

Materials

- 1 Energy Ball per group of students
- 1 “Insulator or Conductor?” chart per student (make copies if needed)
- 1 box of materials per group of students consisting of various

items for testing conductivity. Examples may include paper, aluminum foil, rubber bands, nails, clothespin, penny, paperclips, cardboard, plastic, wood, rubber, or fabric.

Goals & Objectives

Students will:

- investigate the difference between open and closed circuits and recognize that electricity requires a complete loop through which an electrical current can pass.
- learn that a conductor is any material that lets electric charges pass through it easily, and an insulator is any material that does not let current electricity move through it easily.
- test materials and find out whether it is a conductor or insulator of electricity.

DISCUSSION

Enrichment Activities

- 1 Ask students to create a class list of conductors and insulators on the board and categorize the objects based on the materials they are made of. Ask them to identify any patterns they see.
- 2 Next, ask students to predict whether other materials not listed would be a conductor or an insulator. For example, if they found that a paper clip was a good conductor, what do they think a staple would be?

ACTIVITIES

- 1 Have students sit in a circle touching palms. Give one student the Energy Ball and have them touch one electrode. Have the person next to them touch the other electrode. The ball should light up.
- 2 Discuss that a circuit is a path through which electricity can flow. Substances through which electricity can travel easily are called conductors, and substances through which electricity has difficulty moving are called insulators.
- 3 Experiment with opening and closing the circuit by having two students separate their hands. Then try having students only touch their index fingers together instead of holding hands. Finally, have another student put their sleeve down over their hand while still holding hands.
- 4 Using various materials, have students hold different objects between them in the circuit to see which objects are conductors and which are insulators.
- 5 Divide the class into small groups of 3-4 students, and give each group a box of random materials and charts for each person. Allow student to investigate on their own the conductivity of the materials. Have them record their observations in the “Insulator or Conductor?” worksheet.

ASSESSMENT

Discussion Questions/Assessment

Have students complete the “Insulator or Conductor?” chart on *Page 4* and answer the following conclusion questions.

- 1 How can we activate the energy ball using just our hands? Why does this work?
- 2 In what ways do you and your family use electricity at home? What about at school?
- 3 What items in your box of materials were insulators? Which ones were conductors?
- 4 List ways that you and your family can conserve electrical energy in your home.
- 5 What is the difference between an insulator and a conductor?