Fossils

Investigation Data Sheet

Earth Science IN ACTION™

What Type Of Environment Is Best For Preserving Remains?

Fossils can be impressions left behind by plants or animals, or the preserved remains of a living thing. Some environments have conditions favorable to fossil formation, and some do not.

Objective

Create four simulated climates, or environments, and test each for its ability to preserve the remains of living things. Our climates will be hot and moist, like a rain forest; hot and dry, like a desert; freezing cold and moist, like the Arctic; and freezing cold and dry, like the Antarctic.

Materials

__ 4 large, clear, plastic cups
__ 4 flowers
__ 4 shelled walnuts
__ toothpicks
__ moist potting soil
__ a heat lamp
__ paper towels
__ 4 seashells
__ 4 grapes
__ 1 toothbrush
__ sand
__ water
__ markers
__ a freezer

Safety Notice: All applicable laboratory safety rules must be followed. Students should not perform any experimental activity without the teacher's supervision and express permission. Students must follow safety guidelines and wear appropriate protective gear.

Procedure

1. First, examine your sample remains (shell, grape, flower and walnut) and write a description of each object in the data table. Note characteristics like the length, width, texture, color and shape of each object.

2. Using your marker, label your plastic cups 1 through 4.

3. Create the Arctic environment, which is cold and wet, in cup 1. Place a seashell, grape, flower and walnut into this cup. Fill the cup halfway with water and place it in a freezer. Check it a few hours later, and if your samples are not completely covered with ice, add more water and place the cup in the freezer again.

4. Create the Antarctic climate, which is cold and dry, in cup 2. Put one of each of your sample remains into this cup and place the cup in the freezer with cup 1.

5. Make the desert environment, which is hot and dry, in cup 3. Fill the bottom of this cup with some sand. Place one of each of your sample remains into the cup and completely cover them with more sand. Place the cup under the heat lamp.

6. Create the rain forest environment, which is hot and wet, in cup 4. Place the rest of the sample remains into this cup and bury them in moistened potting soil. Place the cup under the heat lamp with cup 3. Add water to cup 4 each day.

   • Think about how your climates might affect your remains. Which climate do you think will preserve the remains the best? Write down what you expect will happen. This is your hypothesis — the ideas you will test to see if your guess is correct.

7. After a period of two to three weeks, remove your samples from the freezer and turn off the heat lamp. Allow the samples in cups 1 and 2 to thaw.

8. Carefully remove the remains from the cups and set them out on labeled paper towels. Use your toothbrush and toothpicks to carefully clean your remains as necessary.

9. Observe the remains from each environment. Note observations in the data table.

Conclusions

• What do you see? Is it what you expected? In which cup did the sample remains change the most? In which cup did they change the least?

• Which environment seems the best for preserving the remains of living things?

	Cup 1: Arctic		Cup 2: Antarctic	
	Initial	2 weeks	Initial	2 weeks
shell				
grape				
flower				
walnut				

	Cup 3: Desert		Cup 4: Rainforest	
	Initial	2 weeks	Initial	2 weeks
shell				
grape				
flower				
walnut				