

Math 5 - Act. 24: Twice the Rice, or More?

Summary

Through exploration, students will discover how many quarts will fit in a gallon, how many pints will fit in a quart, half-gallon, or gallon, etc.

Materials

- *Hershey's Weights and Measures*
by Jerry Pallotta
- Rubbermaid type container(s) with rice/water
- Various measuring supplies, both metric and customary
- Customary and metric measuring cups
- Customary and metric measuring spoons

For each student:

- "Gallon-t Robo"
- "Capacity Measurement" chart
- "Capacity" worksheet

For partners/teams:

- Enlarged "Gallon-t Robo"
- "Gallon-t Robo Exploration" worksheet
- "Capacity Measurement" chart
- "Capacity" worksheet
- "The Inner G" handout

Additional Resources:

- 50 Fabulous Measurement Activities* (Scholastic)
- Measuring* by Sheila Cato

Background for Teachers

Review what uses people have for measuring tools, like cooking, mechanics, painting, etc.

Vocabulary

Capacity: The maximum amount that can be contained by an object. Often refers to a measurement of liquid.

Volume: The number of cubic units it takes to fill a figure.

Customary units of measurement:

<i>Capacity</i>		
1 tablespoon (tbsp)	=	3 teaspoons (tsp)
1 fluid ounce (fl oz)	=	2 tablespoons
1 cup (c)	=	8 fluid ounces
1 pint (pt)	=	2 cups
1 quart	=	2 pints
1/2 gallon	=	2 quarts
1 gallon	=	4 quarts

<i>Volume</i>		
1 cubic foot (ft ³)	=	1,728 cubic inches

$v = l \times w \times h$

Metric Units of measure:

<i>Capacity</i>		
1 liter (L)	=	1,000 milliliters

$$= \begin{matrix} \text{(mL)} \\ 1 \text{ cubic decimeter} \\ \text{(dm}^3\text{)} \end{matrix}$$

$$\begin{matrix} \text{Volume} \\ 1 \text{ cubic} \\ \text{centimeter} \\ \text{(cm}^3\text{)} \\ 1 \text{ cubic} \\ \text{decimeter (dm}^3\text{)} \end{matrix} = \begin{matrix} 1,000 \text{ cubic} \\ \text{millimeters (mm}^3\text{)} \\ 1,000 \text{ cubic} \\ \text{decimeters} \end{matrix}$$

Formula for Volume:

$$v = l \times w \times h$$

Intended Learning Outcomes

3. Reason mathematically.
5. Make mathematical connections.
6. Represent mathematical situations.

Instructional Procedures

Invitation to Learn

Cooperative groups list as many ways as possible to use measuring cups, etc. in jobs and at home.

Instructional Procedures

Through exploration with rice, allow students to experiment and discover how different customary or metric measuring tools are used to measure. Discuss how the measuring units convert from one unit to another.

Have students record their responses on the “Capacity” worksheet.

Students copy the interior G (gallon) into their journals and explain in their own words what they have learned about customary measurements.

Read and discuss with the class *Hershey’s Weights and Measures* by Jerry Pallotta.

Review Capacity chart with class.

Introduce student-size “Gallon-t Robo” to the class. Instruct them to cut out and glue in their planners.

Give partners/teams an enlarged copy of “Gallon-t Robo.” Have them cut out the shapes and explore how many quarts will fit in the gallon, how many pints will fit in the quart, half-gallon, or gallon, etc.

Teams should record exploration results on “Gallon-t Robo” exploration worksheet.

Orally quiz the class on what possible units or combination of units equal one gallon, one quart, one pint, etc.

Teams will create their own “Gallon-t Robo” using all of the pieces from the original copy. They will color and glue it on a large piece of construction paper.

Curriculum Integration

Math/Science—Students can use measuring tools with the matter unit.

Extensions

Possible Extensions/Adaptations/Integration

Real Life—Working in cooperative groups, students make cookies or brownies using their measuring skills.

Art—Have individual students cut out “Gallon-t Robo” and assemble the pieces to make their own art creation.

Homework & Family Connections

Students make cookies, jello, or something else at home for their family that requires measuring.

Assessment Plan

Have students measure rice or water and record the results. Give them a quiz on different measurements.

Authors

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