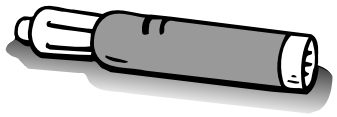
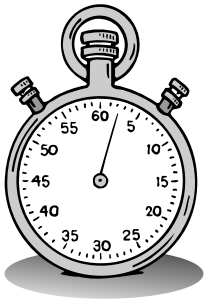
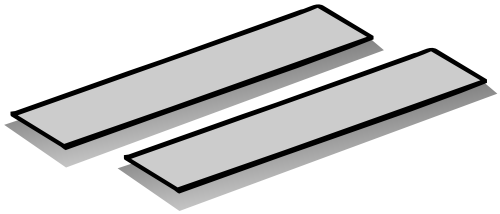
Chapter Science Investigation Name _____

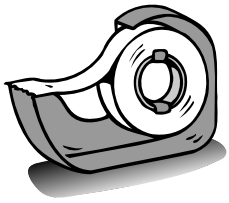
Measuring Wind Speed

What You Need


marker


stopwatch


two 30-cm × 5-cm cardboard strips


tape


pencil


scissors


four paper cups


straight pin


centimeter ruler

Find Out

Do this activity to find out the average daily wind speed and the pattern of wind speed during a three-week period at three sites near your school.

Process Skills

Measuring
Observing
Using Numbers
Communicating
Interpreting Data

Time

- 30 minutes the first day
- 20 minutes each day for three weeks

What to Do

1. **Measure** and draw one line 8-cm long on one side of each cup. Cut a slit along the line on each cup. Make an *X* opposite the slit on one cup. The cups should all face in the same direction.

Safety! ***Use care with scissors and when inserting the straight pin.***

2. Make a plus sign with the cardboard strips and tape them together. Push the straight pin through the center of the cardboard plus sign and into the eraser of the pencil.

3. Slide each cardboard end through the slit in one cup until it touches the opposite side. All the cups should face in the same direction. Tape the cups securely to the cardboard.

4. Select three sites around your school where you will **measure** the wind each day for three weeks.

5. To make daily observations, carefully carry your device to each site. Hold it up and **observe. Count** how many times the cup marked *X* goes around in 30 seconds. **Divide** this number by 3 to get the approximate wind speed in kilometers per hour. **Record** the speed on your chart. **Add** the speed at the three sites and **divide** by 3 to get the day's average wind speed.

6. On the last day, **interpret the data.** Decide which site had the greatest wind speed and what the average wind speed for all the sites was. Do this by **adding** the average wind speeds and **dividing** that number by the number of days that you have recorded wind speeds.

Observing Wind Speed				
	Wind Speed			
Time	Site 1	Site 2	Site 3	Average Wind Speed
Day 1				
Day 2				
Day 3				
Day 4				
Day 5				
Day 6				
Day 7				
Day 8				
Day 9				
Day 10				
Day 11				
Day 12				
Day 13				
Day 14				
Day 15				

Conclusions

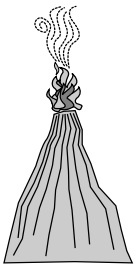
1. Was the wind speed higher at one location? If so, why do you think it was higher?

2. What affected wind speed?

New Questions

1. Where is the best place to get accurate wind-speed information?

2. How might the average wind speed at your home be different from the average wind speed at your school?



Name _____

ACTIVITY

Finding Pollutants in the Air

Record your **observations** and **predictions** in the **chart.**

Locations	What I Observed on the First Day	What I Predict Will Happen to the Lids	What I Observed on the Second Day
Lid 1			
Lid 2			
Lid 3			

Name _____

Conclusions

1. What did you observe on the tape?

2. Where did you find the most solid air pollutants?

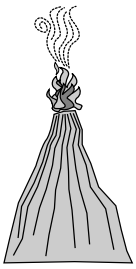
3. Which type of solid air pollutant occurred most often?

Asking New Questions

1. Why were you not supposed to breathe on the lids after you collected them?

2. What room in your home would have the most solid air pollutants?

3. How could you test that prediction?



Name _____

ACTIVITY

Testing Air

Which thermometers do you predict will register higher temperatures?

What is your hypothesis?

Minute	Thermometer in Soil	Thermometer in Air over Soil	Thermometer in Water	Thermometer in Air over Water
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

Name _____

Conclusions

1. In which container did the temperature increase more?

2. How did the soil or water temperature affect the temperature of the air above it?

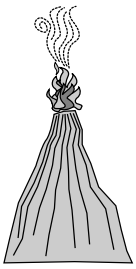
3. Do your data support your hypothesis about the temperature of air over land and over water? Explain why there is a difference in temperature.

Asking New Questions

1. How do large bodies of water affect air temperatures around the world?

2. How do large areas of dark soil affect air temperatures?

Name _____



ACTIVITY

Classifying Storm Characteristics

What do you predict will happen when you hold the yarn over an unlit bulb?

Draw a diagram that **records** what you observe when you hold the yarn over an unlit bulb.

What do you predict will happen when you hold the yarn over the bulb when it is lit?

Draw a diagram that **records** what you observe when you hold the yarn over the lit bulb.

Name _____

Conclusions

1. What effect did the unlit lightbulb have on the yarn?

   When you did the same thing with the lightbulb lit, what happened?

2. What do the yarn threads tell you about air movement?

   What happens to air above very warm land or water?

3. Why did you hold the yarn threads over the unlit bulb?

Asking New Questions

1. What is the most common condition present during the formation of a thunderstorm, a tornado, or a hurricane?

2. How did you **infer** this from your **experiment?**