

PREPARING FOR THE ACTIVITIES—QUARTER 4

CLASSROOM MANAGEMENT

Materials

You may want to familiarize yourself with the materials used in this quarter before beginning the activities. We suggest that you refer to the Quarter 3 Materials List on page 349 of this guide as you review the materials in the drawers of the kit. (The contents of each drawer are listed on the drawer labels.)

Before beginning each activity, review the Materials list and the Preparation required for the activity. The Materials list indicates which items will be used in the activity, how many of each item will be needed for each individual and each student team, and the size of each team. We recommend that you ask student helpers to assist you in locating materials and preparing for each activity.

After you have completed the quarter, make a list of any items that need to be ordered for the next use. For information, call 1-800-258-1302.

Distribution Stations

The most efficient way to distribute materials during an activity is to set up distribution stations from which students can obtain materials as needed. If space in your classroom is limited, you may have room for only one station. If you have more space, we recommend setting up two or three distribution stations, each containing about half or one-third of all the materials listed in the Materials list for each activity. In this way, each distribution station will contain all of the different items used in the activity, and students will not need to visit more than one station to obtain all of their materials.

Cooperative Learning

The **Broward County Hands-On Science** program encourages and promotes cooperative

learning strategies. The quantity of materials included in each kit allows small groups of students to investigate phenomena and each student to make observations and report what he or she has learned. The interaction between team members is an integral part of each activity and enhances individual outcomes.

ADVANCE PREPARATION

Activity 31: Shortly before beginning the activity, prepare insulated pitchers or carafes of ice water and very warm (but *not hot*) water to distribute to students. Each team of four will need 75 mL (3 oz) of ice water and the same amount of warm water. Store the thermometers in a shaded place in the classroom so they show room temperature when you distribute them to the teams.

Activity 32: Locate an area outdoors that has a sunny spot and a shady spot near each other. Make sure the thermometers are at indoor room temperature before students take them outdoors.

Activities 33 and 36: These activities are done outdoors on sunny days. For Activity 33 you will need to locate a sunny, flat area where students can view their shadows without disturbance. For Activity 36, you will need to find an area outdoors where there is pavement or cement that is in the sunlight all day, and where you can safely return for observations at various times throughout the day.

Activity 34: Prior to classtime, check to make sure you are able to darken your room to the point that distinct shadows can be seen from a flashlight.

Activity 37: Before students begin the activity, you will need to cut two 15-cm (6-in.) pieces of insulated copper wire for each team of two and strip the insulation from the ends of each wire.

- ▶ **To cut the wire:** Use the wire cutters. With the blades open, insert the wire at the bottom of the blades, and squeeze the handles together.
- ▶ **To strip insulation from the wire ends:** Use the wire cutters. Put about 2 cm of the wire end through the V-shaped notch in one blade, close the blades so the wire is held in the two notches, and gently twist the wire cutter to cut through the insulation but not through the copper wire inside. With the wire cutter's blades still closed, tug the cut piece of insulation off the end of the wire.

Activity 38: To make it easier for students to hold the wire ends against the battery terminals, trim some additional insulation from the ends of the wires attached to each buzzer.

Activity 39: Practice assembling a battery and two electrical clips in a battery holder, attaching a wire to each clip, and inserting the bulb into the bulb holder as described on pages 427–428. You will need to be familiar with the assembly so you can demonstrate it smoothly to students. Also cut the sheets of cardboard into 6-cm (about 2.5-in.) squares. Use the sharp point of a pencil, a scissors, or a math compass to poke two small holes 3 cm (about 1.2 in.) apart in the middle of each square.

MATERIALS MANAGEMENT

Activities 31 & 32

Safety Note: *The clear tube on each thermometer is made of glass. Caution students to handle a thermometer carefully so they don't drop it and break the tube.*

If students accidentally break a thermometer tube, tell them *not* to touch the pieces. Sweep them up yourself with a slightly damp paper towel, wrap the paper towel in newspaper or some other protective material, and dispose of the bundle in a container intended for materials that need to be handled with caution. (**Note:** The thermometers in the kit do not contain mercury. The red liquid is harmless and can be wiped up with the paper towel.)

Activities 37, 38, 39, and 40

Safety Note: *Tell students to be careful when handling the wire so they do not scratch themselves with the exposed ends.*

The strength of the batteries will cause the results of some activities to vary. The kit contains enough batteries for all teams to conduct all of the activities, but you should encourage students to conserve their batteries' power by never leaving a circuit closed for more than a few seconds at a time.

Safety Note: *Never try—or allow students to try—any experiments using an electrical outlet. Severe injury can result. Always use the batteries supplied with the kit when carrying out these activities.*