

# Attribute Trains

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**Strand:** Patterns, Functions, and Algebra

**Topic:** Classifying

**Primary SOL:** 1.13 The student will sort and classify concrete objects according to one or two attributes.

**Related SOL:** 1.11, 1.12

## Materials

- Attribute blocks (set should include the attributes of shape, color, size, and thickness)
- Chart Paper
- Markers
- Button Sort sheet

## Vocabulary

*attributes, categories, color, different, classify, category, label, same, shape, similar, size, sort, thickness*

## Student/Teacher Actions: What should students be doing? What should teachers be doing?

1. Before you begin the lesson, decide how you are going to sort the students for the introduction. For example, boy/girl, wearing jeans/not wearing jeans, shoes with laces/shows without laces, short hair/long hair, short and blonde hair/not short or blonde hair, etc. Start with one attribute and then work toward more complex classifying with two attributes.
2. Explain that you will be playing a “Guess My Rule” game. Call a few students that fit your rule to the front of the room. Ask students what similarities the children have in common. Call a few other students that fit your rule to the front of the room. Have students discuss what similarities they are noticing about the children. Ask students whether they can identify anyone else in the class that may fit the rule. Respond with yes if the child fits the rule, or no if the child does not fit the rule you are thinking of. Continue to question students to see what similarities they are noticing about the students at the front of the room. Have students share what they think the rule for sorting the children is and have students explain their reasoning.
3. Repeat with several other attributes for sorting the students. You may want to use two attributes, such as “short hair and blonde hair/not short hair and blonde hair”.
4. After several student sorts, gather students in an open area where they have space to sit in a circle. Explain that you are going to place the set of attribute blocks in the center of the circle. Pose the following question to students. *What do you notice about the blocks? How would you describe some of them?* (Responses may include – different sizes, shapes, colors, and thicknesses.)
5. Explain that you are going to give partners one of the shapes so they can think together of as many words as they can to describe the shape. Listen to students while they are

discussing the shape with their partner. Here are some questions to consider: “How are students describing their shape?” “Do they know the name of their shape?” “Can they describe more than one attribute for their shape?”

6. After a few minutes, have partner pairs share one word that tells about their shape. Have a sheet of chart paper labeled with “Shapes” at the top. Have four sections on the chart paper which you will eventually label—Color, Shape, Size, and Thickness. As students share their word, record where it would go on the chart. (Colors: red, blue, yellow; shapes (circle, triangle, rectangle, square, hexagon); size—big, little; thickness – thin, thick)
7. Explain that these words, attributes, help us describe shapes and objects in our world. Attributes allow us to sort and classify things in different ways.
8. Randomly distribute one attribute block to each student. Inform students that they will play a game to make a train out of the blocks. The train will be displayed in the center of the open area so everyone can see.
9. Start the game by choosing and displaying one attribute block to be the train’s engine. Have students describe the block’s four attributes of size, color, thickness, and shape (e.g., “large, red, thick triangle”). If a student thinks he or she has a block that shares one attribute with the first block, s/he may come up and place it as the first car on the train. S/he must also identify its shared attribute as well as its other attributes. If necessary, provide a sentence frame such as, “My block has the same \_\_\_\_\_ as the previous block. It’s other attributes are \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.”
10. The next student who has a block that shares an attribute with the second block may then come forward, add the block to the train, and identify its shared attribute as well as its other attributes.
11. Play continues until as many blocks as possible have been added to the train.
12. Repeat the attribute train activity, using two attributes to describe the block. If a student thinks he or she has a block that shares two attributes with the first block, s/he may come up and place it as the first car on the train. S/he must also identify its two shared attributes as well as its other two attributes. If necessary, provide a sentence frame such as, “My block has the same \_\_\_\_\_ and \_\_\_\_\_ as the previous block. It’s other two attributes are \_\_\_\_\_ and \_\_\_\_\_.”

### Assessment

- **Questions**
  - (Have students look at one- third or any number block in the train. Is there another block that could be the next block besides the one that is already there? If so, why? Explain how you know.
  - Have students look at the fourth or any number block in the train. What block or blocks could not be the next block? Why? Explain how you know.
- **Journal/writing prompts**
  - Draw or use pre-cut shapes to make a train that has at least five blocks. Tell how each car is related to the one before it.

- Represent and describe at least two attributes that we used today when making our attribute train.
- **Other Assessments**
  - Randomly distribute an attribute block to each student. Have him/her describe three different attributes of the block that could be used to build a train.
  - **Button Sort:** Have students cut out the different buttons from the “Button Sorting” sheet. Students will sort the cards into two or more groups and glue the cards down. Have students describe each group and how they sorted the buttons using labels.

### **Extensions and Connections (for all students)**

- Adapt this game to be played with a variety of manipulatives, such as buttons, leaves, animals, food, etc.
- Have students play a game of attribute dominoes. Players must match a least one attribute to the previously displayed block in order to play a block. If a player cannot match at least one attribute, s/he must skip a turn. The first player to play all of his/her attribute blocks is the winner.
- Take students on an attribute scavenger hunt, having them find and record something that is blue and thick, thick and round, or blue and square, etc. Have students share their findings during a math talk after the hunt.
- Have students play a card game similar to crazy eights in which they use cards based on color, suit, or number.

### **Strategies for Differentiation**

- If students have difficulty focusing on two attributes, begin by working with only one.
- Put thin and thick attribute blocks in a long sock. Have students select blocks that fit the targeted attribute (e.g., thin blocks), using their sense of touch.
- Provide students with a visual reference for each of the attributes.
- For students who need extra support, during the whole group train activity have students write each of the attributes of their shape on a sticky note. Alternatively, provide an attribute checklist. The checklist would prompt students to check for shape, size, color, and thickness as they see what attribute matches.

**Note: The following pages are intended for classroom use for students as a visual aid to learning.**

## Sorting Buttons

**Directions:**

1. Sort the button cards into two or more groups and glue your groups on the back of this paper or construction paper.
2. Describe each group and how you sorted them with a label.

Cut out the shapes below and use them to sort into groups.

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