

Size and Color

BROWARD COUNTY ELEMENTARY SCIENCE BENCHMARK PLAN

Grade 1—Quarter 1

Activity 3

SC.A.1.1.1

The student knows that objects can be described, classified, and compared by their composition (e.g., wood or metal) and their physical properties (e.g., color, size, and shape).

SC.H.1.1.1

The student knows that in order to learn, it is important to observe the same things often and compare them.

SC.H.1.1.3

The student knows that in doing science, it is often helpful to work with a team and to share findings with others.

SC.H.1.1.5

The student uses the senses, tools, and instruments to obtain information from his or her surroundings.

ACTIVITY ASSESSMENT OPPORTUNITIES

The following suggestions are intended to help identify major concepts covered in the activity that may need extra reinforcement. The goal is to provide opportunities to assess student progress without creating the need for a separate, formal assessment session (or activity) for each of the 40 hands-on activities at this grade level.

1. Ask, ***Could you sort crayons and markers into groups using the property of color?*** (Yes, we could use color to sort the markers and crayons.) You might want to show two or three colors to start the process of doing such a sort, then have students finish the process as a class or in small groups. Ask, ***Could you also sort the crayons and markers into two groups using the property of shape?*** (Yes, we could use shape to sort markers into two groups, “crayon shape” and “marker shape.”) ***What other property could you use to sort the crayons and markers?*** (We could use size—long, short, and medium.)
2. Use the Activity Sheet(s) to assess student understanding of the major concepts in the activity.

In addition to the above assessment suggestions, the questions in bold and tasks that students perform throughout the activity provide opportunities to identify areas that may require additional review before proceeding further with the activity.

Size and Color

OBJECTIVES

In this activity, students classify and sort paper squares and circles by size and color.

The students

- ▶ describe properties of paper squares and circles
- ▶ classify and sort squares and circles by size
- ▶ classify and sort circles by color

SCHEDULE

About 40 minutes

VOCABULARY

color
size
sort

MATERIALS

For each student

- 1 Activity Sheet 3

For each team of two

- 1 box crayons
- 1 tray, sorting

For the class

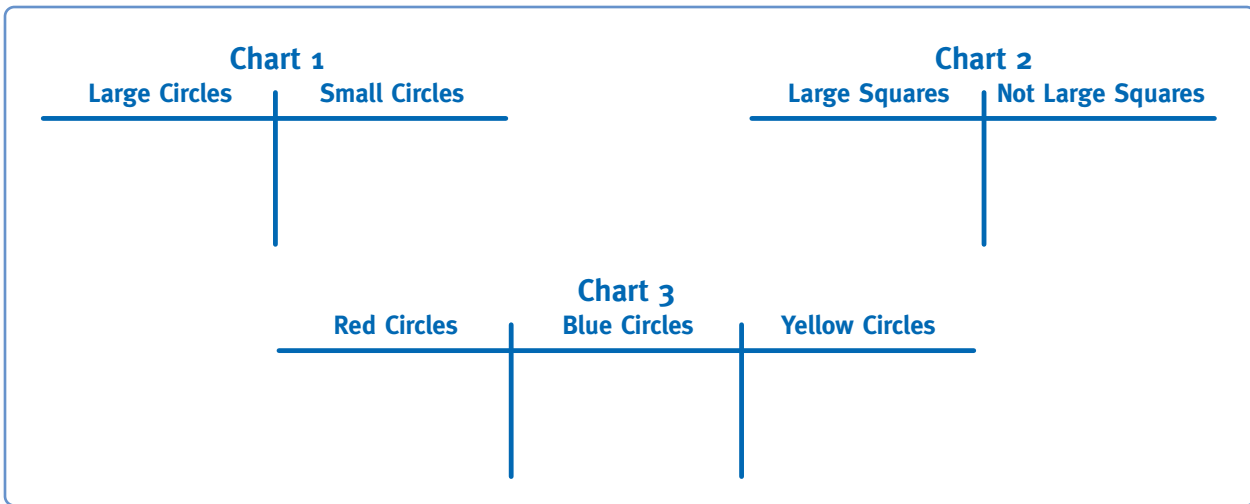
- 1 chart, Property Words (from Activity 2)
- 1 Circle Patterns
- 1 marker, felt-tip*
- 3 shts paper, construction, blue

- 3 shts paper, construction, red
 - 3 shts paper, construction, yellow
 - 1 pair scissors*
 - 1 squares, paper, assorted, p/192
 - 1 roll tape, masking
- Delta Science Reader, *Properties*

*provided by the teacher

PREPARATION

- 1 Make a copy of Activity Sheet 3 for each student.
- 2 You will need to use copies of the Circle Patterns sheet to cut out the following circles from construction paper for a class demonstration: three small yellow, three small blue, two small red, three large yellow, three large blue, and five large red.
- 3 Group two small yellow, one small blue, one small red, one large yellow, two large blue, and three large red circles together. This group will be referred to as Group 1. Group one small yellow, two small blue, one small red, two large yellow, one large blue, and two large red circles together. This group will be referred to as Group 2. Put a loop of masking tape, sticky-side out, on the backs of each of the paper circles.
- 4 Draw three charts on the board, the first with two columns, the second with two columns, and the third with three columns. The columns on the first chart should be labeled *Large Circles* and *Small Circles*; the columns on the second chart should be labeled *Large Squares* and *Not Large Squares*; the columns on the third chart should be labeled *Red Circles*, *Blue Circles*, and *Yellow Circles*. Make the columns wide enough to accommodate the paper shapes you will place in them (see Figure 3-1).



▲ Figure 3-1. Three sorting charts.

- 5 Using the paper squares provided in the kit, group 12 paper squares of assorted sizes and colors on each sorting tray. Each tray should contain 3 green squares (small, medium, large), 3 blue squares (small, medium, large), 3 pink squares (small, medium, large), and 3 yellow squares (small, medium, large). Mix up the squares on each tray, as students will be sorting them during the activity.
- 6 Each team of two will need a sorting tray with paper squares and a box of crayons.

BACKGROUND INFORMATION

When we **sort** objects, we break them down into groups according to their similar properties. All members of a newly created group, by definition, must share these properties. In the two previous activities, students learned to describe properties of objects using a variety of adjectives. In this activity, students compare and contrast a collection of paper squares and then sort them into groups based on the properties of **size** (how large or small a thing is) and **color** (a property that distinguishes objects by hue, shade, or tint). As will be true throughout the remainder of the activities, students will sort their objects based on comparisons between a particular object and the other objects on their trays.

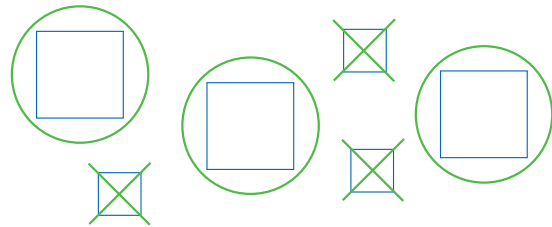
Avoid specifying the number of groups students should create when they sort their squares. Allow students to decide on the rules for sorting their objects. Always accept all groupings so long as students can justify them. For example, when sorting by size, students might put their squares into two groups, *large* and *small*, or into three groups, *small*, *medium*, and *large*.

▼ Activity Sheet 3

Size and Color

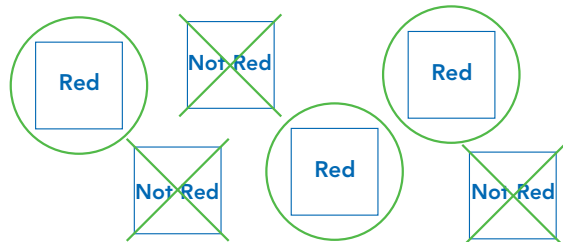
Sorting by Size

1. Circle all the large squares. Draw an X through all the small squares.



Sorting by Color

2. The squares are labeled *Red* and *Not Red*. Use crayons to color the *Red* squares red. Color the *Not Red* squares some other color. Then circle all the red squares. Draw an X through all the other squares.



Guiding the Activity

- 1 Select a small yellow circle and a large yellow circle from the circles in Group 1 and hold them up for the class to see. Ask, **How are these two circles alike? How are they different?**

Point to the chart on the board with the columns labeled *Large Circles* and *Small Circles*. Read the column headings aloud and stick the large circle onto the board under the column headed *Large Circles* and the small circle under the column labeled *Small Circles*.

Write the word *size* on the board and tell students that **size** is a property that describes how big or small an object is.

- 2 Select a large blue circle from the circles in Group 1. Point to the first chart on the board and tell students that you are going to stick any large paper circles in the column labeled *Large Circles* and any small paper circles in the column labeled *Small Circles*. Hold up the large blue circle. Ask, **Does this circle belong in the large group or the small group?**

Stick the large blue circle to the board under the column marked *Large Circles*. Hold up a small red circle. Ask, **Does this circle belong in the large or the small group?**

Stick the small red circle under the column marked *Small Circles*.

Continue sorting the circles in Group 1 in this manner until all of the circles have been sorted. Ask, **How many large circles do we have? How many small circles?**

Additional Information

Students should say that both circles are round and both are the same color, but one circle is larger than the other.

Students should say that it belongs in the large group. Some students might think that the large blue circle does not belong with the large yellow circle because they are different colors. Let students know that differences in color are not important in this exercise, only differences in size.

Students should say that the red circle belongs in the small group.

Students should say that there are four small circles and six large circles.

Guiding the Activity

Point to the Property Words chart displayed at the front of the classroom and read, or have a student read, the words listed under the column heading *Size Words*. Ask students if there are any other size words they would like to add to the column.

- 3 Write the word *sort* on the board and tell students that they have just sorted the paper circles into large circles and small circles. Guide students to define the verb *sort*.

Distribute a sorting tray to each pair of students and give students time to examine the paper squares on their tray. Then tell students to sort their squares by size. Point out to students that even though you used circles, the same principles apply for sorting squares (see Figure 3-2).

After students have finished grouping their squares by size, discuss their results. Ask, **How many groups of squares did you make? How many squares are in each of your groups? What words describe the squares in each group?**

Additional Information

*Students should understand that when you **sort** objects you group all of the objects with a similar property together. In this case, all large circles were put in one group and all small circles were put in another group.*

Tell students simply to put similarly sized squares together. Be careful not to specify the number of groups students should create in sorting their squares.



▲ Figure 3-2. Sorting paper squares.

Answers will vary. Students might form two or more groups with one or more squares in each group. Some teams will make two groups, such as small and large; others might make more than two groups, such as small, medium, and large.

Guiding the Activity

Encourage students to explain not only why a certain square belongs in one group, but also why that square does not belong in another group. For example, remove a large paper circle from the chart on the board. Ask, **Can I put this circle in the small group? Why not?**

4

Borrow a set of materials from one team for a class demonstration. Put a loop of masking tape, sticky-side out, on the back of each of the squares.

Help students understand the concept of “not” by sorting the squares. Tell students that they are going to sort the squares into two groups: *large* and *not large*. Hold up one of the largest squares and tell students that this square is large. Stick the square to the board under the column *Large Squares* in the second chart. Hold up a smaller square. Ask, **Is this square large?**

Explain that you will refer to all squares that are smaller than the large square as “not large.”

Stick the smaller square under the column labeled *Not Large Squares*. Continue sorting the demonstration squares in this manner until they are all sorted.

Ask, **Are all the squares in the *Large Squares* column the same size? Are all the squares in the *Not Large Squares* column the same size?**

Distribute a copy of **Activity Sheet 3** to each student. Help students read and answer question 1.

Go over student responses once they have finished.

Additional Information

Students might say that you cannot put it in the small group because it is large. Encourage them to also realize that it cannot go in the small group because it is not small. This concept of “not” is harder for students to understand.

Students should say no; it is not as large as the other.

Students should say that all the squares in the Large Squares column are the same size. The squares in the Not Large Squares column are not all the same size. However, all of them share the property of not being large.

As the students are completing the top portion of their activity sheets, take down the demonstration squares from the board and carefully remove the masking tape. Return the squares to the correct team.

Guiding the Activity

Additional Information

- 5 Hold up a large blue circle, a large red circle, and a large yellow circle from Group 2. Ask, **How are these circles the same? How are they different?**

Point to the third chart on the board and show students that one column reads *Red Circles*, one reads *Blue Circles*, and one reads *Yellow Circles*. Stick the blue paper circle on the board under the column headed *Blue Circles*, the yellow circle under the column headed *Yellow Circles*, and the red paper circle under the column headed *Red Circles*.

Tell students that you have just sorted these three circles by color. Write the word *color* on the board. Tell students that **color** is a property of objects that enables us to visually distinguish them by shade or tint.

Students should say that the circles are round and all three are the same size, but one circle is blue, one is red, and one is yellow.

- 6 Continue sorting the paper circles in Group 2 in this manner until all the circles have been sorted. Ask, **How many red circles do we have? How many blue circles? How many yellow circles?**

Ask, **Are all the circles in each group the same size?**

Point to the column *Color Words* on the Property Words chart. Read, or have a student read, the words listed in this column. Ask students, **Are there any other color words you would like to add to the column?** Then tell students to sort their paper squares by color.

Students should say that there are three red circles, three blue circles, and three yellow circles.

Students should say that each group contains large and small circles, but each of the circles in the blue group is blue, each of the circles in the red group is red, and each of the circles in the yellow group is yellow.

Accept all reasonable responses.

Tell students to put similarly colored squares together. Be careful not to specify the number of groups students should create in sorting their squares.

Guiding the Activity

When the students have finished sorting, stimulate class discussion. Ask, **How many groups of squares did you make? Which group has the most squares? Which group has the fewest squares? What words describe the squares in each group?**

Have students complete question 2 on their activity sheets. Go over student responses once they have finished.

- 7 As appropriate, read or review pages 3–4 and 7 of the Delta Science Reader *Properties*.

Additional Information

Answers will vary. Accept all classification schemes that students can justify. Guide students to identify a variety of classification schemes such as green and not green; and dark colors and light colors.

Help students read the instructions.

REINFORCEMENT

Make sets of various sorting objects for students to practice with. Easy sorting collections can be made from crayons, twist ties, bottle caps, golf tees, corks, and stickers.

Assessment Opportunity

This Reinforcement also may be used as an ongoing assessment of students' understanding of science concepts and skills.

SCIENCE JOURNALS

Have students place their completed activity sheets in their science journals.

CLEANUP

Return the sorting trays, masking tape, and paper circles and squares to the kit. Leave the Property Words chart on display in the classroom.

SCIENCE AT HOME

Have students sort the items in their rooms by color and size. Encourage them to create as many groups as they would like and to sort as many items as they can.

Connections

Note: In addition to the objects contained in the kit, you may want to provide a set of commercially available Attribute Blocks for students to sort in the following Connections and in the Connections for other activities. Attribute Blocks vary by color, shape, and size.

Science Challenge

Give each student one paper square from the basic activity, and have the class play “It’s not . . .” as follows: Each student in turn should hold up his or her square, and other students should identify the color and size properties that the square does not have. For example, if a student holds up a small yellow square, other students should identify it as “not large,” “not red,” and “not blue.”

Science Extension

- ▶ Set up a learning center in the classroom with a collection of objects that students could sort by color or size. For example, crayons, markers, pegboard pegs, plastic fruits, and colored rubber bands and paper clips could be used for sorting by color. Crayons and pencils of different lengths and thicknesses could be used for sorting by size. Change the collection every so often to maintain student interest and to give students practice sorting different objects.
- ▶ Provide old magazines, and have each student find and cut out two pictures of objects that are brown and two of objects that are not brown, and tape the brown and not-brown objects on separate sheets of paper. (As a more difficult task, students could draw brown and not-brown objects from memory.) Have students display their pictures on a bulletin board, grouping all the brown objects in one area and the not-brown objects in another area. Repeat the activity using other colors or sizes as the criteria.

Science and the Arts

Invite to class an artist who works in oils, acrylics, or watercolors, and ask the visitor to demonstrate how he or she combines colors to produce other shades. Give students an opportunity to try the techniques themselves in creating individual paintings or a class mural.

Science and Health

Provide examples of the colored-dot patterns used to test for color blindness. (High school health textbooks are a good source.) Point out that each pattern shows a number (or other figure) in one color against a background of another color. Explain that each pattern tests for a different type of color blindness. For example, a number formed from green dots on a background of red dots tests for red-green color blindness. A person with red-green color blindness would see all the dots as brown and would not be able to make out the number. Let students test their own ability to perceive the colors tested by each pattern.

Science and Language Arts

- ▶ Use sets of objects to develop students’ understanding and use of *-er* and *-est* comparison words related to size. For example, hold up a table tennis ball and a tennis ball and ask, “Which ball is bigger?” Then add a beach ball and ask, “Which ball is biggest?” Ask students to describe the relative sizes of the objects in complete sentences: “The tennis ball is bigger than the table tennis ball,” and “The tennis ball is smaller than the beach ball.” Repeat the activity with other objects of different sizes.
- ▶ As a follow-up activity, have each student cut out magazine pictures or draw pictures of three objects whose relative sizes can be described using *-er* and *-est* words and then identify the size relationships.