

Scott Foresman
SCIENCE

Grade 6

**Equipment Kit
Guide**

Unit B
Physical Science

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Equipment Kits and Teacher's Guide

Equipment Kit Management

About Your Kits

The equipment in *Scott Foresman Science* is packaged in sturdy plastic bins for your convenience. The quantities included support eight groups of four students each.

Unit Kit/ Grade Level Kit

The Unit Kit contains most of the items you will need to conduct hands-on activities with your students. Equipment for each unit is contained in one or two bins. The Unit Kit is designed to be purchased separately. Each bin is clearly labeled with the grade level, bin number, unit name, and contents. A label inside the lid of each bin references the materials by activity. Only activities requiring kit items are listed.

Unit Kits are also available in a Grade Level Kit configuration. In this format, a common bin eliminates items duplicated across the units for cost savings and convenience.

Demonstration Kit

The Demonstration Kit gives teachers the opportunity to rehearse activities before conducting them in the classroom. Kit-provided materials for each activity are pre-packaged and labeled for easy identification. When used in conjunction with the activity videos, the demonstration kits make it easy to prepare and conduct all investigations and experiments.

Storage of the Kits

Your equipment is packaged in sturdy, translucent plastic bins and labeled for easy storage and access. Bins may be stacked or stored on shelves or carts. Bins are labeled on all sides for quick identification and location of items. This provides convenient organization of materials before and after use.

Replacement Materials

Use the Packing List/Replacement Parts Price List to reorder items as needed for the Unit Kit or Grade Level Kit. These order forms are packed in the plastic bins and can be photocopied. Each list provides a column for entering the quantities of items you need to replace. Materials are organized alphabetically and identified as consumable or nonconsumable.

Complete consumable Replacement Kits are available as well. These kits replenish all the consumable materials for each Unit Kit or Grade Level Kit.

Using the Teacher's Guide

This guide will help you better prepare to conduct the program activities in your classroom. Reviewing the guide while practicing with the activity video and demonstration kit or simply reading the guide upon receiving your classroom kit will make it easy to facilitate an activity with your students.

Getting Started

Familiarize yourself with the kit contents. To make sure your shipment is complete, check the packing statement provided with your kit.

Activity Notes

The Activity Notes in this guide provide comprehensive information to make your activity sessions a success. This information may include:

Video Segment

The video segment number is indicated to help you cue the tape to each Investigate and Experiment activity.

Materials

A materials list for each activity identifies kit-supplied and school-supplied materials. Use this list as a check of your kit contents and as a list for class preparation.

Material Substitutions

For increased flexibility, material substitutions, when appropriate, are indicated.

Advance Prep

These instructions offer preparation guidance as necessary. With these suggestions, you will always be well prepared to conduct activities in your class.

Hints and Tips

Detailed hints and tips help to ensure student success in the classroom. Notes range from how to enhance students' success to increasing your understanding of activity concepts.

Safety Notes

While safety should be practiced at all times for each activity, it may be necessary to consider specific activity concerns. These notes give activity-specific safety tips.

Additional Comments

This section provides extension ideas, alternate activities, and other helpful information.

Exploring Temperature Scales

Explore Activity (B6)

Materials (per group)

Kit Items	School-Supplied Items
3 plastic cups, 10 oz thermometer	ice water (250 mL) warm water (250 mL) room-temperature water (250 mL)

Advance Prep

Allow water to stand for several hours to reach room temperature.

Safety Note

Do not allow students to use hot water. Use only water that feels warm to the touch from the tap.

Comparing Expansion and Contraction

Investigate Activity (B18–B19)

Video Segment 1

Materials (per group)

Kit Items	School-Supplied Items
balloon (9 in.) rubber band, #33 2 plastic pails (buckets)	safety goggles plastic bottle, 16 oz container of warm water container of ice water

Hints and Tips

- The neck of the balloon must form a seal with the neck of the bottle. If air leaks out of the bottle, little change will occur in the size of the balloon. Instruct students to begin again if air leaks from the balloon during the activity.
- The balloon should inflate in less than one minute after being placed in the warm water.
- The balloon should deflate and may even invert very quickly after being placed in the ice water. This activity can be done without ice, using cold tap water, but the results may be less dramatic.

Safety Notes

Use only warm tap water. Do not allow students to use hot tap water or to heat the water to temperatures that could cause burns.

Keeping Ice Frozen

Investigate Activity (B26–B27)

Video Segment 2

Materials (per group)

Kit Items	School-Supplied Items
2 resealable plastic bags	2 ice cubes assorted insulating and packaging materials such as flannel, newspaper, wool, shredded paper, plastic foam packing material, aluminum foil, jars, cans, and boxes with lids clock

Advance Prep

Prepare ice cubes of uniform size.

Hints and Tips

- Stress the importance of removing as much air as possible from the plastic bag containing the ice cube. Excess air trapped in the bag will act as insulation and affect the results of the activity.
- This investigation can be presented as a design contest. For judging purposes, students can determine the mass of the ice cube and plastic bag before packaging. After 30 minutes, students should pour out the water and determine the mass of the ice remaining in the bag. The team with the smallest change in total mass wins.

Exploring Dissolving

Explore Activity (B32)

Materials (per group)

Kit Items	School-Supplied Items
3 clear plastic cups, 10 oz 3 sugar cubes	masking tape ice water (250 mL) room-temperature water (250 mL) warm water (250 mL) clock with a second hand

Material Substitutions

Jawbreaker candy made with layers of different colors may be used in this activity in place of sugar cubes. As the candy dissolves, the different layers become visible. Students can observe the rate of color change as the candy dissolves.

Advance Prep

Allow water to stand for several hours to reach room temperature.

Safety Note

Do not use water that is warm enough to cause burns.

Investigating Solutions

Investigate Activity (B48–B49)

Video Segment 3

Materials (per group)

Kit Items	School-Supplied Items
funnel vegetable oil (250 mL) blue or green food coloring	clear plastic bottle, 20–32 oz water

Safety Note

Have students wipe up any spills immediately.

Investigating Temperature Change in a Reaction

Investigate Activity (B60–B61)

Video Segment 4

Materials (per group)

Kit Items	School-Supplied Items
thermometer graduated plastic cup, 10 oz white vinegar plastic spoon baking soda	safety goggles clock with a second hand paper towels

Hints and Tips

Encourage students to link their prediction with the concepts of endothermy and exothermy. If students predict that the temperature will increase, they are predicting that the chemical reaction is exothermic. If they predict that the temperature will decrease, they are predicting that the chemical reaction is endothermic.

Safety Note

Have students wipe up any spills immediately.

Experimenting with Acids and Bases

Experiment Activity (B69–B71)

Video Segment 5

Materials (per group)

Kit Items	School-Supplied Items
10 plastic medicine cups, 1 oz baking soda (to make baking soda solution) white vinegar plastic dropper 9 plastic stirrers milk of magnesia Epsom salt (to make Epsom salt solution)	safety goggles marker masking tape red cabbage juice distilled water lemon juice clear cleaning solution (dilute ammonia solution) carbonated water tap water

Material Substitutions

Other household substances that are clear, and clear carbonated soft drinks may be used in addition to the materials listed.

Advance Prep

- Prepare baking soda solution by dissolving 5 heaping spoonfuls of baking soda in 100 mL of water.
- Prepare the Epsom salt solution by dissolving 1 heaping spoonful of Epsom salt in 100 mL of water.
- Prepare dilute clear cleaning solution by adding 1/4 teaspoon clear ammonia to 1 quart water. Stir.
- The cabbage juice is prepared by cooking 1/2 head of red cabbage in 2 quarts of water. Cook the cabbage in a stainless steel pan. Be sure there is no soap residue in the pan.
- The color of the cabbage juice may vary from reddish-purple to blue, but will still work.

Safety Notes

- Remind students not to taste any of the test materials.
- Remind students not to inhale any fumes from the cleaning solution.

Exploring Acceleration

Explore Activity (B76)

Materials (per group)

Kit Items	School-Supplied Items
2 plastic cups, 10 oz plastic wrap 2 rubber bands, #3	safety goggles 10 pennies 10 paper clips metric ruler

Material Substitutions

Other small objects can be used in place of the pennies and paper clips.

Investigating Friction and Motion

Investigate Activity (B100–B101)

Video Segment 6

Materials (per group)

Kit Items	School-Supplied Items
balloon (9 in.) 5 wooden dowels	safety goggles shoe box (with a 1 cm diameter hole cut in one end) masking tape metric ruler

Material Substitutions

Round pencils, round markers, or plastic straws can be substituted for the wooden dowels.

Advance Prep

For each group, cut a 1 cm hole in the end of a shoe box.

Hints and Tips

Students should make sure that the balloon is correctly oriented in the box before releasing the neck of the balloon. The balloon may fly into the air, rather than push the box across the table. Have students repeat the procedure if this happens to their balloons. Inflating the balloons to less than full capacity may help prevent fly-away balloons.

Safety Note

Students should use caution when blowing up balloons.

Investigating Action and Reaction

Investigate Activity (B110–B111)

Video Segment 7

Materials (per group)

Kit Items	School-Supplied Items
corrugated cardboard (10 cm square) rubber band, #33 foil pan	scissors metric ruler water paper towel

Advance Prep

For each group, measure and cut a 10 cm square from a piece of cardboard

Hints and Tips

Overwinding the paddle may cause the boat to flip over. Remind students to wind the paddle only four or five times.

Safety Note

Remind students to be careful using scissors. Have students wipe up any spills immediately.

Exploring Light Rays

Explore Activity (B116)

Materials (per group)

Kit Items	School-Supplied Items
plastic mirror flashlight and batteries comb	white paper (unlined) pencil metric ruler semicircular protractor

Hints and Tips

Students may need to adjust the angle at which they hold the flashlight in order to see the reflected rays.

Investigating Light

Investigate Activity (B130–B131)

Video Segment 8

Materials (per group)

Kit Items	School-Supplied Items
funnel foil pan (13 in. x 10 in. x 2 in.) flashlight with batteries	hole punch metric ruler black construction paper 1L clear plastic bottle with cap scissors transparent tape water pushpin

Hints and Tips

Remind students that they can stop the flow of water by replacing and tightening the bottle cap.

Safety Notes

- Students should exercise caution when using pushpins.
- Have students wipe up any spills immediately.

Investigating Sound Insulation

Investigate Activity (B152–B153)

Video Segment 9

Materials (per group)

Kit Items	School-Supplied Items
none	assorted insulating materials, such as wool, newspapers, packing “peanuts,” foam rubber masking tape half-meter stick timer (with audible ticking)

Hints and Tips

Quiet conditions will be necessary to complete this activity.