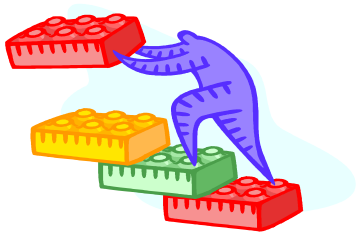

CONSTRUCTING TASK: WHICH IS LONGER?

Approximately 1 day
This lesson is adapted from "Which Is Longer" 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 to learn that when measuring multiple objects as one unit, the objects must be lined up end to end in order to get an accurate measurement. If gaps are left between objects, it changes the measurement or comparison. 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 end-to-end is important for an accurate measurement.

ESSENTIAL QUESTIONS

- If I have the same number of objects, why is one set longer than the other set?
- Why is it important to lay the objects end-to-end?
- What qualities of an object can be measured?
- How can I compare 2 sets of objects?
- What ways can I measure this object?
- How can I record my information?

MATERIALS

- Connecting cubes
- Paper clips
- Counters
- Pattern blocks
- Other items for measurement

GROUPING

Individual

TASK DESCRIPTION, DEVELOPMENT, AND DISCUSSION

Gather students together at meeting area and show two sets of items such as 8 crayons and 8 pencils. Ask, "If I lay these sets of objects end-to-end, which do you think is longer?" Whisper your answer to your elbow partner. Then share with the class. "Why do you think that? How can we prove that?" Discuss how you decide which set is longer. Select two students to demonstrate how you can measure to determine which is longer. Have a student line up the items end-to-end and remind them of the importance of common endpoints for each line. Ask students, "Why is it important to line items up end-to-end when comparing length of a set?" Model on a chart how to write a math statement about the two objects. For example:

My 8  are shorter than my 8 

crayons pencils

Tell students they are going to explore comparing sets of objects and writing true math statements. Give each group pre-made bags of items such as 20 connecting cubes and 20 paper clips, 7 crayons and 7 counters, 12 square pattern blocks and 12 trapezoid pattern blocks and 10 craft sticks and 10 dominoes.

Once they have their bags of objects, they are to lay the objects end-to-end on their table (creating 2 lines with each lining containing alike objects). They should compare the two sets of objects and write a true math statement to describe the comparison of common attributes. Then switch bags with a peer in their small group to make a new comparison. Again, please note students are only comparing 2 items at a time. Emphasize the importance of aligning endpoints on both lines of objects to compare length. Observe as students compare to make sure they are lining the endpoints up correctly.

Allow students time to share their comparisons. 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 compare sets of objects and explain why this would be important?
- Can students explain why we need to line objects up end-to-end in order to accurately measure sets?
- 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

- Why is this set longer/shorter when we have the same number of items as this set?
- What attributes did you measure?
- 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

- Prepare baggies of sets of items of different quantities. For example: 10 connecting cubes and 20 paper clips, 7 crayons and 15 counters, 5 craft sticks and 15 dominoes, etc. that can be used for comparison of length of sets. Have the students order the items end-to-end and compare the lengths. Students draw pictures in their Math Journals to show how they compared the items.

Intervention

- *Have pre-made cards of items such as 20 connecting cubes and 20 paper clips, 7 crayons and 7 counters, and 10 craft sticks and 10 dominoes glued down. Have the child make comparisons of the length of each line.*