

Scott Foresman
SCIENCE

Grade 4
Equipment Kit
Guide

Unit C
Earth Science

ISBN: 0-673-62761-6

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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 Surface Temperatures

Explore Activity (C6)

Materials (per group)

Kit Items	School-Supplied Items
thermometer	black and white construction paper concrete and blacktop surfaces clock with a second hand

Advance Prep

Place light and dark papers in sunlight 20 minutes before taking temperature measurements. Determine location of outdoor surfaces to be measured in advance.

Hints and Tips

- Allow a cool-down period of several minutes after measuring temperature of surfaces in the sun. Allow thermometers to cool down in a shaded area before taking additional measurements.
- Be sure students are not touching thermometer bulbs when measuring temperatures of different surfaces.

Safety Note

Advise students to handle thermometers with care.

Additional Comments

If enough thermometers are available, students could be assigned to measure temperatures of various surfaces simultaneously. Students may wish to test dark and light cloth to see if they obtain similar results.

Investigating Air Pressure and Weather

Investigate Activity (C24–C25)

Video Segment 1

Materials (per group)

Kit Items	School-Supplied Items
balloon (13 in.) plastic jar modeling clay plastic stirrer rubber band (#33)	safety goggles scissors tape glue metric ruler

Hints and Tips

- Students should use tape to hold the stirrer in place while the glue dries. When removing the tape, students should be careful not to remove the straw from the glue.
- Students should avoid moving their barometers from day to day. If they must be moved, be sure that rulers are pressed all the way into the clay each time so readings are accurate and changes can be accurately noted.
- The “zero end” of the metric ruler should be in the clay.
- Be sure that students make their charts large enough to write down all of their observations.

Safety Note

Remind students to be careful when handling the balloon and rubber band.

Exploring How Magma Moves

Explore Activity (C36)

Materials (per group)

Kit Items	School-Supplied Items
vegetable oil red food coloring plastic cup, 10 oz sponge plastic dropper hand lens	water paper towel

Advance Prep

Cut sponges into pieces (about 8 cm x 8 cm).

Safety Note

Have students wipe up any spills immediately.

Additional Comments

This would be a good opportunity to discuss the importance of comparing and contrasting models with the real situations, events, objects, or ideas they represent. In this activity the oil acts like magma in that it is fluid, moves between solid areas represented by the sponge, and rises toward the surface. But the oil is a fluid at room temperature, and the sponge is very porous. Real magma is molten rock that forms deep within Earth as a result of heat and pressure. It rises toward the surface of Earth through the mantle and crust.

Classifying Rocks

Investigate Activity (C54–C55)

Video Segment 2

Materials (per group)

Kit Items	School-Supplied Items
hand lens rock specimen pack (7 rocks)	marker paper glue scissors

Material Substitutions

Use any other types of rocks for classification. Make sure the properties of each rock are distinct enough to allow classification.

Hints and Tips

As a class, generate terms to use in the rock classification (texture, visible crystal surfaces, color, etc.). This will help students think about ways to classify their rocks.

Measuring What You Can't See

Explore Activity (C64)

Materials (per group)

Kit Items	School-Supplied Items
modeling clay plastic straw	marker cardboard (14 cm x 20 cm) masking tape metric ruler

Advance Prep

Cut cardboard pieces for each group.

Hints and Tips

Be sure that students translate the correct measurements for each of the points on the cardboard onto their drawings.

Investigating Currents and Waves

Investigate Activity (C76–C77)

Video Segment 3

Materials (per group)

Kit Items	School-Supplied Items
foam cup, 8 oz red food coloring interlocking gram cubes plastic pail, 5 qt plastic straw	safety goggles ice warm water container of cold water metric ruler sharpened pencil

Advance Prep

Make ice and break it into small pieces.

Hints and Tips

Make sure students do not blow directly on the gram cube shape. Students should blow directly on the water to make waves.

Safety Notes

Have students wipe up any spills immediately. Make sure that the warm water is not warm enough to cause burns.

Additional Comments

Be sure that students see that the object moves up and down on the waves. The object is not moved forward by the waves. If the object moves, it is probably being moved by air from the straw.

Experimenting with Brine Shrimp

Experiment Activity (C89–C91)

Video Segment 4

Materials (per group)

Kit Items	School-Supplied Items
balance 4 plastic cups, 10 oz hand lens interlocking gram cubes brine shrimp eggs salt flat toothpick plastic spoon measuring cup	tap water (800 mL per group, left to set out overnight) marker masking tape paper (2 small squares)

Advance Prep

- Set out 800 mL of tap water (per group) overnight.
- Mix the salt solutions. In the first cup, no salt is added. For Cup 2, dissolve 10 g of salt in 1 liter of water. For Cup 3, dissolve 20 g of salt in 1 liter of water. For Cup 4, dissolve 30 g of salt in 1 liter of water. Stir each solution before beginning the activity.

Hints and Tips

- Have students make a mark 1 cm from the end of the toothpick. Students use this to measure approximately the same number of eggs into the different cups.
- Students should place the cups in a relatively warm place. Eggs will not hatch if they are too cold.

Safety Note

Students should immediately wipe up any spills.

Additional Comments

- Be sure students understand the variables in the experiment. See the Teacher’s Edition for more information.
- Shrimp are hard to keep alive for more than two or three days. However, in order to keep shrimp alive longer, students may wish to try the following tips:
 - Use water that has been allowed to stand for several days to dissipate chlorine.
 - To grow bacteria that the shrimp use as food, add a pinch of yeast to each cup.
 - Add a pinch of baking soda in each shrimp container once a week to neutralize acids that may build up.
 - A temperature of about 80 degrees F (27 degrees C) is optimal.
 - Replace any evaporated water with prepared salt water.

Exploring Seasons

Explore Activity (C96)

Materials (per group)

Kit Items	School-Supplied Items
styrene (plastic-foam) ball 2 D-cell batteries flashlight	marker pencil

Advance Prep

Make a model of Earth on its axis by pushing a pencil through the foam ball. Have students hold the model with the eraser end pointing upwards. The eraser end represents the North Pole, and the pencil point represents the South Pole. After poking the holes, you may want to replace the pencils with unsharpened pencils.

Hints and Tips

- Stress that students must keep the axis pointed in the same direction throughout the revolution of Earth around the sun.
- The student holding the flashlight must keep the light shining on Earth, so he or she must turn as the model of Earth revolves.

Safety Note

When poking pencils through the styrene ball, handle sharp pencil points carefully.

Modeling the Phases of the Moon

Investigate Activity (C106–C107)

Video Segment 5

Materials (per group)

Kit Items	School-Supplied Items
styrene (plastic-foam) ball	lamp

Material Substitutions

Any type of ball with a light, reflective surface may be used.

Hints and Tips

Make sure students understand that this model does not include the rotation of Earth on its axis or the revolution of Earth around the sun.

Safety Note

Remind students not to look directly at the lamp.

Additional Comments

You may wish to challenge students to develop a model that includes the rotation of Earth and its revolution around the sun. One student could hold a globe spinning from left to right (counterclockwise). A second student could hold the moon model while circling the student holding the globe in a counterclockwise direction. Both students would need to slowly move around the lamp in a counterclockwise direction to represent the revolution of Earth around the sun.