

MATERIALS AND EQUIPMENT

The unit requires a variety of materials to support various ways of learning (including doing, discussing, listening, watching, reading, and writing). Prepare in advance by collecting the materials and equipment needed for all the demonstrations and hands-on investigations.

Part A: Problem-Based Learning Introduction

Lesson 1

- rulers with a groove down the middle (1 per student pair)
- small marbles (2 per ruler/student pair)
- index cards for student vocabulary deck (2 per student)
- internet access and the means to project images/video for whole-class viewing

Part B: The Structure of Our Earth

Lesson 2

- index cards for student vocabulary deck (3 per student)
- internet access and the means to project images/video for whole-class viewing

Lesson 3

- 12-inch rulers, ideally with both metric and standard rulings (1 per team)
- modeling clay or dough (4 different colors)
- rolling pins or soup cans (1 per team)
- straightened paper clips (1 per team)
- dental floss (1 30-centimeter length per team)
- markers, colored pencils, or crayons (colors to match clay or dough)
- index cards for student vocabulary deck (3 per student)

Lesson 4

- samples of igneous, metamorphic, and sedimentary rocks
- modeling clay
- putty knife

Lesson 4, continued

- index cards for student vocabulary deck (3 per student)
- internet access and the means to project images/video for whole-class viewing

Part C: Earth's Moving Crust

Lesson 5

- index cards for student vocabulary deck (2 per student)
- internet access and the means to project images/video for whole-class viewing

Lesson 6

- pizza boxes (large or individual size)
- scissors
- marbles (10–20 marbles per box)
- ruler
- small rubber bands (4 per box)
- stapler
- mini-marshmallows
- plastic coffee stirrers (or dried spaghetti)
- internet access and the means to project images/video for whole-class viewing

Lesson 7

- 2-liter plastic soda bottle with cap
- small gravel (fish tank gravel)
- water
- index cards for student vocabulary deck (1 per student)
- internet access and the means to project images/video for whole-class viewing

Lesson 8

- index cards for student vocabulary deck (4 per student)
- internet access and the means to project images/video for whole-class viewing

Lesson 9

- globe (optional)
- highlighters
- internet access and the means to project images/video for whole-class viewing

Part D: Other Changes on Earth's Surface

Lesson 10

- small milk cartons (2)
- plaster of paris
- balloons (2)
- water
- access to a freezer
- sand
- loamy garden soil
- small piece of grass-covered soil
- piece of cardboard
- index cards for student vocabulary deck (4 per student)
- internet access and the means to project images/video for whole-class viewing

Lesson 11

- stream table
- catch bucket (if not in the kit)
- sand
- ruler
- water
- three sizes of blocks (if the stream table does not include a way to change its slope)

Lesson 11, continued

- water flow cup (if not in the kit), with a small hole near the bottom
- measuring cups, graduated cylinder, or scale (depending on what property students decide to measure)
- internet access and the means to project images/video for whole-class viewing

Lesson 12

- sand or sandy soil
- shoebox
- construction paper or thin cardboard
- index cards for student vocabulary deck (2 per student)
- internet access and the means to project images/video for whole-class viewing

Lesson 13

- empty half-gallon paper drink cartons (2 per team, 1 with cap in place)
- scissors (1 per team)
- potting soil or sand (slightly moist)
- plastic bins (1 per team, large enough to hold the carton on its side at an angle)

Part E: Managing the Effects of Earth's Natural Processes in Our Area

Unit Capstone

- online image library for the entire unit
- internet access and the means to project images/video for whole-class viewing
- name tags for students and event attendees