

## Effective and Safe Classroom Activities

### Online Resources



Conducting safe classroom demonstrations and activities is essential to successful elementary science education. The following resources provide Core Knowledge's recommendations for developing effective science classroom activities.

These resources, included at the back of the Teacher Guide on pages 212–216, consist of the following:

- Classroom Safety for Activities and Demonstrations
- Strategies for Acquiring Materials
- Advance Preparation for Activities and Demonstrations
- What to Do When Activities Don't Give Expected Results

These resources may also be accessed within the CKSci Online Resources Guide for this unit:

[www.coreknowledge.org/cksci-online-resources](http://www.coreknowledge.org/cksci-online-resources)

## MATERIALS AND EQUIPMENT

The unit, like all hands-on science, requires a large variety of materials to support various ways of learning (including doing, discussing, listening, watching, reading, and writing). Prepare in advance by collecting the materials and equipment needed for all the demonstrations and hands-on investigations.

- Roll paper, poster board, or a bulletin board should be dedicated at the beginning of the unit to serve as a question board to cumulatively document and return to student questions. The question board is referred to in the materials for lesson segments in which it is used but is not repeated in the materials listed here.
- Internet access and the means to project images/videos for whole-class viewing is also required in many lesson segments but is not repeated below.

### Unit Opener

- crayons
- pencils

### Lesson 1 Sound and Vibration

#### Lesson 1.1

- recording device, such as a smartphone
- chart paper
- set of markers for writing on the chart (1 per class)
- pencils (1 per student)

#### Lesson 1.2

- tuning fork (1 per class)
- small cardboard boxes, such as crayon or tissue boxes, or paper cups (1 per pair)
- rubber bands large enough to fit around the boxes (1 per pair)
- pencils or crayons (2 per pair)
- safety goggles (1 per student)

#### Lesson 1.3

- safety goggles (1 per group)
- disposable beverage cups (1 per group)
- sheets of plastic wrap, about 4 in. wider than the cup openings (1 sheet per group)

### Lesson 1.3, continued

- rubber bands, sized to hold the plastic wrap tightly to the cup (1 per group)
- fine table salt (one-eighth teaspoon per group)
- trays (1 per group)
- other assorted lightweight materials—such as larger salt crystals, cut-up squares of tissue paper, pencil shavings, or round sprinkles/nonpareils (about one-eighth teaspoon of a material per group)

### Lesson 1.4

- access to musical instruments

### Lesson 1.5

- cardboard paper tubes, about 6–12 in. in length (1 per student)
- waxed paper, 6x6-in. pieces (1 per student)
- rubber bands, sized to fit around the tubes (1 per student)
- pointed scissors or awl (teacher use)
- rubber bands, box of assorted sizes (1 per class)
- cardboard boxes, such as from shoes, tissues, or crayons (1 per group)
- disposable aluminum pie pans (2 per group)
- 12-inch. long pieces of string (1 per group)
- clean, empty plastic water bottles (1 per group)
- dried beans (1 tablespoon in a cup per group)

## Lesson 2 Light

### Lesson 2.2

- children’s literature about fireflies
- smartphone
- cardboard shoeboxes with a small eyehole punched in one end (1 per group)
- small, common classroom objects (1 set per group)
- flashlight
- glow-in-the-dark objects, such as stars or glow sticks (1 pair per group)

### Lesson 2.3

- cardboard shoeboxes, with a pinhole in one end (1 per group)
- small nonluminous classroom objects (1 per student)
- small luminous objects, such as glow sticks or flashlights (1 per group)

### Lesson 2.4

- flashlight

### Lesson 2.5

- flashlight
- copy of a theater ticket with seat numbers
- colored pencils

## Lesson 3 Light and Materials

### Lesson 3.1

- file folders (1 per student)
- markers or colored pencils (1 set per group)

### Lesson 3.2

- flashlights (1 per group)
- clear plastic objects (1 per group)
- clear glass square, such as in a picture frame with no backing, or a water glass (1 per class)
- clouded plastic objects (1 per group)
- waxed paper squares (1 per group)
- cardboard squares (1 per group)
- poster board squares (1 per group)
- wood squares (1 per group)
- plastic mirrors (1 per group)
- aluminum foil squares (1 per group)

### Lesson 3.3

- flashlights (1 per group)
- cardboard squares (1 per group)
- wood squares (1 per group)
- aluminum foil squares (1 per group)
- plastic mirrors (1 per group)

### Lesson 3.3, continued

- tissue paper squares (1 per group)
- waxed paper squares (1 per group)
- clouded plastic objects (1 per group)
- clear plastic objects (1 per group)
- clear glass square, such as in an interior school door (1 per class)
- clear plastic cup filled with water (1 per class)
- black and gray crayons (1 set per group)

### Lesson 3.4

- flashlights (1 per group)
- cardboard squares (1 per group)
- wood squares (1 per group)
- aluminum foil squares (1 per group)
- plastic mirrors (1 per group)
- tissue paper squares (1 per group)
- waxed paper squares (1 per group)
- clouded plastic objects (1 per group)
- clear plastic objects (1 per group)
- large sheets of white paper (1 per group)
- modeling clay (optional)

### Lesson 3.5

- science folders (1 per student)
- stapler (1 per class)
- soft object, such as a ball (1 per class)

## Lesson 4 Solving Problems with Light or Sound

### Lesson 4.3

- meterstick or measuring tape (1 per class)

### Lesson 4.4

- rubber bands, box of assorted sizes (1 per class)
- cardboard boxes, such as from shoes, tissues, or crayons (1 per group)
- disposable aluminum pie pans (2 per group)
- 12-inch. lengths of string (1 per group)
- clean, empty plastic water bottles (1 per group)
- dried beans (2 tablespoons or Tbsp. in a cup per group)
- flashlights (1 per group)
- cardboard squares (1 per group)
- wood squares (1 per group)
- aluminum foil squares (1 per group)
- plastic mirrors (1 per group)
- tissue paper squares (1 per group)
- waxed paper squares (1 per group)
- clouded plastic objects (1 per group)
- clear plastic objects (1 per group)
- large sheets of white paper (1 per group)
- scissors, stapler, tape, paper clips

## Science in Action

- clear tape (1 roll per group)
- black construction paper (2–3 sheets per group)
- small flashlights (1 per group)
- aluminum foil (2–3 large sheets per group)
- scissors (1 per group)
- markers (1 per group)