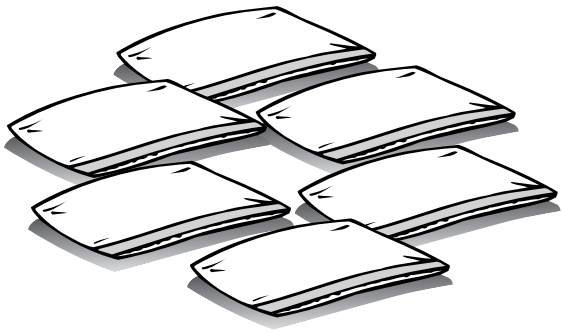
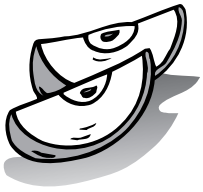
Chapter Science Investigation Name _____

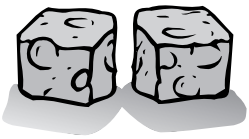
Observing Decomposers

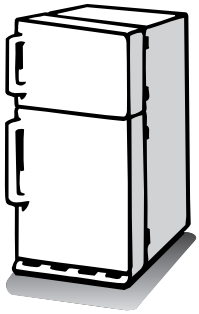
What You Need

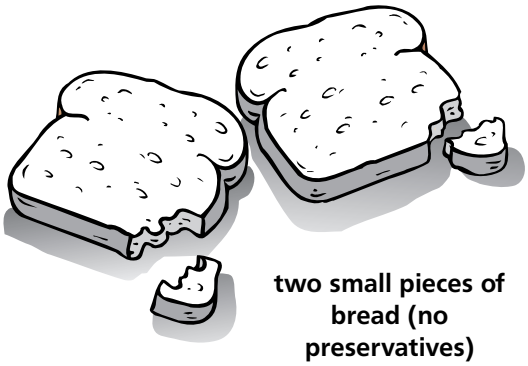

six resealable plastic bags

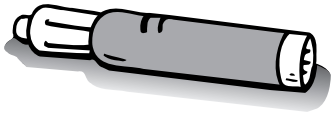

water


two small pieces of apple

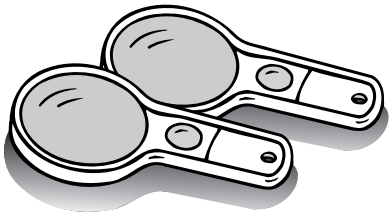

two small pieces of cheese


refrigerator


two small pieces of bread (no preservatives)


marker


dropper


two hand lenses

Find Out

Do this activity to illustrate how nonliving factors affect the work of decomposers.

Process Skills

Observing
Hypothesizing
Controlling Variables
Inferring
Experimenting

Time

- 40 minutes the first day
- 10 minutes every other day for two weeks

What to Do

1. Work with a partner. Fill the dropper with water and moisten each food sample. Wait five minutes.

2. **Observe** each sample. **Record** your observations.

3. Label three bags "W" for warm, and three bags "C" for cold.

4. Place one of each food sample in the plastic bags labeled "W" and one of each in the bags labeled "C." Seal the bags.

5. Put the "W" bags in a warm, dark place. Put the three "C" bags in a refrigerator. **Write a hypothesis** about how temperature can affect the growth of molds. **Record** your hypothesis.

Do not open the bags.

6. **Observe** the bags every other day for the next two weeks. Do not open the bags, but use a hand lens to examine the food inside each bag. **Record** your observations.

If a bag comes open, dispose of it immediately for safety reasons.

Hypothesis: _____

_____

_____

Observing Food Decomposers						
	In a Warm, Dark Place			In Refrigerator		
Time	Apple	Cheese	Bread	Apple	Cheese	Bread
Week 1						
Day 1						
Day 3						
Day 5						
Week 2						
Day 1						
Day 3						
Day 5						

Conclusions

1. How did the food samples change?
Answers will vary.

2. On which food did you observe the decomposers first?
On the bread that was in a warm, dark place. All food in the warm, dark place showed decomposers before the food in the refrigerator.

3. Why do you think that happened?
The food in the dark, warm place is breaking down sooner than the refrigerated food because the warm temperature helps to encourage the growth of decomposers first.

New Questions

1. How can people try to stop the growth of decomposers in their food?
Accept any reasonable answers. Possibilities might include preserving them with salt or smoke, and by refrigeration or freezing.

2. Cooking food can kill decomposers. Why do you think this happens?
Answers will vary. Decomposers grow better in warm environments but if the temperature is too hot, such as during cooking, the decomposers will die.

Name _____

ACTIVITY

Influencing an Ecosystem

Write your **hypothesis** about what will happen to each plant.
Hypotheses will vary.

After three days, what did you **observe** about the two plants?
Draw or **write** what you observed.
Students' drawings or observations will vary.

Plant in Salt Water

Plant in Tap Water

Name _____

Conclusions

1. Compare your hypothesis with your observations.
Responses will vary.

2. What can you infer about the plant placed in salt water?
The salt caused the plant to wilt or die.

3. Why did the two plants react differently?
One had salt added and one did not.

Asking New Questions

1. **Predict** how salt might affect other plants. Test your prediction.
Answers will vary. Salt may kill some plants. Other plants, however, have adapted to salt—for example, plants that live near the ocean. Encourage students to experiment.

2. Can farmers use ocean water to water their crops? No.
Why or why not?
Accept any reasonable answer. Plants not adapted to salt that are watered with ocean water would probably die because of the salt in the ocean water.

Name _____

ACTIVITY

Decomposers

What happened to the contents of each bag? **Draw** or **record** your observations in the chart. **Compare** your recordings with the other groups.

Student drawings will vary.

Bag 1

Bag 2

Bag 3

Bag 4

Name _____

Conclusions

1. What happened to the bananas in each bag?
Answers will vary. They will react differently.

2. Why are the bananas in each bag reacting differently?
The nonliving factors in each bag are different. The yeast is a decomposer; when it is mixed with water and sunshine, it rapidly decays the banana.

Asking New Questions

1. **Predict** how the bananas and yeast would react in the dark or in the cold. **Design an investigation** to test your prediction.
Accept any reasonable predictions. Encourage student designs.

2. Why do you think bakers use yeast when baking bread?
Yeast is a decomposer. When decomposers break down materials, they let off carbon dioxide gas. The carbon dioxide gas makes bread light and fluffy.

Name _____

ACTIVITY

Adding to Ecosystems

Write your **hypothesis** about what the worms will do.
Hypotheses will vary.

What did you **observe** each day? **Record** your observations in the chart.
Answers will vary.

Day	Observations
2	
4	

Name _____

Conclusions

1. Compare your **hypothesis** and your observations.
Answers will vary.

2. Where did the worms go in the jar? Why?
They tunneled down into the soil. Worms are decomposers that live in the soil.

3. How are the worms changing the soil?
Answers will vary. They are breaking down the soil and bringing air into the soil.

Asking New Questions

1. Why are worms valuable for farmers?
Answers will vary. Possibilities include that worms are decomposers that return nutrients to the soil. The worms improve soil conditions so plants can grow better.

2. How can earthworms help to change a vacant lot in the city?
Answers will vary. Earthworms can help decompose materials in the lot. This decomposition can help new plants to grow in the lot, which can bring other animals to eat the plants. Earthworms play a role in the succession of the lot.

3. Write another question you have about earthworm behavior. **Design an investigation** to find an answer to your question.
Accept any reasonable questions. Encourage student designs.