

**Scott Foresman**  
**SCIENCE**

**Grade 5**

**Equipment Kit  
Guide**

**Unit C**  
Earth 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 a Model of the Earth's Layers

*Explore Activity (C6)*

## Materials (per group)

Kit Items	School-Supplied Items
modeling clay (3 colors) plastic knife	piece of paper metric ruler

## Hints and Tips

Have students cut through the clay carefully so that the layers remain separate. The top layer should be as thin as possible.

# Investigating Moving Continents

*Investigate Activity (C12–C13)*

## Video Segment 1

## Materials (per group)

Kit Items	School-Supplied Items
none	outline map of continents colored pencils or crayons map of the world scissors sheet of paper glue

## Advance Prep

Prepare copies of the continent outlines found on textbook page C13. You may photocopy the continent outlines from the text and enlarge them.

## Hints and Tips

Students should be told that there will not be a perfect fit when continents are moved together.

## Additional Comments

- Changing ocean levels, the formation of new landforms, and the effects of glaciers are some possible reasons why the continent outlines do not fit together perfectly.
- Students may notice that India seems out of place when the continents are placed together. Evidence indicates that India was not originally part of what became the Eurasian continent. Students may cut India away from Eurasia and place it further south in an appropriate place that better matches the deposits and formations found in India.

# Investigating Weathering

*Investigate Activity (C28–C29)*

## Video Segment 2

### Materials (per group)

Kit Items	School-Supplied Items
hand lens pebbles 2 plastic cups, 10 oz 1 plastic lid, 10 oz plastic spoon white vinegar	safety goggles 3 pieces of chalk water masking tape clock with a second hand paper towel

### Material Substitutions

Gravel may be used in place of pebbles. Be sure the gravel is rinsed.

### Hints and Tips

- Use regular chalk, not the dustless type. Dustless chalk does not dissolve as well in vinegar and will not demonstrate chemical weathering as well.
- Have students hold the closed cup with their thumbs on the lid and fingers wrapped around and below the cup. They should shake the cup up and down. Students should let the liquid settle before opening the lid.
- Students may need to turn the cup or empty some of the water to find the chalk among the pebbles.

### Safety Notes

- Have students wipe up any spills immediately.
- Because gas is released during the chemical change, be sure students do not place a lid on the cup with chalk and vinegar.

### Additional Comments

You may wish to have students measure the length, circumference, and mass of dry chalk pieces before and after weathering.

# Experimenting with Crystal Formation

*Experiment Activity (C35–C37)*

## Video Segment 3

### Materials (per group)

Kit Items	School-Supplied Items
aluminum potassium sulfate (alum) 3 plastic cups, 9 oz 3 plastic medicine cups, 1 oz plastic wrap thread 3 buttons	safety goggles metric ruler masking tape ice water room-temperature water warm water pencils

### Advance Prep

- Prepare alum solution immediately prior to the activity. Mix one part alum and two parts water in a pan over a burner or in very warm water. Stir until completely dissolved. When dissolved, the solution will be clear. Allow the solution to cool until it is warm but not hot enough to cause burns.
- Prepare the ice water and room-temperature water before beginning the activity.

### Hints and Tips

Remind students not to bump or move the containers with the cups. Movement will disturb crystal growth.

### Safety Notes

- Remind students not to touch very warm solution and not to drink any of the solution.
- Have students wipe up any spills immediately.

## Exploring the Earth's Resources

*Explore Activity (C42)*

### Materials (per group)

Kit Items	School-Supplied Items
potting soil aluminum foil resealable plastic bag plastic cup, 10 oz	water piece of newspaper leaf from a tree plastic bottle 4 index cards (labeled <i>sunlight</i> , <i>oil</i> , <i>wind</i> , and <i>fish</i> ) piece of paper

### Material Substitutions

You may prepare additional or substitute cards with labels of other resources, such as oil, natural gas, produce items, and so forth.

### Advance Prep

Prepare the index cards as indicated in the materials list.

### Hints and Tips

Students may not be familiar with sources of some of the materials. Stress that they should record questions and try to find answers as they read the lesson.

## Investigating Water Pollution

*Investigate Activity (C54–C55)*

### Video Segment 4

### Materials (per group)

Kit Items	School-Supplied Items
plastic cup, 10 oz plastic container, 2 qt fine sand spray bottle dropper (without rubber top) dropper red food coloring	newspapers water metric ruler clock

### Advance Prep

Remove the dropper tops.

**Hints and Tips**

Students may need to periodically spray the sand to keep the food-coloring “pollution” moving through the model.

**Safety Note**

Have students wipe up any spills or wet areas immediately.

**Additional Comments**

Students may clean the sand by adding water to the model, mixing the sand and water, carefully pouring the water out of the model (without pouring out the sand), and repeating until the water is clear.

**Investigating Air Pollution**

*Investigate Activity (C68–C69)*

**Video Segment 5****Materials (per group)**

Kit Items	School-Supplied Items
4 pieces of string petroleum jelly hand lens	safety goggles pencil index cards paper towel

**Advance Prep**

You may wish to pre-punch holes in the cards using a hole punch.

**Hints and Tips**

- Locations for pollution detectors may include: by a tree, in a parking lot, in the cafeteria, by windows, and by air vents.
- Encourage students to choose locations that are likely to have many pollutants as well as locations that are likely to have few pollutants.

**Safety Note**

Remind students not to eat or taste the petroleum jelly and to avoid contact between petroleum jelly and clothing.

**Additional Comments**

You may have students keep the pollution detectors hanging in their locations for two or more days, if the detectors will not be disturbed.

## Exploring How Sunlight Moves Water

*Explore Activity (C74)*

### Materials (per group)

Kit Items	School-Supplied Items
plastic pail plastic cup, 9 oz plastic wrap	water large stone tape small stone

### Material Substitutions

A metal washer or other small weight can be placed on the plastic wrap in place of a rock.

### Advance Prep

Cut plastic wrap to a length that will loosely cover the opening of the pail.

### Hints and Tips

- Be sure plastic wrap is loose enough so that an indentation occurs when the weight is placed on top of the plastic wrap.
- Be sure that there is a complete seal where the plastic wrap meets the edge of the pail.

### Safety Note

Remind students to wipe up any spills immediately.

## Investigating Sunlight and the Earth's Tilt

*Investigate Activity (C82–C83)*

### Video Segment 6

### Materials (per group)

Kit Items	School-Supplied Items
styrene (plastic-foam) ball flashlight with batteries	pencil marker

### Material Substitutions

A lamp placed in the center of the room can be used in place of flashlights. Students carry their models of the earth around the lamp instead of around a partner with a flashlight.

### Advance Prep

Prepare a model for each group in advance. Carefully push a sharpened pencil through the center of a foam ball. The pencil represents the axis of the earth. The eraser 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

Be sure students keep their models tilted in the same direction (toward the front of the room, for example) as they model the earth's revolution around the sun.

## Investigating How a Greenhouse Works

*Investigate Activity (C88–C89)*

### Video Segment 7

#### Materials (per group)

Kit Items	School-Supplied Items
potting soil 2 plastic containers modeling clay 2 thermometers plastic wrap	masking tape clock or watch

#### Material Substitutions

If your classroom location or weather conditions limit the availability of sunlight, a desk lamp can be used. Be sure to put both containers at the same distance from the lamp to control variables.

#### Safety Note

Handle the thermometers carefully to avoid breakage.

#### Additional Comments

- There may be small differences in starting temperatures due to variations in thermometers. Be sure students understand that the main factor they are looking for is the change in temperature in each of the containers.
- Stress the similarities and differences between these models and the “greenhouse effect” that occurs in the earth’s atmosphere (see Teacher’s Edition, pages C84–C85, and C89).

## Making a Model of the Solar System

*Explore Activity (C108)*

#### Materials (per group)

Kit Items	School-Supplied Items
none	posterboard metric ruler scissors markers or crayons

#### Material Substitutions

You may wish to have students make three-dimensional models. Modeling clay can be used for smaller planets. For larger planets, students may substitute round objects such as balls from various sports. Choose round objects with diameters close to those listed in the table on textbook page C108.

#### Additional Comments

An alternate or extension activity could involve students in making a scale model of the solar system. Students could develop a scale to model the distances between planets.

# Making a Spectroscope

*Investigate Activity (C126–C127)*

## Video Segment 8

### Materials (per group)

Kit Items	School-Supplied Items
diffraction grating	safety goggles paper towel tube sharpened pencil index cards scissors masking tape incandescent lamp colored pencils or crayons

### Advance Prep

Cut the diffraction grating into 1 1/2-inch squares.

### Safety Note

- Remind students to exercise caution while using the pencil to poke a hole in the cardboard circle.
- Students should not look at the sun with their spectroscopes.

### Additional Comments

Have students look at other sources of light, such as fluorescent lights or natural light. Students may compare and contrast the spectra produced by the different lights.

# Investigating Lenses

*Investigate Activity (C136–C137)*

## Video Segment 9

### Materials (per group)

Kit Items	School-Supplied Items
lens paper glass convex lens hand lens	none

### Hints and Tips

Students should note that the distant object is magnified and upside-down.

### Safety Note

- Students should use care when handling glass lenses.
- Tell students never to look through lenses at direct sunlight or other very bright sources of light.