CONSTRUCTING TASK: ORDERING CONTAINERS

Approximately 1 day

STANDARDS FOR MATHEMATICAL CONTENT

MCC.K.MD.1 Describe measureable attributes of objects, such as length or weight. Describe several measureable attributes of a single object.

MCC.K.MD.2 Directly compare two objects with a measureable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. *For example, directly compare the heights of two children and describe one child as taller/shorter*.

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.

BACKGROUND KNOWLEDGE

Introducing capacity (how much something can hold) can be tricky with kindergarten students. You will want to consider the skill of conservation when working with capacity. Some students may need extra guidance with understanding how different shaped objects can hold more or less. You may want to set up a water investigation station to let the students explore different types of containers and how much they hold. You will also want to reinforce the identification of the unit of measurement. It is important to keep several big ideas in mind when circulating throughout the room having math conversations with your students:

- It is important that the students clearly identify the attribute being measured.
- It is important that the students realize that BOTH objects must share the attribute before a comparison can be made.
- Keeping a careful count of how much of the substance it takes to fill an object is important.

ESSENTIAL QUESTIONS

- Does it matter how we measure?
- What does it mean to measure something?
- What ways can I measure this object?
- How can I record my information?

MATERIALS

- A variety of containers (at least 10 containers per group) Example: small boxes, cups, bowls, bottles, etc.
- Substances to fill containers: beans, sand, water, rice
- Funnel

GROUPING

Whole group and small group task

TASK DESCRIPTION, DEVELOPMENT, AND DISCUSSION

Gather students on meeting area. Show the students two containers; examples could include: a coffee cup and a gallon jug. Pose this question, "Which holds more liquid?" Allow various students to respond. Include "How do you know?" questions. Use a substance to fill the one of the containers and then pour the substance into the other container to determine if it would hold more, less, or the same amount. Model on a chart how to write a math statement about the two objects. For example:

My  holds more than my  .
milk jug coffee cup

Show the students that you have many different sizes of containers for each group. Have students make estimates about which container holds more and which container holds less. Allow children to use a substance (sand, water, rice, beans, etc.) to fill the containers. Discuss which container holds the most, or the least. The students should use their Math Journals to write true math statements about the comparisons.

All students in the group do not have to choose the same two objects to compare. Different comparisons between partners will encourage more productive discussions. For example, a coffee cup may hold less than a pitcher but more than a lid. Students can have these discussions when writing their math statements. Again, please note students are only comparing 2 items at a time.

When students complete their comparisons, let them discuss their findings. Emphasize the importance of aligning endpoints on both objects to compare length. Observe as students compare to make sure they are accurately filling the containers.

Allow students time to share their comparisons. Record these findings on a class chart for later reference. This gives an opportunity to communicate their discoveries in mathematical language. Discuss with the whole group why it DOES matter how you measure.

Teacher reflection questions:

- Are students able to determine which items hold more or less than others?
- Are students able to compare objects by their size and explain why this would be important?
- Are students able to use mathematical language to describe the measurement of attributes of items?
- Can students decide or offer ideas for how to organize/record information?
- Are students able to explain how to record results? Do they understand why this is important to do?

FORMATIVE ASSESSMENT QUESTIONS

- What attributes did you measure?
- Are there any more ways to compare these objects?
- Why did you decide to measure it this way?
- Which object holds more (longer, taller, heavier, etc.)? How do you know?
- If I fill one container with beans and the other container with water, can I still compare how much they hold? Why or why not?

DIFFERENTIATION

Extension

- Provide the student with other container to discuss and record observations.
- Encourage students to compare different attributes of the same two objects.

Intervention

- Have students pour the material into two identical containers so they can compare which holds more/less. This direct comparison will assist them in seeing the comparisons more clearly.
- Provide the student with copies of a recording sheet to help organize their thinking. See the "Ordering Container" example page.

ADDITIONAL RESOURCES:

Van de Walle (2006) Teaching Student-Centered Mathematics Grades K-3, Capacity Sort: p. 238

Ordering Containers

Name: _____

Have the student draw representations of the objects being compared and circle the correct measurement term.

	holds more than holds less than	
	holds more than holds less than	
	holds more than holds less than	
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	holds more than holds less than	