

WIND IN YOUR SOCKS

Objectives

The students will:
Construct and use a simple wind sock.
Measure wind direction and speed using a wind sock.

Standards and Skills

Science

Science as Inquiry
Physical Science
Science and Technology

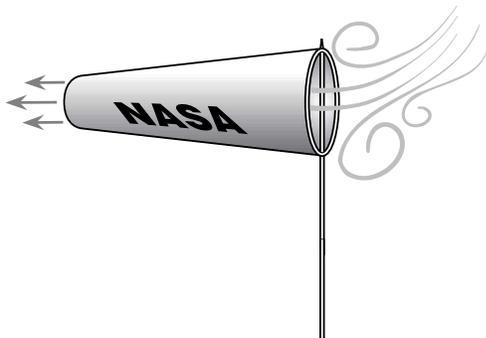
Mathematics

Problem Solving
Reasoning
Measurement

Science Process Skills

Observing
Measuring

Background



A wind sock is a type of kite used to detect wind direction. It is a tapered tube of cloth that is held open at one end by a stiff ring. Wind is directed down the tube, causing the narrow end to point in the same direction the wind is blowing. Brightly colored wind socks are used at airports to help pilots determine the wind direction along the ground. *Meteorologists* use wind direction to help predict the weather.



Materials

1 sheet 8 1/2 X 11 inch printer or copy paper
1 piece tissue paper 28 cm X 28 cm
White glue or paste
Cellophane tape
Scissors
Single-hole paper puncher
1 Paper clip
Metric ruler
1.2 m kite string
Magnetic compass
Wooden dowel

Preparation

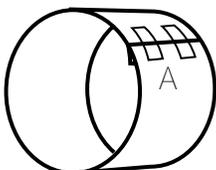
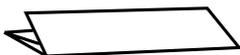
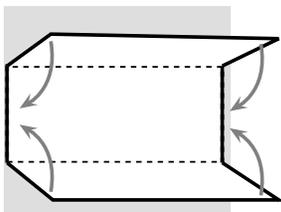
Cut the tissue paper into 28 cm X 28 cm squares before beginning the activity. One square is needed for each wind sock.

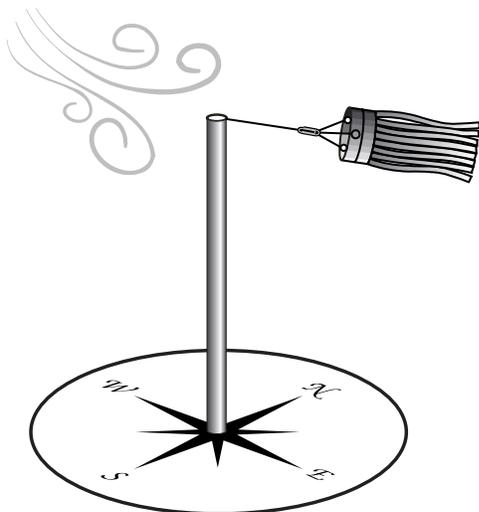
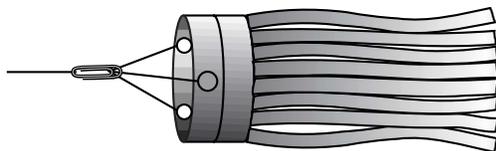
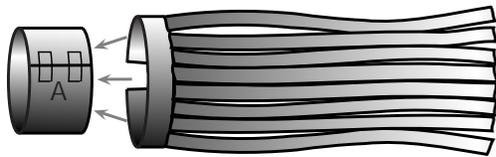
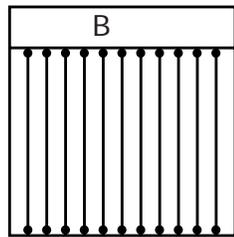
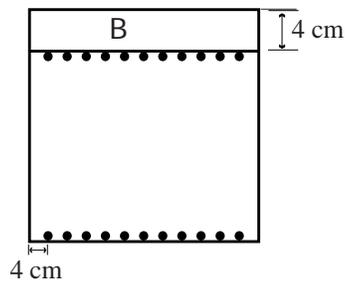
Management

The students will need approximately 1 hour to build a wind sock. It can take several days to monitor wind direction. For younger students, make one wind sock for the class and use it to record data on the student page.

Activity

1. Fold a piece of 8 1/2 X 11 inch paper lengthwise to make the border strip for the wind sock.
2. Form a loop from the strip and tape the ends of the paper together. Mark the outside edge with the letter A.





3. On the tissue paper use a marker to draw a line 4 cm from one edge and across the paper. Mark the 4 cm by 28 cm area with the letter B. (Illustrations shown not to scale.)
4. Beginning along one end of the line drawn in part 3 above, measure and mark a point 3 cm from the edge. Continue marking the edge with additional points each separated by a distance of 3 cm.
5. Repeat step 4 to mark points along the opposite end of the tissue paper.
6. Using the points, draw a series of lines on the tissue paper. With scissors, cut along these lines to make strips.
7. Glue edge B of tissue paper to edge A of the loop strip made in step 2. Allow time for the glue to dry.
8. Use a hole punch to punch three holes equal distance around the paper ring.
9. Cut 3 pieces of string 30 cm long. Tie one end of each string to the wind sock at each of the 3 holes.
10. Tie the 3 loose ends of the string to a single paper clip. Add an additional 30 cm length of string to the paper clip.
11. Test the wind sock by holding the single string in front of a fan.
12. Tape the wind sock to a wooden dowel and place outside to monitor wind direction and "speed" (refer to Student Page, the wind sock "speed" gauge determines the strength of the wind, but not actual speed). To help determine wind direction, use a compass to mark north, south, east, and west below the wind sock (with the dowel in the center).

Discussion

1. What does the wind sock do in the wind? *The wind sock aligns itself with the wind and the strips move toward a horizontal position.*
2. What are some ways wind socks can be used? *Pilots preparing for takeoff or landing observe wind socks to determine wind direction and speed, because they want to land and takeoff facing the wind to reduce the takeoff and landing distance. Meteorologists use wind socks to help forecast the weather. Some factories that must regulate the amount emissions they may put into the atmosphere use wind socks monitor wind conditions, wind speed and direction will have an effect upon the distance and direction the emissions will travel.*
3. Discuss how winds get their names (south, northeast, etc.). *They are named for the direction from which they blow. For example, a north wind blows from a northerly direction.*

Assessment

1. Place a fan on a table, then have students demonstrate wind direction using the wind sock.
2. Use the activities on the student pages to determine and record the strength of the wind: calm, a slight breeze, gentle breeze, moderate breeze, or strong breeze.

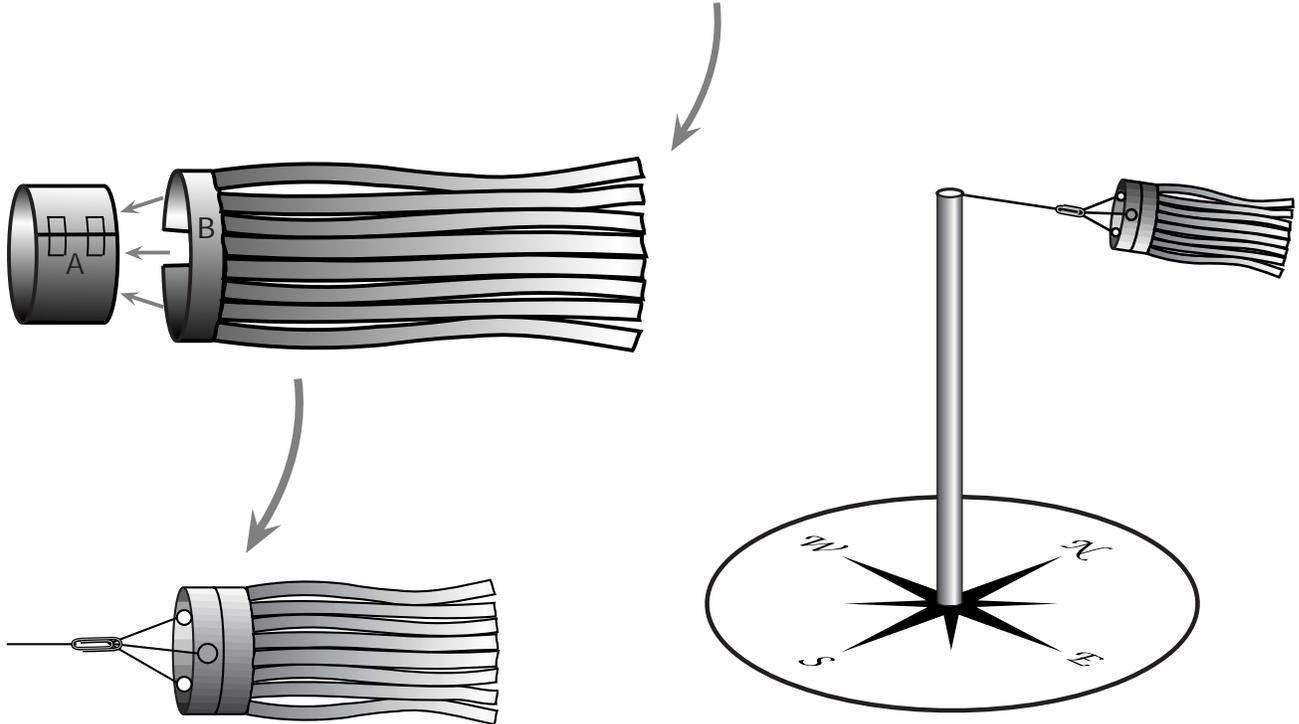
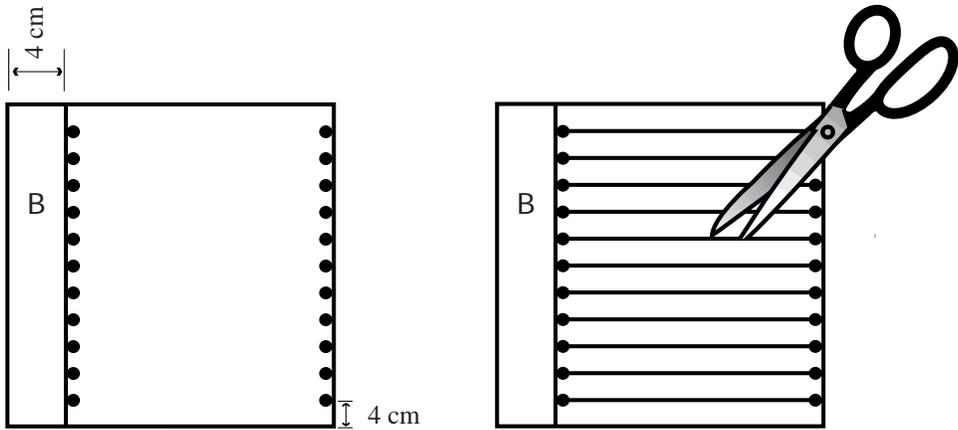
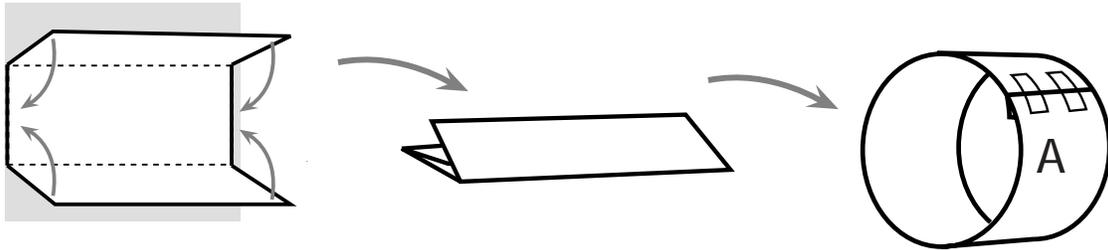
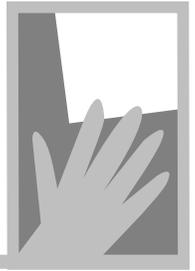
Extensions

1. Use garbage bags or nylon fabric instead of tissue paper to make a wind sock that is more weather resistant.
2. Use different colors of tissue paper to decorate wind socks
3. Make wind socks of different sizes.
4. Place a wind sock in the classroom in different positions and ask the students to determine if there is air circulation in the room, and from which direction.
5. Ask the students to write down information about the wind on a specific day and time. Repeat this activity for several days.
6. In the classroom, obstruct the airflow (using objects, or students) between the fan and the wind sock and observe how the wind sock responds. Discuss how objects in nature may change the flow of wind.
7. Put the wind sock at different distances from the fan throughout the classroom. Ask the students to observe the various ways the wind sock responds.



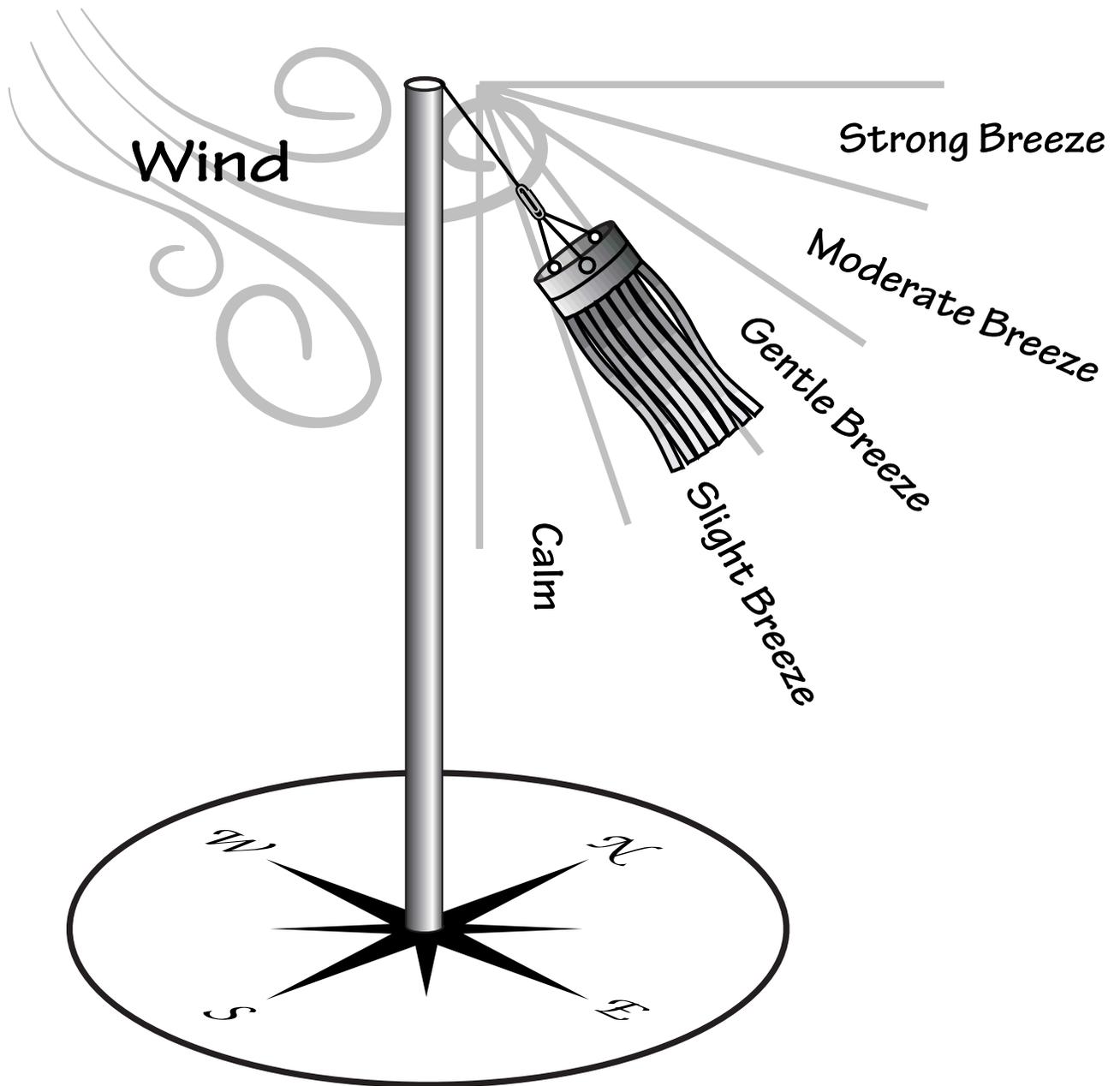
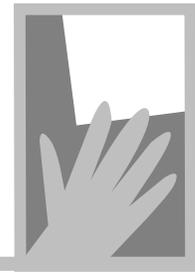


Wind in Your Socks



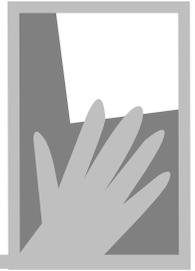


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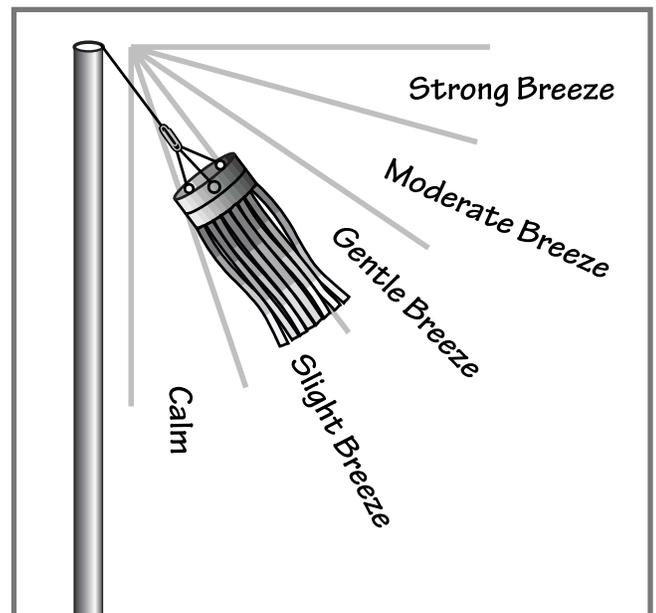
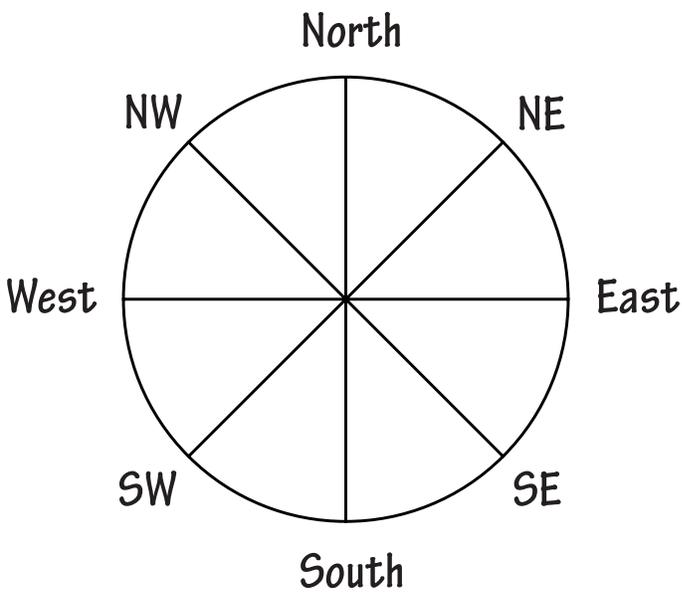




Wind in Your Socks



Using your wind sock, record the following information. Color the charts to show the correct wind strength and direction.



Day:

Time:

Weather:

How is the weather related to the wind strength and wind direction?

