

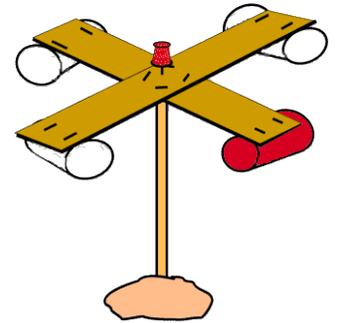
Measuring Wind Speed

*A lesson from the New Jersey Agricultural Society
Learning Through Gardening program*

OVERVIEW: How does wind impact your garden? You can see how fast the wind is blowing in your garden by making anemometer. An anemometer measures wind speed in miles per hour. Your homemade version will help you compare wind speeds, but not give you an actual measurement.

GRADES: 3-5

BACKGROUND Winds speeds are measured in miles per hour. Depending on the speed of the wind, different weather phenomena are created. The following chart illustrates the various speeds and the condition.



*Illustration courtesy
California Energy
Commission*

Beaufort Wind Scale

| Windspeed in MPH | Description - Visible Condition |
|------------------|---|
| 0 | Calm – smoke rises vertically |
| 1-4 | Light – air direction of wind shown by smoke but not by wind vanes |
| 4-7 | Light breeze felt on face – leaves rustle; ordinary wind vane moved by wind |
| 8-12 | Gentle breeze – leaves and small twigs in constant motion; wind extends light flag |
| 13-18 | Moderate breeze – raises dust and loose paper; small branches are moved |
| 19-24 | Fresh breeze – small trees in leaf begin to sway; crested wavelets form inland |
| 25-31 | Strong breeze – large branches in motion; telephone wires whistle; umbrellas used with difficulty |
| 32-38 | Moderate gale – whole trees in motion; inconvenience in walking against wind |
| 39-46 | Fresh gale – breaks twigs off trees; generally impedes progress |
| 47-54 | Strong gale – slight structural damage occurs; chimney pots and slates removed |
| 55-63 | Whole gale – trees uprooted; considerable structural damage occurs |
| 64-72 | Storm – very rarely experienced; accompanied by widespread damage |
| 73+ | Hurricane – devastation occurs |

Courtesy: www.disastercenter.com

MATERIALS:

| | | |
|---|---|---------------------|
| Scissors | 4 small paper cups | Dark colored marker |
| 2 strips of stiff, corrugated cardboard – the same length | Ruler | Stapler |
| Push pin | Sharpened pencil with eraser on the end | Modeling clay |
| Watch that shows seconds | | |

PROCEDURE:

1. Cut off the rolled edges of the paper cups to make them lighter.
2. Color the outside of one cup with the marker.
3. Cross the cardboard strips so they make a plus (+) sign. Staple them together.
4. Take the ruler and pencil and draw lines from the outside corners where the cardboard strips come together to the opposite corners. Where the pencil lines cross will be the exact middle.
5. Staple the cups to the ends of the cardboard strips making sure the cups all face the same direction.
6. Push the pin through the center of the cardboard (where the pencil lines cross) and attach the cardboard cross with the cups on it to the eraser point of the pencil. Blow on the cups to make sure the cardboard spins freely on the pin.
7. Place the modeling clay on a surface outside, such as the sidewalk, a porch railing, wooden fence rail, or a rock. Stick the sharpened end of the pencil into the clay so the anemometer stands straight.
8. Students can approximate the speed of the wind by counting how many revolutions take place in one minute. They can calculate this by counting how many times the colored cup goes around from its starting point. By doing this you will be measuring wind speed in revolutions, not miles per hour like an actual anemometer. Ten revolutions in one minute is equal to one mile per hour of wind speed.
9. Students should take their anemometers outside and measure the wind speed at various locations on the school grounds. You can compare wind speeds on different days, in different months, before or after a storm, etc. They should notice trends in areas that are blocked by trees or buildings, open fields, etc. Discuss how the wind speed may affect your garden. If you scatter dandelion seeds on a windy day compared to a calm day, what happens? How about the effect of the wind on small, fragile plants? Have your students record their observations in their garden journals.

EVALUATION:

Observation of students using anemometer. Recordings in science journals.

EXTENSION:

Have students investigate the way wind affects a farm or garden. For example, farmers look for dry, slightly breezy days to dry hay that has been harvested. Some seeds are spread by wind, including those of weeds. Some plants - grasses such as corn and wheat - are pollinated by the wind. Farmers cannot spray on windy days. Students could also report how wind can be both helpful and detrimental.

New Jersey Learning Standards

Science: 3:LS2.C, 3:LS4.C 4:ESS2.E 5:ESS2.A,C, 5:ESS3.C

