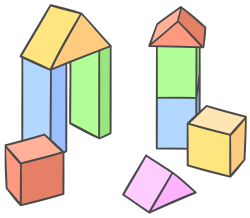

PRACTICE TASK: COMPARING TOWERS

Approximately 1 day

This lesson is adapted from "Comparing Towers" found at K-5_MathTeachingResources.com

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

Kindergarten students need many opportunities to compare attributes of items to determine which is longer or shorter etc. This work is with direct comparison only. Students should use terms such as longer and shorter when comparing towers. Students should not be using a ruler or any standard units of measurement to make comparisons.

ESSENTIAL QUESTIONS

- What qualities of an object can be measured?
- How can I compare 2 objects by their height?
- What does it mean to measure something?
- Why do we need to line the objects up end-to-end?

MATERIALS

- A container with different numbers of connecting cubes such as 5 red cubes and 7 blue cubes for each pair of students.

GROUPING

Whole group and partner task

TASK DESCRIPTION, DEVELOPMENT, AND DISCUSSION

At the meeting area, model the Comparing Towers task described below by showing the students how you and a partner work together. Demonstrate with a student how to take turns and how to use the blocks of one color to build a tower. The student should use the blocks of the other color to build a tower. The teacher and student should hold the two towers end-to-end, to determine which one is longer. The teacher should observe partners as they make their comparisons. Listen for the use of correct vocabulary (length, taller, shorter, longer, more, less, first, second). Encourage the students to use numbers to describe how many cubes make up their tower. As the students make their comparisons, be sure students are using end-points when they compare the lengths of the towers.

Students need to be grouped with partners for this task. Next have each set of partners, come to the front and select a container of cubes. Each student should use the cubes of one color from the container to build a tower. The partners should discuss what attributes can be measured when comparing the two towers. Discuss whose tower is longer or shorter, heavier or lighter, darker in color or lighter in color, more cubes or fewer cubes. Use pictures or words to show your work. The teachers should circulate around the room and ask questions about the items to guide students thinking. For example, "Which tower is longer? Which tower is shorter? How did you know?" Partners should record their observations about the attributes of the two towers. Have the students repeat this process with other student's towers (one pair of students could join another pair) Students may begin comparisons of multiple towers at once. This is a great time to help clarify comparisons.

After allowing an appropriate amount of time to complete the task, bring students together. Have each set of partners share their towers and have them identify which attribute was measured, how many cubes were used to make the tower and explain their reasoning.

Teacher reflection questions:

- 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?

FORMATIVE ASSESSMENT QUESTIONS

- Is this task similar to other tasks we have done? How?
- Does holding the towers end-to-end affect the answer? Is this important?
- 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?

- What does it mean to measure something?
- How can you organize your information so that someone else can understand it?

DIFFERENTIATION

Extension

- Prepare baskets of various items (blocks, strips of paper, small boxes, crayons) that can be used for comparison of length. Have the students order the items by length. Students draw pictures in their Math Journals to show how they ordered the items.

Intervention

- Provide students with a tower of connecting cubes and ask them to locate items in the classroom that are shorter than the tower, as well as longer than the tower. Focus on the discussion of the "why" the item is longer or shorter than the tower.

ADDITIONAL RESOURCES:

Van de Walle (2006) Teaching Student-Centered Mathematics Grades K-3, Length Hunt: p. 229