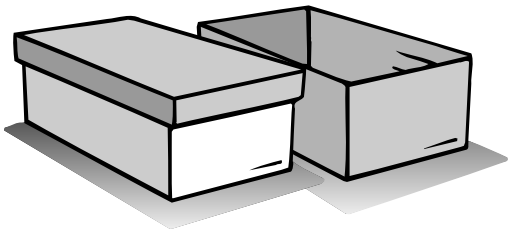
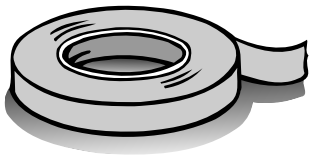
Chapter Science Investigation Name _____

Comparing the Surfaces of the Moon and Earth

What You Need



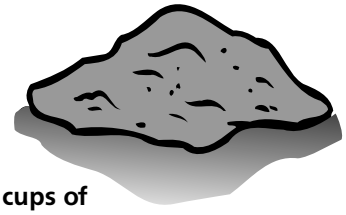
two clear plastic shoe boxes, one with lid



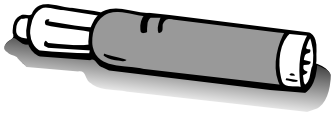
two file folder labels or masking tape

one cup of gravel

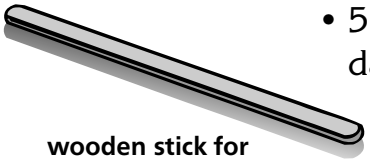
two cups of sand



two cups of potting soil



marker



wooden stick for stirring mixture

Find Out

Do this activity to find out how weather affects the surface of both Earth and the moon.

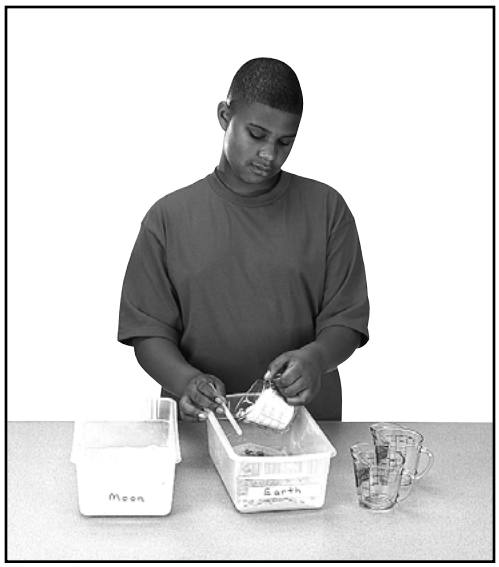
Process Skills

Experimenting
Controlling Variables
Observing
Communicating
Interpreting Data

Time

- 30 minutes the first day
- 5 minutes each day for two weeks

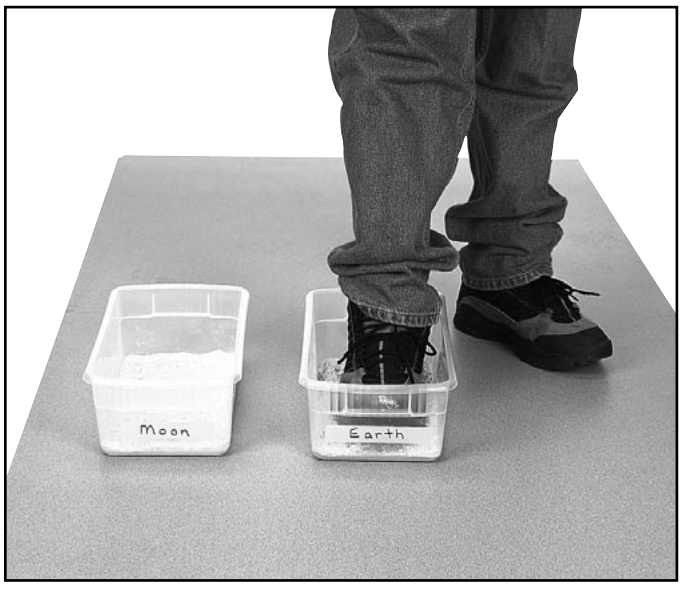
What to Do



1. Label one shoe box "Earth" and the other "Moon."
2. Pour 1 cup of sand, 1 cup of potting soil, and 1/2 cup of gravel into each shoe box. Stir the contents of each box thoroughly.
3. Using the same shoe, carefully make a footprint in each box.
4. Put the lid on the box labeled "Moon." Do not put a lid on the shoe box labeled "Earth." Place both boxes in a safe place outside for the next few weeks.

Safety! ***Wash your hands after working with the soil.***

5. **Predict** what will happen to the footprint in each shoe box.
6. Each day for two weeks, **observe** the footprint in each box. **Record** any changes you see on your *Effects of Atmosphere Log*.



Prediction: _____

_____

_____

Effects of Atmosphere Log		
	Observations	
Time	Moon Box	Earth Box
Week 1 Day 1		
Day 2		
Day 3		
Day 4		
Day 5		
Week 2 Day 1		
Day 2		
Day 3		
Day 4		
Day 5		

Conclusions

1. How did the "Moon" footprint compare to the "Earth" footprint?

2. How did weather affect the "Earth" footprint?

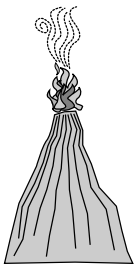
3. Why was the "Moon" footprint undisturbed?

4. Explain why a footprint on the moon would be different from one on Earth over time because Earth has an atmosphere.

New Questions

1. What were the controlled variables in this investigation?

2. What were the dependent variables in this investigation? In other words, what factors were different in the "Earth" box compared to the "Moon" box?



Name _____

ACTIVITY

Investigating Moon Craters

Predict which marble will make the biggest crater and why.

Record the results of steps 5 through 7 in the chart below.

Mass of Marble	Height	Surface of Clay	Width of Crater	Depth of Crater

Name _____

Conclusions

1. What effect, if any, did the mass of the marbles have on the clay?

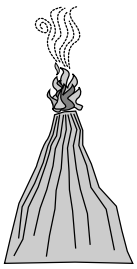
2. **Infer** what force caused the marbles to fall into the clay.

3. How were the marbles like objects moving through space and striking a planet?

Asking New Questions

1. What might have happened to the clay craters if the marbles had been dropped from a greater height?

2. How did the craters in this model compare to actual craters?



Name _____

ACTIVITY

Modeling Planets

Record the diameter and **calculate** the scaled diameter for each planet.

Planet	Diameter (km)	Distance Multiplied by 0.01	Other Characteristics
Mercury			
Venus			
Earth			
Mars			
Jupiter			
Saturn			
Uranus			
Neptune			
Pluto			

Name _____

Conclusions

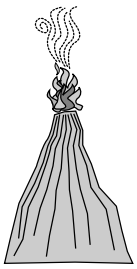
1. How are the posterboard planets like the planets in the solar system? How are they different?

2. In this lesson, the planets were classified as terrestrial or Jovian. Based on the characteristics of the planets, name two other ways the planets could be classified.

Asking New Questions

1. Based on their diameters, how many Earths would fit in Jupiter?

2. How many Plutos would fit in Earth?



Name _____

ACTIVITY

Investigating Brightness

Record the brightness of each light.

Predict which light will seem brighter if one partner moves closer to you and one moves farther away.

How does the brightness of each light compare when one partner moves closer to you and one moves farther away?

Name _____

Conclusions

1. Compare your prediction with your observations.

2. Was the absolute magnitude of the two flashlights different? Why?

3. Was the apparent magnitude of the flashlights different? Explain.

Asking New Questions

1. How were the flashlights like stars you see from Earth?

2. What did this activity show you about the way distance affects brightness?