

CONSTRUCTING TASK: MORE PUNCH, PEASE!

APPROXIMATE TIME: 1-2 Days



STANDARDS FOR MATHEMATICAL CONTENT

MCC.3.MD.2 Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.

STANDARDS FOR MATHEMATICAL PRACTICE

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

ESSENTIAL QUESTIONS

- How can estimating help me to determine liquid volume of something?
- What are some ways I can measure the liquid volume of something?

MATERIALS

- “More Punch, Please!” student recording sheet
- “More Punch Please!” recipe items
- a 1 liter container
- construction paper

GROUPING

Small Group/Partner Task

TASK DESCRIPTION, DEVELOPMENT, AND DISCUSSION

Students will explore and solve problems involving liquid volume.

Part I

Exploring, Estimating, Comparing

With your students, complete the activity below:

**Adapted from Teaching Student-Centered Mathematics, Van de Walle, Lovin, (2006)*

Tape two sheets of construction paper. Make a tube shape (cylinder) of one by taping the two long edges together. Make a shorter, fatter tube from the other sheet by taping the short edges together. When placed upright, which cylinder holds the most, or do they have the same capacity?

Part II

Investigating and Measuring

For this part of the task, students work with liquid volume to determine the amount of punch needed for a class party. Students can make simulated punch with colored water, or actual punch with real ingredients.

Students will follow the directions below from the “More Punch, Please!” student recording sheet.

We are making punch for a 3rd grade party. 30 students will attend the party. Make enough punch for everyone at the party. The recipe for the punch is as follows

Party Punch

* serves 10 students

Ingredients:

2 liters of fruit punch

$\frac{1}{2}$ liter of lemon – lime flavored carbonated beverage
(or ginger ale)

1 liter of sherbet

Directions:

Place sherbet in punch bowl. Pour in fruit punch and lemon-lime soda.

Part III

Reflection and Problem Solving

Answer the following questions about the punch for the party. Show all work and explain how you know your answers are accurate. Use pictures, numbers, and words.

1. How much liquid will be used for one batch?
2. How much of each ingredient needs to be purchased to serve punch at the party? Rewrite the recipe to serve 30 students.
3. How much liquid will be used in all for the entire party of 30 students? Show your work below.
4. Is there enough for students to receive seconds? Why or why not?

FORMATIVE ASSESSMENT QUESTIONS

- How many batches of the recipe will you need? How do you know?
- How much sherbet will you need to buy? How do you know?
- How much fruit punch do you need? How do you know?
- How much Lemon-Lime soda do you need? How do you know?
- What would you need to do to the recipe if more students came to the party?

DIFFERENTIATION

Extension

- Encourage students to find a different punch recipe and to rewrite the recipe to serve other numbers of students (50, 100).
- Ask students to determine what size drink is typical (they can consider the type of cup being used, whether ice will be available, and other factors that may influence the amount of punch served to each student). Once students have collected data, they can display the data, choosing the most effective data display.

Intervention

- Allow students to make only one batch.
- Facilitate a teacher guided group.

Name _____ Date _____

More Punch, Please!

We are making punch for a third grade party. 30 students will attend the party. The recipe below will serve 10 students.



Party Punch Recipe (Serves 10)

Ingredients:

- 1 liter of sherbet
- 2 liters of fruit punch
- $\frac{1}{2}$ liters of lemon-lime flavored carbonated beverage (or ginger-ale)

Directions:

- Place sherbet in punch bowl.
- Pour in fruit punch.
- Pour in lemon-lime soda.
- Stir, and serve chilled.

Answer the following questions about the punch for the party. Show all work and explain how you know your answers are accurate. Use pictures, numbers, and words.

1. How much liquid will be used in all for one batch? Show your work below.

- 2. How much of each ingredient needs to be purchased to serve punch at the party? Rewrite the recipe to serve 30 students.**

Party Punch	
Serves 10	Serves _____
1 liter of sherbet	_____ Liters Sherbet
2 liters of fruit punch	_____ Liters of Punch
½ liters of lemon-lime flavored carbonated beverage (or ginger-ale)	_____ Liters of Lemon-Lime

- 3. How much liquid will be used in all for the entire party of 30 students? Show your math thinking below.**

- 4. Is there enough punch for students to receive seconds? Why or why not?**
