CONSTRUCTING TASK: What Shape Are You?

**Adapted from Are You a Square? By Marilyn Burns*
Approximately 1 day

STANDARDS FOR MATHEMATICAL CONTENT

MCC.1.MD.1 Order three objects by length; compare the lengths of two objects indirectly by using a third object.

MCC.1.MD.2 Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. *Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.*

MCC.1.MD.4 Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

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 some understanding of appropriate units of measure in relationship to the size of the object being measured. Ex: It would not be efficient to measure the length of the white board using paper clips. More appropriate tools would include: outline of foot, textbook or an unsharpened pencil.

ESSENTIAL QUESTIONS

- How are nonstandard units used to measure objects?
- How are measuring units selected?
- How do measurements help compare objects?

MATERIALS

- Yarn (enough for each student)
- Various units of measure for students to choose from (various small and large tools for discussion in Part I)
- Sticky notes (enough for each student to have 1)
- Chart paper (1-2 sheets, see diagram in Part II)
- "What Shape Are You?" recording sheet (1 per pair of students)

GROUPING

Whole group/Partners

TASK DESCRIPTION, DEVELOPMENT, AND DISCUSSION

Part I
Students will work in pairs for this activity. They will measure each other's height and length of reach by using a piece of yarn. The teacher will need to model these measurements so that all the students are clear on the procedure. Then, they will decide on a measuring tool (from a set) to determine the number of units long their height and length of reach are. Once they have determined their "measurements" they will then decide which category they belong in (square, tall or wide rectangle) and place their sticky note on the chart.

Part II
Once everyone in the class has posted their findings, allow students to share their results. Then, graph the results and have a class discussion. Possible questions to pose include:

- *Which does our class have the most of? Tall or wide rectangles?*
- *How many squares does our class have?*
- *Do we have an equal amount of any shapes?*

Discuss the various measurement tools students chose to use. Ask students to explain why they chose the tool they used and ask students if they would be able to determine, based on the data they collected, who is the tallest (or shortest) in the class? Why or why not?

DIFFERENTIATION

Extension
- Students will cut a piece of string, equal in length to their foot, with a partner. Then, they will explore ratios on their body such as: number of "feet" their height is, foot length: forearm, or foot: length of reach.

Intervention

- You may want to provide a large nonstandard unit of measurement for the student to use when measuring his or her height or length of reach, so that organization is less of an issue.

- *Who is taller than _____?* Students will stand back-to-back with the other students and determine if they are taller than, the same as, or shorter than each classmate. As they identify which of those they are in relation to each student, they will record the information on a task sheet. After all data is collected, the student will answer questions about the data, such as: *Are you taller or shorter than most students in the class? How many students are the same height as you?*

What Shape Are You? Recording Sheet

Partner 1: _____

Unit of measurement used: _____

Length of reach (left fingertip to right fingertip):_____

Length of height (top of head to bottom of feet):_____

Partner 2: _____

Unit of measurement used: _____

Length of reach (left fingertip to right fingertip):_____

Length of height (top of head to bottom of feet):_____

What Shape Are You Recording Sheet

Partner 1: _____

Unit of measurement used: _____

Length of reach (left fingertip to right fingertip):_____

Length of height (top of head to bottom of feet):_____

Partner 2: _____

Unit of measurement used: _____

Length of reach (left fingertip to right fingertip):_____

Length of height (top of head to bottom of feet):_____