PERFORMANCE TASK: MEASUREMENT OLYMPICS

Approximately 2 days

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

Students should have had multiple opportunities comparing and ordering objects based on length, capacity, height, and weight prior to this task. In addition to comparing, students should have experience with describing objects as heavier/lighter, taller/shorter, longer/shorter, and/or more/less. 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.
- The lining up of the endpoints for an accurate measurement is important.
- The unit of measurement must be identified

ESSENTIAL QUESTIONS

- How can we measure something?
- 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

- 4 different boxes to hold materials for each event
- Event directions on each box
- Event 1 box: pencil, crayon, marker, spoon, foot ruler, various sizes of cut ribbon etc.
- Event 2 box: various sizes of boxes, containers, blocks etc.
- Event 3 box: Unifix cubes or snapping blocks to build towers
- Event 4 box: balance scale, manipulatives such as counting bears, paper clips, glue sticks, crayons, small toys, various sizes of balls (bouncy ball, playground ball, tennis ball etc.) Anything small enough to put on the balance scale would work.
- A "Olympic Event" student task sheet for each student

GROUPING

Individuals or partners

TASK DESCRIPTION, DEVELOPMENT, AND DISCUSSION

Gather students together at meeting area and review the big ideas learned in this unit and about measurement. Explain that today students will demonstrate their understanding of the measurement standards in each of the events in Measurement Olympics. "Olympic Events" will allow the students to demonstrate their mastery of the measurement standards. This task can be done in one classroom or collaboratively within a grade level. The tasks and activities will be grouped as "Events." Students will rotate to all four of the Olympic events. Tell students that they are going show what they know about measurement in the events. The students should directly compare 2 objects that they choose from each station. Have them do this 3 different times, making sure to choose different objects each time. The students will compare and order the objects based upon the measurement attribute given at each station. Review each stations directions.

Students visit each station and record their observations.

Olympic Event Descriptions

Event 1 – Short to Long	Event 2 – How High
Pick two objects from the box. Decide which is shorter and which is longer. Draw the objects on your event sheet in the correct box. Label them using the words shorter and longer.	Use some of the 20 blocks to make 2 different towers that are two different heights. Decide which tower is shorter and which is taller. Label your pictures using these words. Use numerals or words to tell how many blocks you used on each tower. Write those numbers and/or words on your sheet.
Event 3 – How Much Does it Hold?	**Event 4 – Heavy or Lightest**
Pick two objects from the box. Decide which holds more and which holds less. Draw the objects on your sheet and label them using words less and more.	Select two objects from the box. Decide which is lighter and which is heavier. You can use the balance scale to help you make your determinations. Draw a picture on your event sheet and label the heavier and lighter object.

After everyone has collected and recorded their data, allow them to share their findings in small groups or with the whole class.

Teacher reflection questions:

- Are students able to compare objects by their size and explain why this would be important?
- Can students determine which objects are heavier or lighter than others?
- 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?
- Can students explain why we need to have common endpoints when comparing the height or length of two objects?

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 is heavier (longer, taller, holds more, etc.)? How do you know?
- If I hold the objects like this (without the endpoints lined up), does your math statement change?

DIFFERENTIATION

Extension

- If students are comfortable with the process allow them to back and choose additional items for comparison. Have them record in their Math Journals what they learned from this experience.

Intervention

- Allow students to work through the stages at a speed that is appropriate for their performance level. Some students may need additional experiences acting out problems, using manipulatives, or drawing pictures.

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Event 1 Short or Long?	Event 2 How Much Does It Hold?
Event 3 How High?	Event 4 Heavy or Light?

Name _____

Event 1 Short or Long?			
Event 2 How much Does It Hold?			
Event 3 How High?			
Event 4 Heavy or Light?			