

## Objective

Identify attributes of cubes and spheres.

## Common Core State Standards

- **K.G.2** Correctly name shapes regardless of their orientations or overall size.
- **K.G.3** Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").
- **K.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).

## Geometry

# Cubes and Spheres

In mathematics, three-dimensional figures are also called *solids*. If something is three-dimensional, it is considered to have many dimensions; it is lifelike. A *cube* is a three-dimensional figure made up of six matching square sides, or two-dimensional shapes. A *sphere* is a three-dimensional figure having all of its points the same distance from its center. As children learn to describe solids, they will develop spatial reasoning and a greater understanding of geometric concepts.

**Try It!** Perform the Try It! activity on the next page.

## Talk About It

Discuss the Try It! activity.

- Explain to children that solid shapes are very different from flat shapes. Display the 1" Color Cube and the rubber ball next to the circle and square Attribute Blocks. Ask children how cubes and spheres are different from the flat shapes of the square and the circle.
- Display a ball and an orange (or other sphere). **Ask:** *How many sides do the shapes have? How many corners? How are these objects alike? How are they different?*
- Display a Color Cube, a Snap Cube®, and a cube building block (or other cube). **Ask:** *How many sides do the shapes have? How many corners? How are these shapes alike? How are they different?*

## Solve It

With children, reread the problem. Place enough Color Cubes and spheres in the middle of the room so that children can come up in pairs and pick out a shape like the one Rory chose. Each child should choose a shape and then explain to a partner how they know that this is the shape Rory chose.

## More Ideas

For other ways to teach about cubes and spheres—

- Provide pairs of children with 1" Color Cubes, spheres (such as rubber balls), and square and circle Attribute Blocks. Have one child choose a shape and give clues about it, including a description of its attributes, while his or her partner uses the clues to figure out the mystery shape.
- Give each pair of children a Color Cube and a ball. Have children try to find objects in the classroom that resemble these shapes.

## Formative Assessment

Have children try the following problem.

Color the picture that looks like a sphere blue.  
Color the picture that looks like a cube red.



# Try It!

30 minutes | Groups of 4

Here is a problem about cubes and spheres.

*Rory brought a building block and a rubber ball to school to play with during recess. When it was time to go outside, Rory reached into her backpack and grabbed one of the toys. It had no sides. Which toy did Rory grab?*

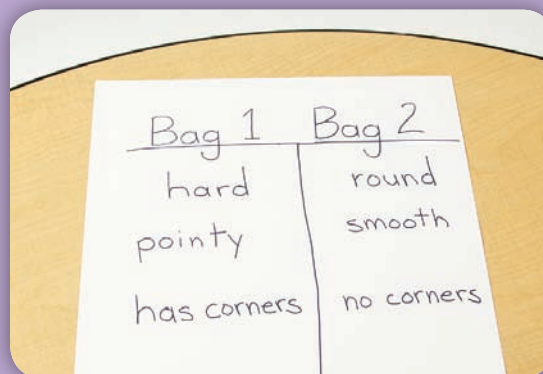
Introduce the problem. Then have children do the activity to solve the problem. Before starting the activity, for each group, place a 1" Color Cube in one bag and a rubber ball in another bag.

## Materials

- 1" Color Cubes (1 per group)
- rubber balls, such as a tennis ball (1 per group)
- paper bags (2 per group)



**1.** Distribute bags with cubes in them. Have children reach into the bag and feel the shape without looking. List children's descriptions of the shape on paper. Ask children what shape they think it is and why. Encourage them to say how they know and use words that describe what a cube is like.



**2.** Distribute bags with balls in them. Have children reach into the bag and feel the shape without looking. Then list their descriptions of the shape. Introduce the word *sphere*.



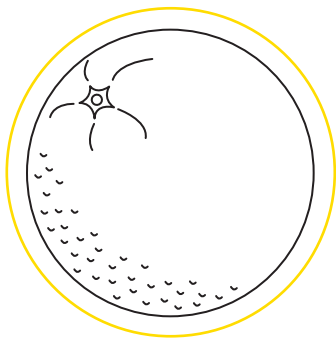
**3.** Have children look in the bags. Allow them to remove the ball and the cube and examine them. Tell children that the object in the first bag is a cube and the object in the second bag is a sphere.

## Look Out!

Many children may have difficulty pronouncing the word *sphere*. Practice saying the word together as a class until it becomes easier. Also, watch for children who have difficulty identifying a cube or a sphere. Give the child that geometric solid to hold and touch as he or she describes the shape to you.

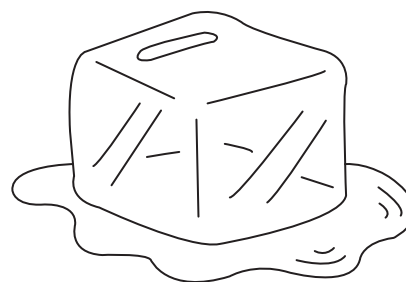


1.



0

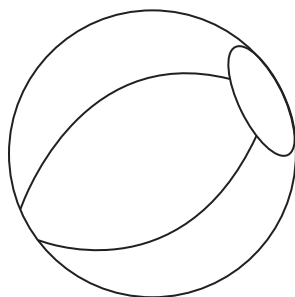
sides



0

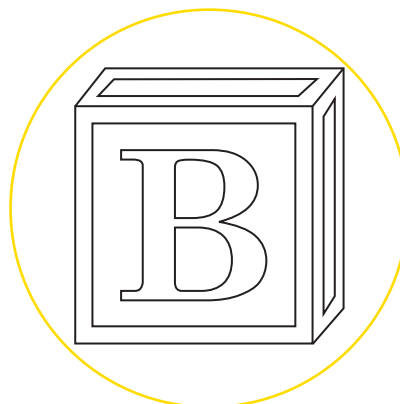
corners

2.



6

sides



8

corners

**Directions**

1. Which object is shaped like a sphere? Circle the object. How many sides does a sphere have? How many corners? 2. Which object is shaped like a cube? Circle the object. How many sides does a cube have? How many corners?



## Answer Key

Check children's work.

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### Challenge

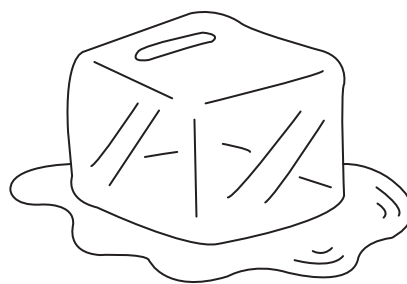
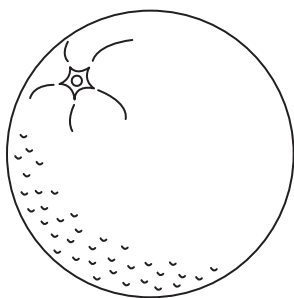
Look around the room. Find something that has a solid shape like a cube or a sphere. Draw the object. Color it red if it is shaped like a cube. Color it blue if it is shaped like a sphere.

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Name \_\_\_\_\_

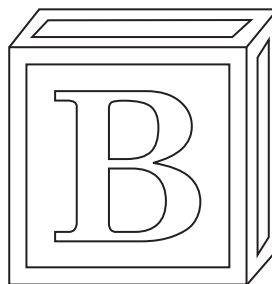
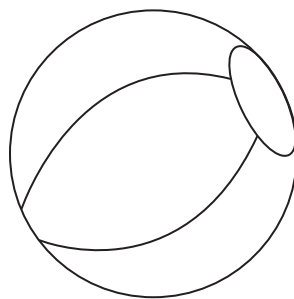
1.



\_\_\_\_\_ sides

\_\_\_\_\_ corners

2.



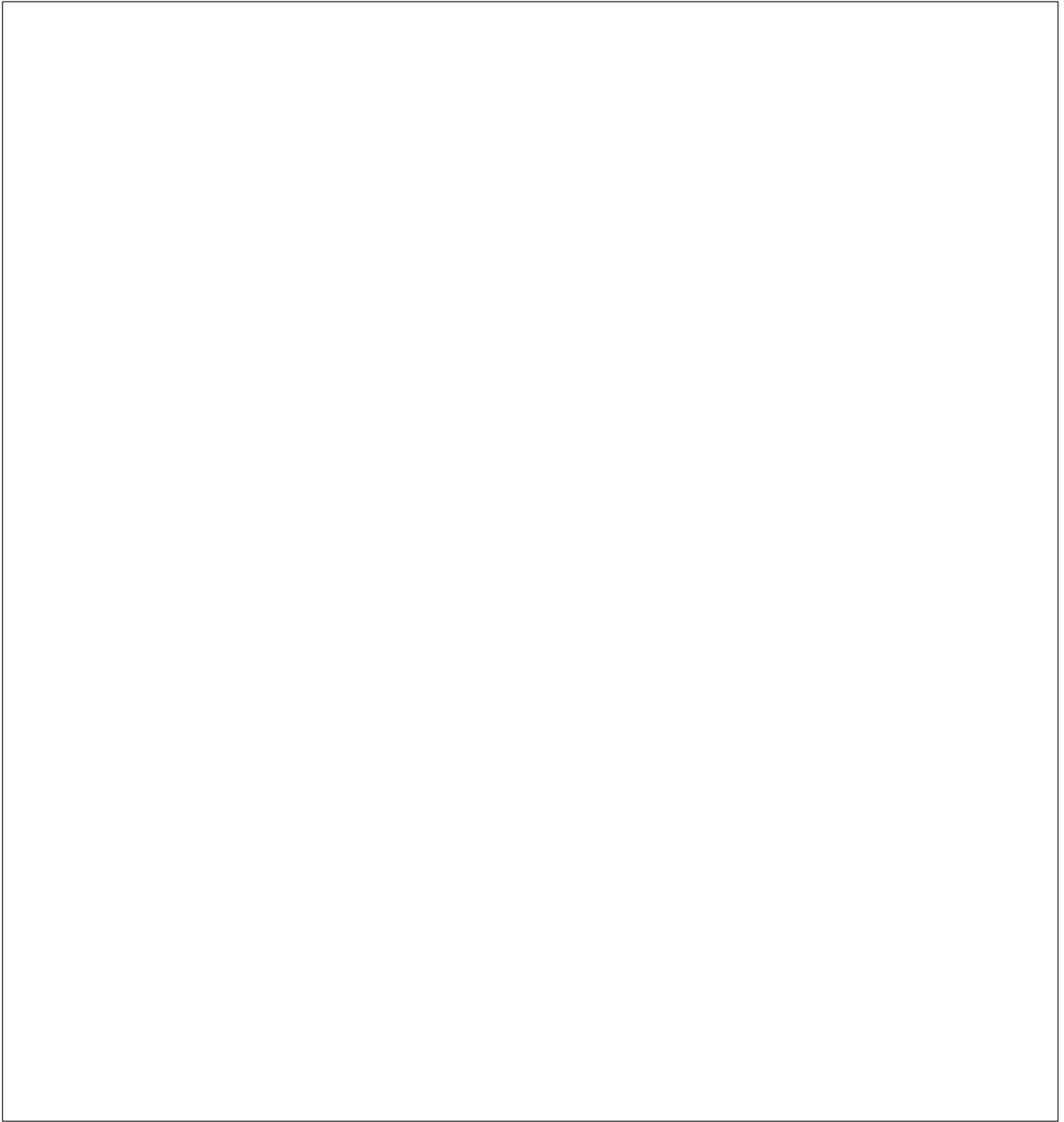
\_\_\_\_\_ sides

\_\_\_\_\_ corners

**Directions**

1. Which object is shaped like a sphere? Circle the object. How many sides does a sphere have? How many corners? 2. Which object is shaped like a cube? Circle the object. How many sides does a cube have? How many corners?

Name \_\_\_\_\_



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### Challenge

Look around the room. Find something that has a solid shape like a cube or a sphere. Draw the object. Color it red if it is shaped like a cube. Color it blue if it is shaped like a sphere.