Hands-On Activity

Exploring Properties of Matter

In this activity, students will demonstrate the following Inquiry Skills:

- Interpret Data
  - Sorts and classifies using scientific reasoning

Materials for Demonstration/Exploration

- Assorted materials and objects enough for one per child (e.g. marble, squeezable ball, cloth, sandpaper, wood block, brick, clear cup of water, etc.) The purpose is to have objects to compare in terms of size, shape, color, texture and hardness. Some should have regular shapes, some not, some should be a primary or secondary color, some not, etc.)

In this activity, students explore the idea of describing matter. At first glance, the choices seem obvious. But after trying to use the scales provided on the worksheet, students will begin to understand that describing matter is not always simple. They will come to understand the value of precise measurement and description. This exercise is not designed as an assessment of their ability to assign properties, but is meant to be a way of getting them to think about how scientists record and describe properties of matter.

Make sure students can see all of the objects they will be describing. Pass out the worksheets. Explain that they will now record some of the properties of the objects. Point out that the properties they will be assigning to the objects and materials will be (from left to right): size, shape, color, texture and hardness.

Demonstrate using a think-aloud how you would mark the properties of one of the objects. For this demonstration, choose an object that is obviously small, has an obvious color, shape, texture and hardness. A small rubber ball would be a good choice for this demonstration. Place an X at the point on each scale where the object's property is. Don't worry about being exact. The point of this exercise is to help students see why scientists use precise measurements to describe properties of matter. As they work they will question whether or not the scales are a good way to describe matter. Your job is to elicit from them what would be a better way.

Once they understand how to mark the scales, pass out the objects and allow them to try and mark the scales. Have pairs trade objects for their second recording. Circulate and listen to their explanations and questions. Ask them to suggest a better way to record the object's properties. For example, what does large and small mean? (They are relative terms.) Is the object exactly one of those colors? Is it the roughest or smoothest surface possible? Are the only categories of shape those of round or rectangular? Is this the best way to describe shape?

Students will begin to question if this is the best way to describe the objects. That should lead to a discussion of how scientists record properties of matter – measurement and classification. Size,

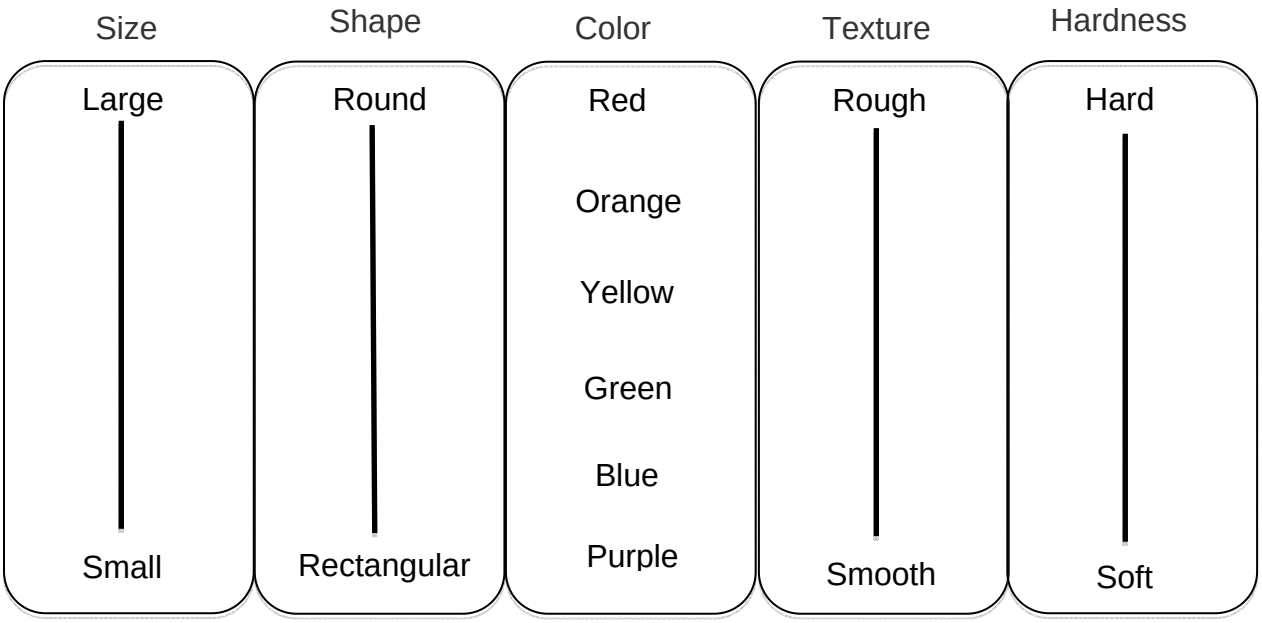
temperature, mass, pressure can all be measured. Shape, color, state of matter, and other aspects have to be classified using agreed upon categories.

It is fine, in fact it is excellent, if the students decide to throw away the worksheets and come up with a better plan. Encourage this, even if it extends the lesson time a bit. They are starting to think like scientists.

Lead students to understand that scientists do use descriptive words, but most importantly they use measurement and classification to record properties of matter. At this age, the most common measurements are length, volume, mass and temperature. All three will be studied as they consider states of matter.

Worksheet: Describing Properties of Matter
Write the object's name on the line. Then Place an X on the scale to describe each object.

Object _____



Object _____