PRACTICE TASK: RIBBON WAR

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

Some students may believe that the lining up of end points (placing the ends of objects next to each other) for comparison is not important. These students will also think that a 3 inch block is longer than an 5 inch block when they are lined up like:

3 inch block

5 inch block

ESSENTIAL QUESTIONS

- How can I compare 2 objects by their size?
- How can I measure something?
- What qualities of an object can be measured?
- How can I organize my information?

MATERIALS

- The Best Bug Parade by Stuart J. Murphy or a similar book
- One bag of ribbons or string, cut in various lengths, per pair of students

GROUPING

Whole group and partner task

TASK DESCRIPTION, DEVELOPMENT, AND DISCUSSION

The teacher should collect one bag of ribbons or string, cut in various lengths, per pair of students. The lengths should range from about an inch to 24 inches.

Have students go to the meeting area and begin by reading a book on size comparisons such as The Best Bug Parade by Stuart Murphy or a similar book. After reading the book, the teacher will model the Ribbon War described below by showing the students how you and a partner play this game. Demonstrate with a volunteer student taking turns and how to lay the ribbons, side by side, to determine the length. 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). As the students make their ribbon comparisons, be sure students are using end-points when they compare the lengths of the ribbons.
Students need to be grouped with partners for this task. The teacher should provide each pair of students with a bag of ribbons.
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Ribbon War Game

- Reach in the bag and take a piece of ribbon. Lay the ribbon out in a straight line, making sure that it is flat or holding it down to make it flat.
- Your partner will pull a piece out of the bag and lay their ribbon beside your piece. Compare your two ribbons. The partner with the longer ribbon will keep both pieces of ribbon. Observe to make sure students lay the ribbons next to one another (use common end points.)
- If the pieces are the same length, partners pull another piece and add it to the piece that they have already. Compare the two new lengths. The partner with the longer length will keep all the pieces of ribbon.
- Continue playing the game and taking turns until the bag is empty. Count up the total number of ribbons each player has. The winner is the person who has more ribbons.
- Each player then lays out all his/her ribbons in a straight line and compares the total length. Who has the longer total length? Discuss this with your partner.
- The next time you play this game the rules change. Put all ribbons back into the bag and play the game again, but see who has the shorter ribbon. The partner with the shorter ribbon takes both. Again, the partner who has more ribbons is the winner. Make sure to ask students, "What was different about the results this time compared to last time?"

After allowing an appropriate amount of time to play the game, bring students together. Have each set of partners pull two ribbons from their bag and have them identify which is longer and which is shorter and explain their reasoning.

Next, facilitate a class discussion involving a scenario where a student has one ribbon and his partner has 3 ribbons and the one ribbon is longer than the three ribbons. Teacher may need to have an example ready to show, such as 3 ribbons are longer than 5 ribbons.

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?
- Are students able to explain why end points are important?

FORMATIVE ASSESSMENT QUESTIONS

- If I hold the objects like this (without the endpoints lined up), does your math statement change?
- Did the person who has the most ribbons also have the longer length? Could a person have fewer pieces of ribbon but have a longer line? Why or why not?
- How do you know which ribbon is shorter? Longer?
- Why do we need to line the ribbons up end-to-end to compare the lengths?
- I wonder why end points are important. Can you tell me?

DIFFERENTIATION

Extension

- Prepare baskets of various items (blocks, strips of paper, small boxes, crayons) that can be used to play "Ribbon War." At the end of the game 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 piece of ribbon and ask them to locate items in the classroom that are longer than the piece of ribbon, as well as shorter than the piece of ribbon. Focus on the discussion of the "why" the item is longer or shorter than the ribbon.

ADDITIONAL RESOURCES:

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