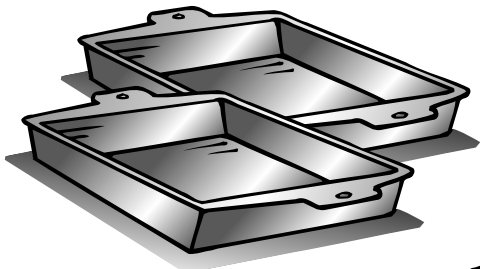


Investigating the Sun's Influence on the Water Cycle

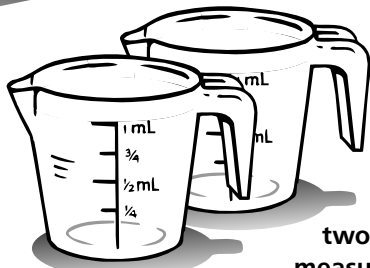
WHAT YOU NEED



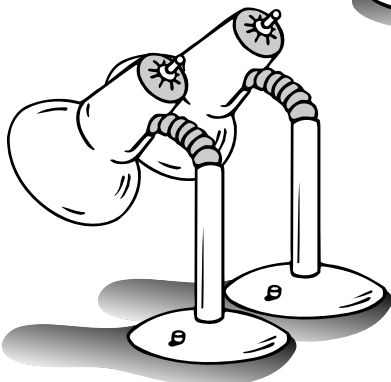
two large, shallow pans



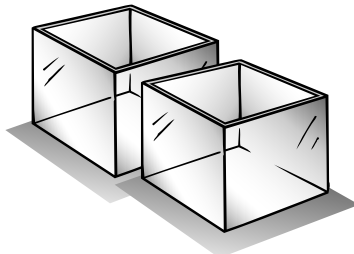
water



two metric measuring cups

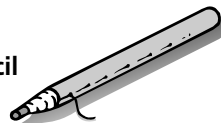


two gooseneck lamps



two smaller, clear plastic containers

grease pencil



Find Out

Do this activity to find out how the sun's angle can affect the evaporation of water.

Process Skills

Measuring
Controlling Variables
Predicting
Communicating
Observing
Interpreting Data
Inferring

Time

- 15 minutes on the first day
- 5 minutes a day for one week



WHAT TO DO

1. Fill the shallow pans half-full with water. **Measure** the water to make sure the pans have the same amount. Mark the level of the water with the grease pencil.
2. Place the measuring cups in the center of the pans.
3. Place the clear containers upside-down in the shallow container over the measuring cup in each pan.
4. Direct the light from one of the lamps directly over one upside-down clear container.
5. Direct the light from the second lamp over the other clear container at a 45° angle.
6. **Predict** what will happen inside each clear container.
7. **Observe** and **record** what happens inside the clear containers during one week.
8. **Observe** and **record** how much water collects in the bottom of each measuring cup each day for one week. **Record** how much the water level in each shallow pan has changed.



Prediction: _____

Stages in the Water Cycle		
Amount of Water That Has Collected	In Cup with Direct Light	In Cup with Light at 45° Angle
After One Hour		
Day 2		
Day 3		
Day 4		
Day 5		

Conclusions

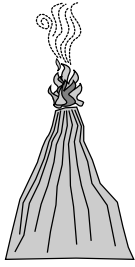
1. How did the amount of water collected in the cup with direct light compare to the amount in the cup with indirect light?
2. Based on the data you collected, **infer** what effect the sun's angle has on each stage in the water cycle.
3. Why did the light affect the rate of evaporation, condensation, and precipitation in the container?
4. What is the term used to describe the temperature at which condensation occurs? How did you know that the water reached this temperature in the investigation?

New Questions

1. When the water collected on the top of the clear containers, what stage in the water cycle did that represent?
2. When the water fell into the bottom of the measuring cups, what stage in the water cycle did that represent?
3. What stage in the water cycle could be detected when the water level in the shallow containers dropped?



Name _____



ACTIVITY

Comparing Buoyancy

Predict how hot and cold salt water and how hot and cold freshwater might affect the buoyancy of a pencil.

Record the length of the part of the pencil that is above the water level.

Type of Water	Length of the Part of the Pencil Above the Water Level in Millimeters
hot salt water	
cold salt water	
hot freshwater	
cold freshwater	

Name _____

Conclusions

- ① Compare your results with your prediction.

- ② How does salinity affect the buoyancy of water?

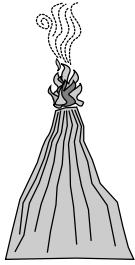
- ③ How does the temperature of the water affect buoyancy?

Asking New Questions

- ① Why is it easier to float in the ocean than in freshwater?

- ② Could a boat carry a heavier load in freshwater or in salt water? What kinds of further information would be helpful to support your conclusion or to answer new questions that you have?

Name _____



ACTIVITY

Investigating Humidity and Precipitation

Predict which jar will be most humid and which will have the most precipitation in ten minutes.

	Observations After Ten Minutes
Jar 1	
Jar 2	
Jar 3	

Name _____

Conclusions

① How could you tell which jar was most humid? Least humid?

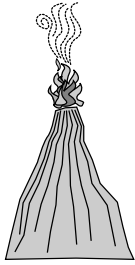
② Which jar had the most precipitation? Why?

Asking New Questions

① If you poured 200 mL of hot water into a small jar and poured the same amount into a large jar, in which jar would the relative humidity be higher? Why?

② How is condensation different from precipitation?

Name _____



ACTIVITY

Sonar Mapping

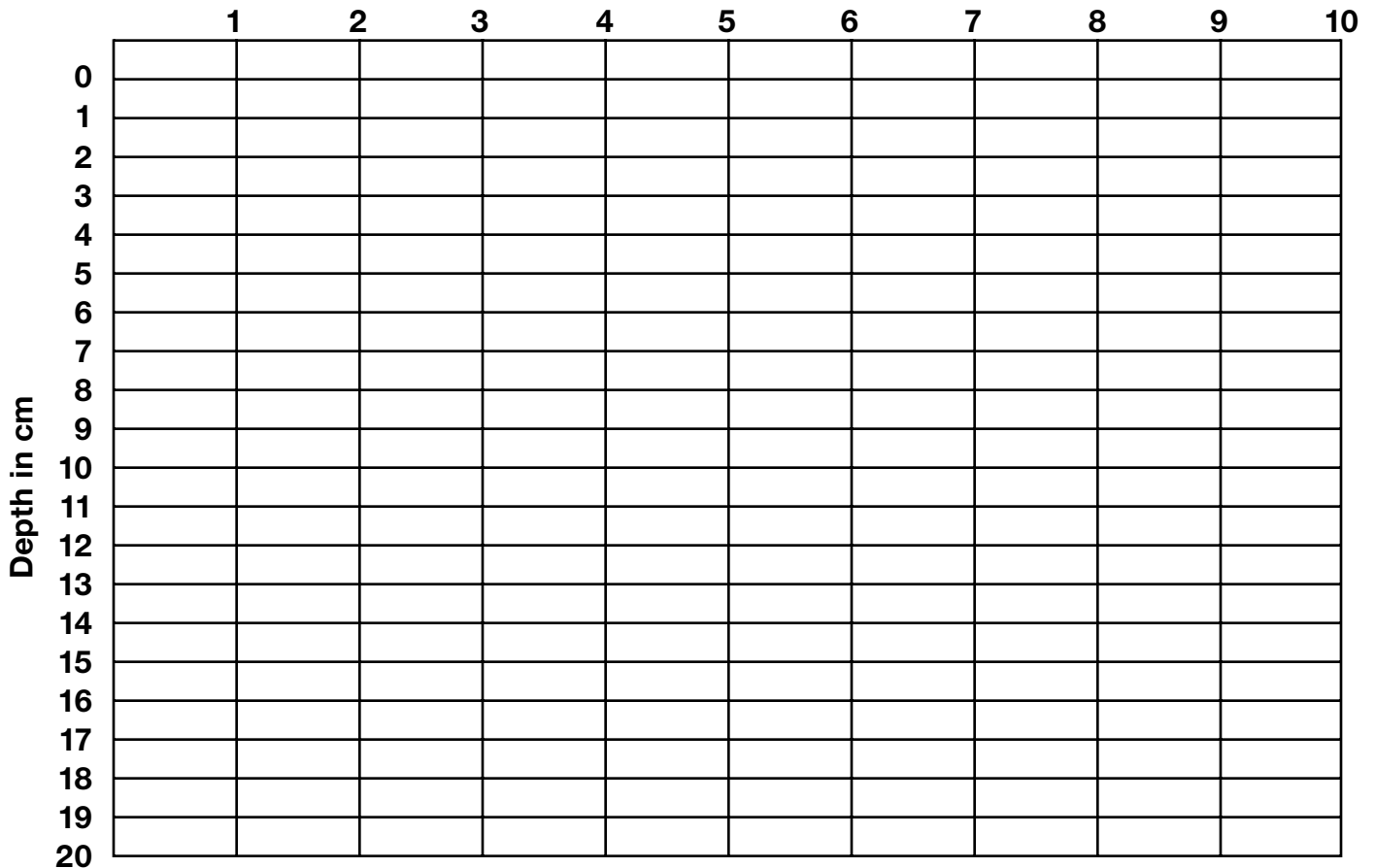
Record the depth of each straw that touched the “ocean floor.”

Holes

	1	2	3	4	5	6	7	8	9	10
Depth in cm										

Use the data to make a bar graph showing the depth in centimeters of each hole.

Holes



Name _____

Conclusions

① How does your graph compare with the actual model?

② The straw represents the sonar echo in this model. How is the straw like and unlike sonar?

Asking New Questions

① Which areas of the model you tested would you compare to actual ocean-floor features?

② Would it be possible to create a three-dimensional map of the shoe-box seafloor using the data from this activity?