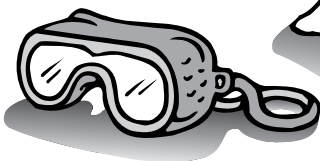


Watching for Erosion

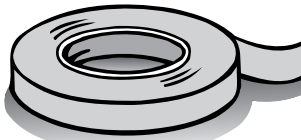
WHAT YOU NEED



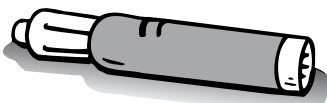
safety goggles



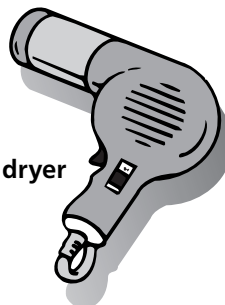
1 kg fine sand



masking tape



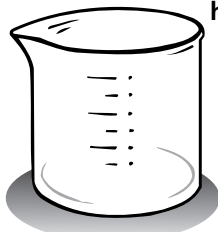
marking pen



hair dryer



1 kg local soil



500-mL beaker



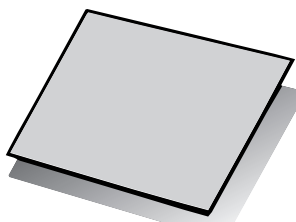
sprinkling can



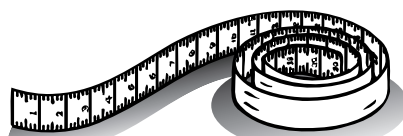
timer



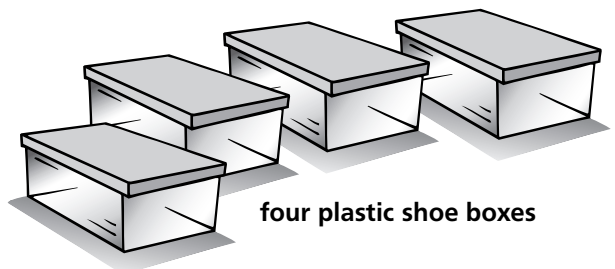
water



cardboard



meter tape



four plastic shoe boxes

Find Out

Do this activity to find out how natural forces such as water and wind contribute to erosion.

Process Skills

Communicating
Measuring
Observing
Inferring

Time

- One hour the first day
- 20 minutes two days later
- 10 minutes one week after that

WHAT TO DO



1. Using the masking tape, label the boxes A, B, C, and D.
2. **Measure** 500 mL of soil into boxes A and B, and 500 mL of sand into boxes C and D.
3. Sprinkle only enough water to moisten the soil in boxes B and D.
4. Tape cardboard to one end of box A.



Wear your safety goggles.

5. Hold the hair dryer at an angle of about 45° 20 cm from the end of box A without the cardboard. Direct a stream of air into the box for one minute. **Record** your observation.
6. Repeat Steps 4–5 for boxes B, C, and D.
7. **Record** what happens.
8. Let the boxes dry for two days. Smooth out the surface in each box and repeat Steps 3–7. This time increase the force of the “wind” by holding the hair dryer 10 cm from each box.
9. Sprinkle 300 mL of water on boxes B and D.
10. **Record** what happened.
11. Smooth out the surface in each box and pour 300 mL of water on boxes B and D all at once.
12. **Record** your observations.
13. Set boxes B and D in a warm place. Do not disturb the boxes. After a week, **record** how the soil and sand in each box look.

Wind and Water Erosion

Conditions	Box A soil	Box B soil and water	Box C sand	Box D sand and water
Wind 20 cm from box		Student observations will vary.		
Wind 10 cm from box				
Water sprinkled on box	X		X	
Water dumped on box	X		X	
After settling	X		X	

Conclusions

1. Were the dry soil and dry sand affected differently by the wind? If so, how?

The sand should erode faster than the soil. The dryness will affect how both the sand and the soil erode.

2. How did the effects of the wind differ between wet and dry soil and sand?

Dry soils were eroded more.

3. How did changing the force of the wind affect the soil and sand?

A stronger wind eroded more soil and sand.

New Questions

1. How do different types of weather affect soils?

Windy and wet weather increase soil erosion.

2. Which probably causes more damage to soil, a light steady rain or a downpour? Why?

A downpour, because the more force the water has, the more soil will be eroded.

3. Write a new question you have about erosion.

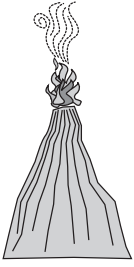
Accept any reasonable questions.



Activity Journal

Lesson 1 • Weathering

Name _____



ACTIVITY

Ice Power

Make a bar graph to **record** your **observations**.

Name _____

Conclusions

- ① What happened to the water in the freezer?
The water turned into a solid piece of ice.

- ② Which jar contained the greater volume of matter?
The jar in the freezer contained the greater volume of matter.

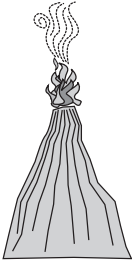
- ③ What kind of weathering have you **simulated**?
physical weathering

Asking New Questions

- ① **Predict** what will happen if you fill a jar to the top with water and put the closed jar outside on a very cold night.
If the temperature outside is below freezing, the jar might break because of the expanding volume.

- ② If you need to freeze something, should you fill the container to the top? Why or why not?
No—leaving space for the expansion due to freezing will stop the container from breaking.

Name _____



ACTIVITY

Eroding with Water

Write a **hypothesis** about how water will affect your mound.
Answers will vary. Students may think that the mound will flatten out or change shape.

Draw a picture of what the mound looks like before you pour water on it.
Drawings will vary.

What did you **observe** after you slowly poured 10 mL of water on top of the mound?
Answers will vary. The mound did flatten out in places and wore away the sand and clay in others.

Draw another picture of what the mound looked like after you slowly poured water on it.
Second drawing should show erosion.

Name _____

Conclusions

① What effect did the water have on the mound of soil?
The water should have eroded some of the soil.

② How did the shape of the mound change?
Answers will vary, but in general the mound should have begun to flatten out.

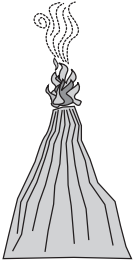
③ What does the water in the cylinder **represent** on Earth?
running water in rivers and streams or water falling as rain

Asking New Questions

① If you pour the water out quickly, what do you think will happen to the mound? Try this.
More erosion will occur because the force of the running water will be stronger.

② Where can you find examples of water causing erosion around your school?
Answers will vary, but might include downspouts, nearby creeks, streams, rivers, playgrounds, or walkways that have soil washed out.

Name _____



ACTIVITY

Making an Earthquake

Draw your 3-story building.

Drawings will vary depending on student designs.

What happened to your building during the earthquake?

Draw pictures to show the building or **write** a description.

Answers and drawings will vary.

Name _____

Conclusions

- ① How did the building change as you moved the pan at different speeds?

Answers will vary. The building should bend and move more as the pan is moved faster.

- ② What happened to your building after you stopped moving the pan?

Answers will vary. Some buildings may collapse; some may tip; some may return to their original place.

Asking New Questions

- ① How could you design your building differently to decrease the amount of damage during the simulated earthquake?

Answers will vary, but may include making the building with materials that are more flexible and capable of absorbing the shocks of the earthquake.

- ② Do you think you would feel an earthquake more on the top floor of a building or in the basement?

The movements would be more noticeable on the top floor because of the sway of the building.