Comparing Reflectors

• Students predict which types of objects reflect light best and compare the results with the prediction.
• Students recognize that light is reflected better from some surfaces than others.

Materials

For each pair

1 pc. aluminum foil, 4-in × 4-in (crumpled)
1 pc. aluminum foil, 4-in × 4-in (smooth)
1 pc. construction paper, black, 4-in × 4-in
1 flashlight with batteries
1 metal spoon
1 mirror, plastic
1 plastic sandwich bag
1 pc. waxed paper, 4-in × 4-in
1 pc. *white paper, 4-in × 4-in

*Not provided in kit

Student Resource 1.2 Comparing Reflectors

In Advance

• Put the batteries in the flashlights.
• Remove the protective plastic sheet from the mirrors.
• Cut 4-in x 4-in squares of the materials listed above for each pair.

1. Distribute the Resource page and materials.
Make copies of Student Resource 1.2, Comparing Reflectors, and distribute to students. Distribute materials to each pair.

2. Students predict which objects are good reflectors.
Ask students to sort their objects into two groups: objects they think are good reflectors and objects they think are bad reflectors. Have students write their predictions on the Resource page.

Safety

Caution students to be careful when handling mirrors. If a mirror is broken, they should inform an adult immediately. They should not handle the pieces of broken mirror themselves.

Teaching Tip

Step 1: Preserve batteries by removing them from flashlights when they are not in use for long periods of time.
Comparing Reflectors (continued)

3. **Students observe reflection of different objects.**

   Have students place a piece of white paper on their desk and stand the flashlight up on the white paper so that the light shines up at the ceiling. Darken the room. Then have students hold each object about 3 cm above the flashlight. Instruct students to compare the brightness of the white paper on their desk when each object is held over the flashlight.

4. **Students rate each object’s ability to reflect.**

   Explain that the more light that is reflected onto the white paper, the better the object is at reflecting light. Have students rate each object as an **excellent reflector**, **good reflector**, or **poor reflector**.

5. **Students compare predictions and results.**

   Discuss any differences. Ask: **Which objects reflect light?** *(Most objects, except very dull black items, reflect some light.)* **Which objects are the better reflectors?** *(objects with shiny, flat surfaces)* Have students compare their results. Then invite students to repeat the activity with any objects they disagree on. Explain that shiny objects reflect more light than dull objects.

6. **Discuss scattering of light.**

   Ask: **Which piece of foil best reflected light?** *(the smooth foil)* Explain that the crumpled foil scatters light in all directions. Only some of that light reached the white paper.

**Assessment**

Ask: **Which do you think would reflect more light, a doorknob or a paper plate?** *(the doorknob)* **Why?** *(The doorknob is made of shiny metal. The paper plate is dull.)*

---

**Teaching Tip**

**Step 3:** If you do not have a dark enough room, turn off the lights and have students do these experiments under their desks where there is less light.

**Teaching Tip**

**Step 6:** Have each pair put their five “paper” samples in the plastic bag. This makes setup easy next time this lesson is taught. Bags can also be used in Section 2 and Section 4.
Section Assessment

Name______ Date______

Section 1 Assessment

Vocabulary
1. What word means to bounce back from a surface?
   reflect

How Light Travels
2. Draw what you see when you shine a flashlight through a cloud of chalk dust.

Reflectors
3. Sort the objects at your station into two piles: good reflectors and poor reflectors.

<table>
<thead>
<tr>
<th>Good Reflectors</th>
<th>Poor Reflectors</th>
</tr>
</thead>
<tbody>
<tr>
<td>foil</td>
<td>black paper</td>
</tr>
<tr>
<td>mirror</td>
<td>plastic sandwich</td>
</tr>
<tr>
<td>metal spoon</td>
<td>waxed paper</td>
</tr>
</tbody>
</table>

4. What makes an object a good reflector?
   Smooth, shiny objects make good reflectors.

Student Resource 1.3 (p. 12)

Materials
For each station
1 pc. aluminum foil, 4-in x 4-in
1 pc. construction paper, black, 4-in x 4-in
1 flashlight with batteries
1 metal spoon
1 mirror, plastic
1 plastic sandwich bag
1 pc. waxed paper, 4-in x 4-in

Student Resource • 1.3 Section 1 Assessment

1. Set up enough materials stations around the room to allow one-third of the class to work alone at a station during the hands-on portion of the assessment.

2. Make copies of Student Resource 1.3 Section 1 Assessment and distribute to students.

3. Divide the class into three groups. While one group is working at the stations to complete the hands-on portion of the assessment, the other two groups can be completing the top part of the assessment. Rotate the groups through the stations until each has completed the hands-on portion of the assessment.

4. Discuss the answers as a whole-class activity.