangular solids and compute the object's volume.

4. Use map scales to measure distance between locations and make simple scale drawings using grid paper.

Example: Using grid paper, the students will make a scale map of the classroom.

Performance Skill: Patterns/Algebra

Students are expected to:

1. In the context of solving multi-step problems across the curriculum with algebra and patterns:

Select from a variety of strategies to solve problems.

Explain strategies and solutions orally or in written form, or both.

Evaluate solutions using mental math and estimation to determine if they are reasonable.

Connect mathematical problem solving to real life situations.

Select and use appropriate tools, including manipulatives, calculators, and other technology. **Example:** Pat runs an average of 3 meters per second and Terry runs an average of 5 meters per second. In a 100-meter race, Pat gets a 40-meter head start because he runs at a slower pace. Who wins the race? Explain your solution.

2. Construct and solve addition and subtraction number sentences using a variable to represent an unknown quantity. **Example:**

$W + X + Y = Z$. If $W = 2$, $X = 3$, and $Y = 4$, then $Z = \underline{\quad}$.

If $W = 1$, $X = 2$, and $Z = 7$, then $Y = \underline{\quad}$.

3. Understand and use properties including: commutative, associative, distributive, transitive, zero, equality, and the order of operations in problem solving.

Examples:

$3 \times 6 + 4 = \underline{\quad}$. (Think $18 + 4 = \underline{\quad}$).

$5 \times [(7 - 3) + 4] = \underline{\quad}$. (Think $5 \times 8 = \underline{\quad}$).

$4 \times [12 \times (6 - 3)] = \underline{\quad}$. (Think $4 \times 36 = \underline{\quad}$)

$3^3 = 27$

Performance Skill: Geometry

Students are expected to:

1. In the context of solving multi-step problems across the curriculum with geometry:

Select from a variety of strategies to solve problems.

Explain strategies and solutions orally, in written form, or both.

Evaluate solutions using mental math and estimation to determine if they are reasonable.

Connect mathematical problem solving to real life situations.

Select and use appropriate tools, including manipulatives, calculators, and other technology. **Example:** Fold a rectangle in half, divide one half into two congruent right triangles, and divide the other half into 2 congruent triangles. Compare one of the right triangles and one of the small rectangles. Do they have the same area or does one have a larger area than the other? Explain.

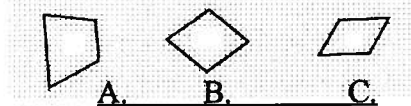
2. Build, describe, and compare physical models of 2- and 3-dimensional shapes.

Example: Students will be asked to find household items which represent a cube, a cylinder, and a prism.

They will discuss what they have found.

3. Identify, describe, compare, and classify properties and relationships using 2-dimensional shapes. **Example:**

Which figures below have four sides and two sets of parallel lines?



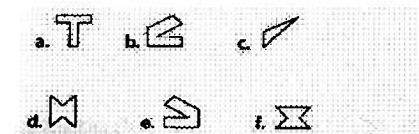
4. Make conjectures about properties and relationships of shapes, and use spatial

reasoning and geometric tools to test them. **Example:** Students will make geometric shapes from a variety of items, craft sticks, toothpicks, crayons, rulers, straws, and computer software. They will be asked to discuss the shapes they have created by describing their properties and relationships.

5. Develop spatial sense and examine geometric concepts by:

Exploring shapes with more than one line of symmetry.

Predicting results of sliding, flipping, and turning two dimensional figures, and show congruency of figures by describing a motion or series of motions. **Example:** Use these shapes to answer the questions.



How many lines of symmetry does each shape have? $\underline{\quad}$ Which shapes are congruent? $\underline{\quad}$ Which congruent shapes are flips of one another? $\underline{\quad}$

6. In a problem-solving context set up a coordinate graph (including axis, origin, and scale) and use it to mark and read position using coordinate pairs.

Example: Using a piece of graph paper with the axis numbered, draw the route from your house to school. Label the coordinates.

Performance Skill: Data Analysis

Students are expected to:

1. In the context of solving multi-step problems across the curriculum with data analysis:

Select from a variety of strategies to solve problems.

Explain strategies and solutions orally, in written form, or both.