



SCAFFOLDING TASK: ATTRIBUTES RULE!

Approximately 1 day

[Back To Task Table](#)

STANDARDS FOR MATHEMATICAL CONTENT

MGSEK.G. 4 Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/“corners”) and other attributes (e.g., having sides of equal length).

MGSEK.MD.3 Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.

STANDARDS FOR MATHEMATICAL PRACTICE

1. Make sense of problems and persevere in solving them.
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

As Van de Walle states, “In any sorting activity, the students should decide how to sort, not the teacher. This allows the students to do the activity using ideas *they* own and understand. By listening to the kinds of attributes that they use in their sorting, you will be able to tell what properties they know and use and how they think about shapes”. (Van de Walle pg. 194)

ESSENTIAL QUESTIONS

- How can we describe the position or location of an object or shape?
- How can we use words that describe location in our everyday lives?
- How are shapes alike and different?

MATERIALS

- Attribute blocks

GROUPING

Whole group, small group and/or partners

TASK DESCRIPTION, DEVELOPMENT AND DISCUSSION

Comment: ordinal numbers and patterns are not mentioned explicitly in the standards however they should be integrated into lessons whenever possible.

PART I

Gather students at a central meeting place. Discuss/review what an attribute is and allow students to provide examples. Give each student a handful of attribute blocks and have them sort the blocks and share with classmates how they sorted. Allow for ample time to explore and share.(SMP 1,6)

PART II (Attribute Train)

Gather students together to form a circle to play the attribute train game. Begin the attribute train by placing one block in the center of the circle. Next, choose a student to add to your train by putting a block next to the first block. The next block added must have one common attribute with the block previously laid. Have a class discussion about what is the same about the two shapes and what is different. The next student in the circle repeats the steps and adds a third block to the train. (Example: *Student 1* lays an attribute block down and says “A thick, large red circle” *Student 2* lays an attribute block down and says “A skinny, small red square.” *Student 2* explains that the circle and the square are both red but different shapes) Next time the train goes around have the student match 2 attributes with the previous block.
(SMP 1,3,4,5,6,7,8)

Comment: During the lesson continue to ask the students questions about their shape and if there are any other attributes that may link their block to the previous one.

PART III(Guess My Sort)

Place students in pairs. One partner picks three blocks with similar attributes and shows their partner. The partner has 2-3 guesses to identify how the blocks were sorted. If the partner correctly identifies the sorting attribute, the roles switch. If not, the players’ roles remain the same. The students will be shown four attribute blocks, three of which have some similar properties or characteristics (based upon, shape, size, color, thickness.) Discuss which three belong together and why. Have students justify their reasoning. The teacher can decide how the students share their choices and their reasoning. Provide several examples, and then allow students to work on their own to create their own examples. After partners have worked together and explored the various ways to sort attribute blocks, have them expand to a group of 4 or 5 and play the game *Guess My Sort* with a group of students. Students take turns trying to identify the sorting rule.

After students have shared within small groups, have all the groups meet back at a meeting place and share the different ways they sorted their shapes. Ask students what their favorite way to sort the shapes was and create a bar graph to display the result. The data collected for this graph will usually result with the that students are most familiar with. (SMP 1,3,4,5,6,7,8)

TEACHER REFLECTION QUESTIONS

- Can students sort shapes in multiple ways?
- Are students able to describe the attributes of their shape?
- Can students able to identify common attributes of shapes?

FORMATIVE ASSESSMENT QUESTIONS

- Is there another attribute you could have sorted by?
- How many attributes does the _____ have?
- How did the attributes help you sort the shapes?
- What information can we learn from the graph?

DIFFERENTIATION

Extension

- Students can be asked to sort shapes that have more than one matching attribute using the Guess My Attribute game.

Guess My Attribute

Students play this game in pairs. Student A places an attribute block on the first circle. Student B will place an attribute block on the next circle by following the number of lines: if there is 1 line, the student places an attribute block with only 1 different attribute, if there are 2 lines, the student will place an attribute block with 2 different attributes, and 3 lines mean there will be 3 different attributes.

As students make their placements, they are to share why the attribute block they have chosen the correct block. This should result in much conversation about attributes.

Intervention

- Have the students identify a list of attributes and have them pick an attribute from the list to help guide their sort.

[Back To Intervention Table](#)

TECHNOLOGY

Shapes Concentration <http://illuminations.nctm.org/ActivityDetail.aspx?ID=73>

Students match 2-D figures in a game of concentration