



Grams, Kilograms, and Liters, oh my! Measuring Liquid Volume

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Math
Grades 3–5



Introduction

When and why do people measure liquids? What do we use to measure them? In this lesson, students will brainstorm different types of liquids that need measuring. They will then observe a variety of containers of liquid, record and estimate, and then find the precise measurement.

Learning Objectives

[CCSS.Math.Content.3.MD.A.2](#); Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).

Materials Needed

- 15 or so containers with water or other liquids filled up and placed around the room
- Food coloring (if desired)
- Paper for recording
- Device for playing a song to the class
- Measurement tools for students to share (ounce, cup, pint, quart, gallon)

Procedure

Prep: Fill up various sizes of containers and place them around the room. Be sure to label them with a number, to help with the organization and checking of the recordings later. You may use different sorts of liquids if desired (think milk, orange juice, olive oil), or make plain water more fun by adding some food coloring. Aim for 15 or so containers.

1. Ask students what are some types of liquids that need to be measured (examples include gasoline, ingredients when baking, etc.). Tell students that today they are going to be estimating how much liquid is in particular containers. They are then going to measure those liquids. They will finish by writing a paragraph describing why it is important to measure.
2. Play the [Capacity Song](#) on YouTube. As students watch, have them record the different units of measurement they hear in the song.

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3. Afterwards, make a circle map on the board showing all the units of measurement the students heard (examples include gallon, pint, quart, cup, ounces). Ask students to help you put these units in order from biggest to smallest:
 - Fluid Ounces
 - Cups
 - Pints
 - Quarts
 - Gallons
4. Tell students that they are now going to observe the different (numbered) containers of liquids you have placed throughout the room. The students should walk around the room and write down their estimate of the volume of each container (they can have flexibility in the unit they record it in).
5. Tell students once they have written down a prediction for every container on their piece of paper, they should partner up to do the actual measuring. With their partner, students should walk around the room choosing five containers to measure. Once they have measured the liquid, they should carefully dump it back into the display container for other students to measure. Tell students they may need to round their measurements up to make up for the drops that get spilled by previous measurers.
6. Once all students have completed their 15 predictions and have measured five containers, come together as a whole group. Use volunteers to help you measure all (or some, depending on time) of the containers so students can check how close they were. Talk with students about why you choose to use cups to measure some liquids and quarts to measure others. Ask students if they ran into any problems when they tried to use ounces and realized it would have been quicker to use pints or gallons.

Evaluation

When students are finished, they should turn in their 15 predictions as well as their five actual measurements for grading. Grading should be based on completion of 15 reasonable predictions and five actual measurements that are within reason.