

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 230–234, 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

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

- water (1–2 cups per group)
- watering cans or spray bottles (1 per group)
- salt (quarter cup per group)
- brown paper bags (1 per group)
- plastic containers (1 per group)
- cloth towels or tarps (1 per group)

Lesson 1 Introduction to Matter

Lesson 1.1

- backpack
- lunch box

Lesson 1.1, continued

- sandwich in a plastic bag
- clear food storage container with fruit inside
- cake in a plastic bag
- juice box
- pencil box
- water jug or bottle
- canned food

Lesson 1.2

- wooden craft sticks (1 per group)
- metal coins (1 per group)
- paper (1 sheet per group)

Lesson 1.2, continued

- markers (1 per group)
- bowls of water (1 per group)
- balloons (1 per group, inflated)
- poster paper
- black marker
- balloons (1 per group, deflated)
- plastic exercise hoops (1 per group)

Lesson 1.3

- wooden craft sticks (1 per group)
- plastic straws (1 per group)
- metal coins (1 per group)
- paper (1 sheet per group)
- markers (1 per group)
- bowls of water (1 per group)
- stuffed animal (1 for demonstration)
- spring scales (1 per pair)
- cookies (chocolate chip cookies, sandwich cookies, fig cookies, and vanilla wafers; 1 of each per pair)
- clear jars (1 per pair)
- rulers (1 per pair)
- rubber balloons (1 per pair)
- tall plastic or paper cups (1 per pair)
- short plastic or paper cups (1 per pair)
- calculators (1 per pair or enough to share)
- milk (can also use plant-based milk instead; 1–2 cups per pair)

Lesson 1.4

- clear bowls (2)
- flour
- bag of chocolate chips
- hot plate
- cookie mold or ice cube tray
- spatula
- oven mitt

Lesson 1.5

- scales (1 per group or enough for groups to share)

Lesson 1.5, continued

- rulers (1 per group)
- variety of containers (1–2 per group)
- balloons (1 per group)
- cups (various sizes, 2 per group)
- water (1 cup per group)
- spoons or stir sticks (1 per group)
- liquid glue (1 bottle per group)
- modeling clay (1 tablespoon per group)
- rocks (1 per group)
- powdered gelatin (half cup per group)
- large paper clips (1 per group)
- colorful candy melts (a few per group)
- bowls
- bucket of ice
- hot plate
- small metal pan
- oven mitt

Lesson 2 Heating and Cooling Matter

Lesson 2.1

- thermometers (1 per group)
- melted ice cream
- ice cream scoop
- freezer (or cooler filled with ice)
- foam cups (1 per group)
- water (1 cup per group)

Lesson 2.2

- thermometers (1 per group)
- foam cups (1 per group)
- water (1 cup per group)
- ice cubes (4–5 per group)
- plastic snack- or sandwich-size baggies (1 per group)
- hot plate
- pot for boiling water
- freezer or cooler
- chalk or dry-erase markers (1 per group)

Lesson 2.3

- hot plate
- freezer
- small metal pans (4)
- spatulas, spoons, or stir sticks (2)
- raw egg
- butter, solid (quarter stick)
- oven mitt
- paper (1 sheet)
- ice cubes (half cup)
- plant leaves (1 per pair)
- water (quarter cup per pair)
- paper or foam cups (1 per pair)

Lesson 3 Properties and Uses of Matter

Lesson 3.1

- bowl
- milk (1–2 cups)
- large rock
- paper towels (several sheets per student)
- containers (1 per group)
- water (4 cups per group)
- 2-cup graduated cylinders (1 per group)
- dry sponge, cut into 1-inch pieces (1 piece per group)
- cotton balls (1 per group)
- washcloths (1 per group)
- tissues (1 sheet per group)
- fabric (1 piece per group)
- wax paper (1 sheet per group)
- plastic toys (1 per group)
- pencils (1 per group)
- rubber erasers (1 per group)
- timer
- small glass jars with lids (1 per group)
- glycerin (2–3 tablespoons per group)
- spoons (1 per group)
- glitter and sequins (2–3 tablespoons per group)

Lesson 3.1, continued

- plastic figurines (1–2 per group)
- hot glue gun (for teacher use)

Lesson 3.2

Station 1:

- container with 4" opening (1 per group)
- construction paper (1 5-inch square per group)
- cardstock (1 5-inch square per group)
- cloth (1 5-inch square per group)
- plexiglass (1 sheet per group)
- paper towels (1 sheet per group)
- shallow pans (1 per group)
- containers to pour water from (1 per group)
- water

Station 2:

- plastic rulers, 12" (1 per group)
- chenille stems (1 per group)
- cardstock strips (1 per group)
- rope (1 6-inch piece per group)
- fabric measuring tapes (1 per group)
- 100-g weights (1 per group)
- heavy-duty tape
- thread

Station 3:

- modeling clay (1 package)
- sponges (1 per group)
- rocks (2–3 per group)
- rubber erasers (1 per group)
- large candy jawbreakers (several per group)

Station 4:

- wooden blocks (2 per station)
- tape to secure testing materials to blocks
- pennies or washers (100 per station)
- construction paper (1 sheet per group)
- fabric dish towels (1 per station)
- plexiglass (1 sheet per station)

Lesson 3.2, continued

Station 5:

- plastic or wooden block
- masking tape
- tray
- plastic ruler, 12" (1 per group)
- sandpaper (1 sheet)
- plexiglass or other glossy plastic (1 sheet)
- construction paper (1 sheet)
- velvet square or other soft material

Station 6:

- wooden spoons (1 per station)
- plastic spoons (1 per station)
- metal spoons (1 per station)
- butter
- craft beads (3 per station)
- hot plate
- kettle or pot
- water
- cereal bowl
- plastic knife

Lesson 4 Building from Component Parts

Lesson 4.1

- plastic baggies (1 per group)
- sliced sandwich bread
- tomato
- romaine lettuce (2–3 leaves)
- sandwich meat
- sandwich cheese
- mayonnaise
- knife
- plate or cutting board
- colored construction paper

Lesson 4.1, continued

- plastic baggies (1 per group)
- timer

Lesson 4.2

- ballpoint pens (1 per pair)
- paper (1 sheet per pair)
- paper plates (1 per pair)
- markers or colored pencils (assortment per pair)
- tweezers (1 per pair, optional)

Lesson 4.3

- colored interlocking plastic blocks (3–5 handfuls per group)
- baggies or small containers (1 per group)
- markers, assorted colors (1 box per group)
- wooden craft sticks (10)
- glue

Unit Capstone

- poster or roll paper (6–8 large sheets)
- pencil
- black marker
- markers, assorted colors (1 box per group)
- construction paper (several sheets per group)
- clips for hanging the sheets of paper

Unit Supplement

- assortment of coins (several per group)
- assortment of pom-poms (various colors per group)
- assortment of plastic or wooden blocks (various shapes and/or colors per group)
- assortment of buttons (various colors and sizes per group)
- construction paper (1 sheet per group)