Science Tools for Teachers

Which Way Does the Wind Blow?

A Science Museum of Virginia Activity

(Upper Elementary to Middle School Level)

Wind direction is one of the most important factors in understanding weather. Changes in the weather are carried by the wind. Winds are named after the direction from which they blow; for example, a wind blowing from the west, toward the east, is called a "west wind." Wind vanes, like the ones in this activity, are used to indicate wind direction.

(Time required: 20 minutes for construction, plus observation time)

Purpose: Students will learn how to construct a wind vane and understand how to use their wind vane to determine the direction of the wind.

1995 Virginia Science S.O.L.s: 3.1, 4.1, 4.6, 5.1, 6.1, 6.2, 6.3

Materials:

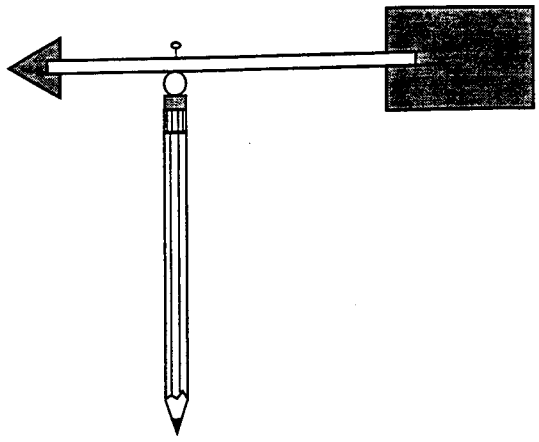
Per Person
- 1 straw
- 1 pair of scissors
- 1 pin
- 1 pencil (with eraser top)
- scotch tape
- 1 piece of tagboard or thin cardboard (10 cm x 10 cm)

Optional
- 1 small bead
- compass
- ruler
- paper
- pencil
- paper clips

Procedure:

1. To make the wind vane's tale, cut a rectangle approximately 7 cm by 6 cm out of the tagboard. The large size of the tail makes it easier for the wind's force to affect the vane. Next, cut a triangle in which all three sides are approximately 3 cm long (an equilateral triangle). This is the pointer.

2. Use the scissors to make a 1-cm slit in both ends of the straw. Insert the tagboard pieces — one on either end — and secure them with scotch tape.



3. Insert the pin through the straw approximately 8.5 cm from the base of the triangle and into the eraser end of the pencil. The location of the pin will depend on the weight of the tagboard; the straw should rotate easily around the pin and remain level, regardless of which way it points.

4. Place your wind vane in an open area well above the ground.

Optional Constructions:

1. Paper clips can be added to the pointer for balance.

2. A small bead between the eraser and the straw will lower the friction between them and allow the wind vane to turn more easily.

Observations:

Look at your wind vane. Which way does the arrow point?

From what direction is the wind coming?

Does the direction of the wind remain constant?

Does the arrow remain steady or does the arrow change direction from minute to minute?

Move the wind vane to a more sheltered location and answer the observation questions again.

Wind Vane Extensions

Materials:

compass
ruler
paper and pencil

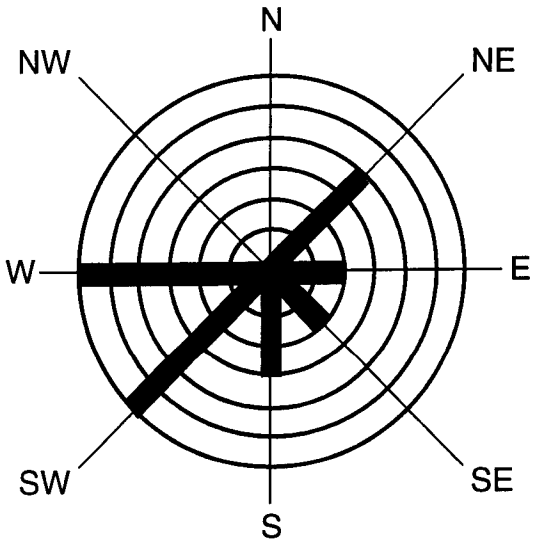
Make a Base:

You may want to make a base for the pencil. Mark N, S, W and E on the base so that once you orient the base, you can quickly and easily determine the direction the wind vane is pointing.

Make a Wind Rose:

A "wind rose" is useful for showing the direction from which the wind comes most frequently; this is called the "prevailing wind direction." Use a compass (or a computer drawing program) to draw six or more equally-spaced, concentric circles. Use a ruler to divide the circles into eight sections (as shown).

Determine the wind direction every day for about three weeks. Each day, draw a bar along the appropriate directional radial, counting one circle as one observation.



In the illustration, the wind blew from the west 6 times; from the southwest 6 times; from the south 3 times; and from the southeast and east 2 times; and from the northeast 4 times each (a total of 23 observations). The wind rose shows that in this case, west/southwest winds dominate. You could make several wind roses to determine how the wind pattern in your area changes throughout the year.