

Scott Foresman
SCIENCE

Grade 3

**Equipment Kit
Guide**

Unit C
Earth Science

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ISBN: 0-673-62758-6

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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 Rocks Formed from Molten Rock

Explore Activity (C6)

Materials (per group)

Kit Items	School-Supplied Items
samples of granite, obsidian, and pumice from rock specimen pack hand lens balance	piece of paper

Hints and Tips

- Rock specimens should be very close in size. Use the samples from the rock specimen pack in the equipment kit.
- Students should look for differences in surface texture, presence of visible crystals, and the presence of “pockets” or “spaces.”

Additional Comments

As an extension, you may have students compare and contrast a sedimentary rock such as sandstone and a metamorphic rock such as gneiss with the igneous rocks. Samples of these rocks can be found in your rock specimen pack.

Making a Model of a Landform

Investigate Activity (C18–C19)

Video Segment 1

Materials (per group)

Kit Items	School-Supplied Items
plastic cup, 10 oz foil pan pebbles fine sand dropper	safety goggles thick book water in plastic cup

Advance Prep

Dampen sand so that it holds a shape and can support the pebbles, but not so that it is dripping wet.

Hints and Tips

For cleanup, you may wish to have students separate the mixture of sand, pebbles, and water. The water can be evaporated, and the sand and pebbles can be sifted. The sand and pebbles can be reused.

Safety Note

Remind students to wipe up any spills immediately.

Exploring Properties of Rocks

Explore Activity (C32)

Materials (per group)

Kit Items	School-Supplied Items
rock specimen pack (sandstone, chalk, pumice, obsidian, gneiss, quartzite, granite) hand lens	paper

Hints and Tips

You may have students make a list of properties of each rock before classifying the rocks. Instead of having each group communicate how they classified the rocks, you may wish to have groups observe the classified rocks of other groups. Students may then make inferences as to how each group classified the rocks.

Additional Comments

As an added challenge, you may distribute the same type of rock to each group and repeat the activity. You may also have students collect rocks from local areas and compare and contrast them with classroom specimens.

Observing What Is in Soil

Investigate Activity (C46–C47)

Video Segment 2

Materials (per group)

Kit Items	School-Supplied Items
potting soil hand lens plastic spoon 2 plastic cups with lids, 10 oz	safety goggles soil from schoolyard or park white construction paper marker masking tape water clock

Material Substitutions

Rich garden soil may be used in place of potting soil.

Advance Prep

Obtain soil from the schoolyard or park. An area where the ground is compacted rather than a garden area is suggested.

Hints and Tips

Be sure students hold the tops of the cups when shaking the cups.

Safety Notes

Remind students to wipe up all spills immediately. Students should wash their hands with soap and water after completing this activity.

Additional Comments

You may have students draw their observations after shaking the soil samples and allowing the samples to settle. Students should notice that larger soil particles, such as sand, settle to the bottom first. Then finer particles, such as silt and clay, settle to the bottom. The tiniest particles may remain suspended in the water for a long period of time. Students could use a metric ruler to measure layers of different-sized particles and compare and contrast the two soil samples. Students could make additional observations after allowing the cups to settle overnight.

Experimenting with Soils and Water

Experiment Activity (C51–C53)

Video Segment 3

Materials (per group)

Kit Items	School-Supplied Items
3 foam cups, 8 oz 3 pieces of cheesecloth sandy soil clay soil potting soil graduated cylinder clear plastic cup, 10 oz foil pan	safety goggles masking tape pencil large spoon water clock with a second hand

Advance Prep

- Prior to beginning the activity, cut the cheesecloth into three pieces per group.
- You may wish to have paper towels and brooms available for cleanup.

Hints and Tips

- Students should lightly tap on the sides of the cups to gently pack down the soil before pouring the water into the cups. Remind students not to tightly pack the soils in the cups.
- Have students try to pour the water at the same rate for each of the trials. Have students pour the water slowly and carefully around the center of the cup and not along the edge.
- Display charts and bar graphs of each group for comparison.

Safety Note

Caution students to wipe up any spills immediately and wash hands after handling soil.

Additional Comments

To increase the reliability of the results, students may combine the data from all the groups and make graphs based on the compiled averages. They may then discuss any differences between graphs of individual groups and the class graph.

Exploring Size and Distance of Earth and Sun

Explore Activity (C58)

Materials (per group)

Kit Items	School-Supplied Items
peppercorn string (7 m)	posterboard circle (33 cm) metric ruler

Material Substitutions

A ball or inflated balloon with a diameter of approximately 33 cm may be used in place of the posterboard circle. If using balloons, have students wear safety goggles.

Advance Prep

For each group, cut the string to 7 m and make a posterboard circle with a diameter of 33 cm.

Hints and Tips

- Be sure students understand the process of repeatedly stretching the string and carrying the peppercorn representing Earth farther and farther from the student holding the posterboard circle representing the sun. The string is stretched a total of five times until the student holding Earth is standing approximately 35 meters from the student holding the sun. Students should then observe the relative sizes of Earth and the sun, and the relative distance between them.
- Have students trade places to make observations from both the position of the sun and the position of Earth.

Additional Comments

Approximate relative planet sizes (mm)/distances from the sun (m) in this model are: Mercury: 1.1 mm/14 m; Venus: 2.8 mm/26 m; Earth: 3 mm/35 m; Mars: 1.6 mm/54 m; Jupiter: 33 mm/184 m; Saturn: 27.6 mm/338 m; Uranus: 11.1 mm/681 m; Neptune: 10.7 mm/1067 m; Pluto: 0.8 mm/1402 m

Observing Shadows Caused by Sunlight

Investigate Activity (C64–C65)

Video Segment 4

Materials (per group)

Kit Items	School-Supplied Items
modeling clay plastic straw (one half)	cardboard (56 cm x 43 cm, or 22 in. x 17 in.) black marker clock with a second hand metric ruler

Material Substitutions

A pencil, dowel, or similar object may be used in place of the straw. Posterboard or heavy drawing paper may be used in place of the cardboard square.

Advance Prep

Cut the straw in half and cut a piece of cardboard for each group.

Hints and Tips

- Before starting the activity, check that the cardboard is large enough to allow lines for the longest shadows (cast early and late in the day) to be drawn and measured.
- Use a directional compass to determine North in the schoolyard. Instruct students as to the proper orientation of the cardboard.
- Make sure that the straw is standing straight up while students are completing their drawings and measurements.
- The activity should be done on a sunny day. Be sure students place the cardboard in the same position each time they observe a shadow. Lining up the cardboard with a seam in the sidewalk or tracing the square with chalk may help maintain the correct positioning.
- The orientation and length of the shadows will depend on the latitude of your location. In northern or southern latitudes outside the tropics, the shadow should shift from left to right as the shadow shortens through the morning and lengthens through the afternoon. In tropical areas, the shadow may become very short at midday as the sun passes more directly overhead.

Safety Note

Remind students not to look directly at the sun.

Additional Comments

You may extend this activity by making observations at different times of the school year and comparing the shadow patterns. Students may use a flashlight or other light source and the cardboard, clay, and straw to make an indoor simulation of the shadow patterns they see outdoors. Be sure students hold the light source still and move the cardboard to create the changing shadows, reminding them that it's the motion of Earth, not the sun, that causes the changes in the shadows.

Modeling the Moon's Motion and Light

Investigate Activity (C72–C73)

Video Segment 5

Materials (per group)

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

Material Substitutions

Light from a window may be used if a lamp is not available. If a light is not available, turn off the classroom lights and have students face away from the window to observe the phase representing the full moon.

Hints and Tips

- In this activity, the lamp represents the sun, the ball represents the moon, and the student represents Earth.
- Only one lamp is needed, but choose a bright light so shadows are evident.
- Students need to hold the ball above their heads so the lamp will shine fully on the ball.

Safety Note

Remind students not to look directly at the light source.

Exploring How Clouds Form

Explore Activity (C86)

Materials (per group)

Kit Items	School-Supplied Items
plastic cup with lid, 10 oz	warm water 2 ice cubes clock with a second hand

Material Substitutions

Any plastic, clear container with a lid may be used in place of the cup and lid.

Advance Prep

Prepare ice cubes prior to beginning the activity.

Hints and Tips

It may take several minutes for visible moisture to appear on the lid of the cup beneath the ice.

Safety Notes

Be careful that water is not too hot. Remind students to wipe up any spills immediately.

Additional Comments

This model shows how water vapor in warm air condenses when it is cooled. In this case, the water vapor condenses on the lid of the cup. Students will learn that clouds form as warm air is cooled and water vapor condenses onto tiny bits of dust, particles from smoke, and salt to form tiny water droplets. If the air is cold enough, the water droplets may freeze.

Investigating Clouds and Weather

Investigate Activity (C92–C93)

Video Segment 6

Materials (per group)

Kit Items	School-Supplied Items
cotton balls	posterboard or heavy paper glue

Hints and Tips

You may provide dark-colored markers for students to shade cotton balls to represent storm clouds.

Making a Model Tornado

Investigate Activity (C98–C99)

Video Segment 7

Materials (per group)

Kit Items	School-Supplied Items
plastic spoon salt dishwashing detergent blue food coloring	tall, clear, plastic bottle with cap water metric ruler glitter or bits of paper

Hints and Tips

The plastic bottle should have smooth sides and a flat bottom. Indentations in the plastic may prevent the funnel from forming.

Safety Note

Remind students to wipe up all spills immediately.