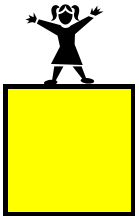

CONSTRUCTING TASK: SORTING ATTRIBUTE BLOCKS

Approximately 1 day
This lesson is adapted from "Sorting Attribute Blocks" found at K-5_MathTeachingResources.com

STANDARDS FOR MATHEMATICAL CONTENT

MCC.K.MD.3 Classify objects into given categories; count the numbers in each category and sort the categories by count. *Limit category counts to less than or equal to 10.*

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

Sorting objects into categories and then ordering the categories by how many are in each set is the foundation for gathering data and data analysis that will be further developed in 1st and 2nd grade. Grouping objects by common attributes is an important skill and ordering sets according to how many are in the set is a foundational building block for graphing. 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 attributes being sorted.
- It is important that the students know that asking the questions, "How are these things alike? How are they different?" guides their sorts. A question should always guide your work with organizing data.
- Counting the number of objects in the categories and then organizing the categories by how many are in the set is the bridge to representing data in graphs and charts.

ESSENTIAL QUESTIONS

- How are things alike? How are things different?
- Why do we group like things together?
- Does it matter how we group objects?
- What attributes can we look at to sort items?
- Is there more than one way to sort a set of items?
- How can I record my information?

MATERIALS

- Sets of attribute blocks for each group. The real blocks are best, but you can copy attribute blocks if you must. (see attachment at the end of task)

GROUPING

Whole group and small group task

TASK DESCRIPTION, DEVELOPMENT, AND DISCUSSION

Gather students together at the meeting area. Show them a set of 3-D blocks and model describing the different attributes of the set. Record the different attributes that can be seen in the blocks for the children to reference during work time. Show the students a set of attribute blocks. Ask, "What attributes could you use to describe these blocks?" Whisper your answer to your elbow partner. Then share with the class. "Are there other attributes that we can identify?" Discuss how you can create groups and sort the blocks into groups called categories according to blocks that have attributes that are alike.

Tell students they are going to explore sorting attribute blocks into categories. Give each group a pre-made bag of 10 attribute blocks.

Once they have their bag of blocks, they are to lay the blocks on the table and talk about how they are alike and how they are different. They should then decide on two categories to sort the blocks. Do not limit their thinking with the different ways that they can sort the blocks. Let the students make the decision to guide the sorts (thick and thin blocks, colors, shapes or small, medium and large shapes…just to name a few). Each student should draw a picture to show how the blocks were sorted. They should then label the groups and count how many are in each set. Encourage each student to represent their work on paper and to label the amount of objects in each set. Be ready to tell your rule for sorting the blocks or how the blocks within the set are alike and how the sets are different. Have the students order the sets according to the amount of blocks in each set. If there is time, the students should try to sort the blocks a different way.

Allow students time to share their classified groups. Discuss how many items are in each set. This gives them an opportunity to communicate their discoveries in mathematical language. Discuss with the whole group how the blocks within a set are alike and how the sets are different. The teacher should choose one set of sorted blocks to represent in a graph.

Teacher reflection questions:

- Are students able to sort objects by attributes?
- Are students able to use mathematical language to describe the sorts?
- 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?
- Are students able to identify how many objects are in a set?
- Can they order the sets by the number of objects?

FORMATIVE ASSESSMENT QUESTIONS

- What attributes did you use to determine your groups?
- What are all the ways to sort the attribute blocks? How do you know you have found them all?
- Are there any more ways to compare these objects or to sort them?
- Why did you decide to classify the objects this way?
- How many objects are in each set? Can you organize the sets to represent how many are in each set?
- How can you organize your information so that someone else can see how you sorted your objects? How will you identify the attributes?

DIFFERENTIATION

Extension

- Encourage the students to find a different way to sort the same objects and/or include pattern blocks.
- Give the student pattern blocks to repeat the activity.

Intervention

- Identify how the objects are alike and or different and label the categories for the sort for the students.