

GOT MILK?

Performance Standard 7C.D

Draw an acute, obtuse and right angles, name and measure angles, and measure volume of a cube using inch and centimeter cubes:

- *Mathematical knowledge:* Draw figures with acute, obtuse and right angles, determine volume using inch and centimeter cubes;
- *Strategic knowledge:* Determine figures that contain different angles and measure correctly use cubes systematically to determine volume
- *Explanation:* Explain what was done and why it was done.

Procedures

1. *In order to construct a simple scale drawing for a given situation (7C)*, students should experience sufficient learning opportunities to develop the following:
 - Select and apply appropriate standard units and tools to measure the size of angles.
 - Determine the volume of a cube or rectangular prism using concrete materials.
2. Distribute student recording sheet and student friendly rubric to each child.
3. Distribute one $\frac{1}{2}$ pint container to each child.
4. Thoroughly explain the task. It might be helpful to cut the $\frac{1}{2}$ pint containers together before beginning the assessment.
5. Evaluate student work using all three parts of the Student Friendly Rubric.

Examples of Student Work not available

Time Requirements

- One class period.

Resources

- $\frac{1}{2}$ pint container for each child (These can easily be retrieved from the school cafeteria.)
- Inch cubes and centimeter cubes for each child to use for volume
- Protractors to be used for angle measurement
- Copies of the “Got Milk?” recording sheet
- Mathematics Rubric

NAME _____ DATE _____

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Student Recording Sheet

Part A: Angles: Draw three different figures below. One figure should have an acute angle. One figure should have a right angle. One figure should have an obtuse angle. Be certain to show the angle measurement that makes it an acute, right, or obtuse angle. Complete the blanks for each figure.

Figure A: The labeled angle shows a/an _____ angle.
Angle measurement: _____

Figure B: The labeled angle shows a/an _____ angle.
Angle measurement: _____

Figure C: The labeled angle shows a/an _____ angle.
Angle measurement: _____

Part B: Use a $\frac{1}{2}$ pt. container. Cut the top off so it looks like a cube.

1. Systematically stack inch cubes in your container so that the entire space is filled. What is the volume of your container? _____

I know my answer is correct because _____

2. Now, systematically stack cm cubes in your container. Be sure the entire space is filled with cm cubes. What is the new volume of your container? _____

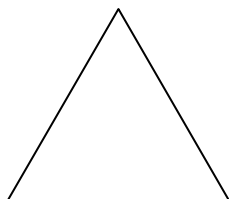
I know my answer is correct because _____

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Answer Key:

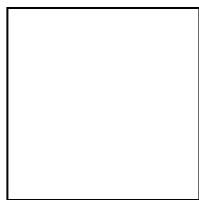
Figure construction: Here is a possible example of constructions for right, obtuse and acute angles.

Figure A:



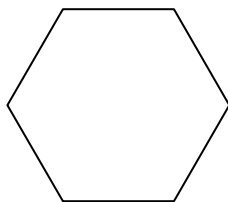
This triangle contains three acute angles. Each angle measures 60 degrees. I know these are acute angles because acute angles measure less than 90 degrees.

Figure B:



This square contains four right angles. Each angle measures 90 degrees. I know these right angles because right angles measure 90 degrees.

Figure C:



This hexagon contains six obtuse angles. Each angle measures 120 degrees. I know these are obtuse angles because obtuse angles measure more than 90 degrees.

Part B:

1. 12 cubic inches. The explanation should include something about placing cubic inch blocks in the container and then counting them. When I did this, I had to allow for $\frac{1}{2}$ inch units.
2. 343 cubic centimeters. The explanation should include a discussion of placing cubic centimeters in the cube and counting them. Another possible solution is discovering that 49 cm are needed for the first layer. A student could explain that 7 layers will fill the container.