



Atmospheric Anemometer Experiment

Grade Level: 6-7

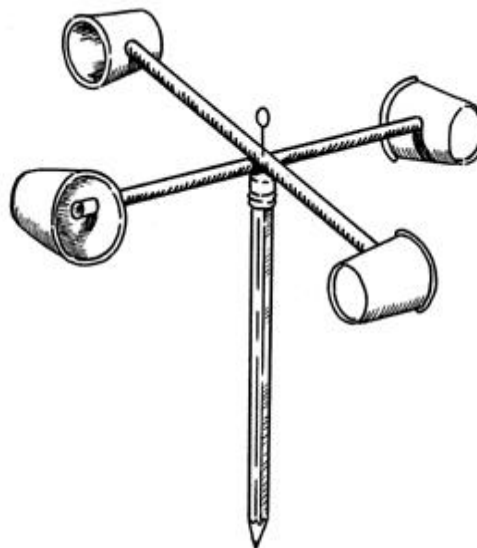
Objective: The objective of this experiment is to learn more about the function of our atmosphere and to create an anemometer that will aid in measuring wind speeds.

Introduction:

Monitoring wind speed and direction is important because our observations can aid in the predicament of weather patterns and global climate. In addition, knowing wind speed and direction can help scientists understand the distribution of certain pollinating plant species.

Materials and Equipment:

- ✦ pin
- ✦ stapler
- ✦ hole puncher
- ✦ 2 drinking straws
- ✦ sharpened pencil with an eraser
- ✦ scissors
- ✦ five 3 fl oz paper cups



Terms and Concepts to Start Defining:

- ✦ atmospheric pressure
- ✦ anemometer
- ✦ humidity
- ✦ wind speed

Research Questions:

- ✦ Will this anemometer work if the wind is blowing only from one direction?
- ✦ What does RPM stand for?
- ✦ Why is it important to monitor wind direction?
- ✦ How does this experiment related to NevCAN research sites?

Experimental Procedure:

Part 1:

- ✦ Take four of the paper cups and use the paper punch to punch one hole in each, about a half inch below the rim.
- ✦ Take the fifth cup and punch four equally spaced holes about a quarter inch below the rim. Then punch a hole in the center of the bottom of the cup.

- ⤴ Take one of the four cups and push a soda straw through the hole. Fold the end of the straw and staple it to the side of the cup across from the hole. Repeat this procedure for another one-hole cup and the second straw.
- ⤴ Slide one cup and straw assembly through two opposite holes in the cup with four holes. Push another one-hole cup onto the end of the straw just pushed through the four-hole cup.
- ⤴ Bend the straw and staple it to the one-hole cup, making certain that the cup faces the opposite direction from the first cup. Repeat this procedure using the other cup and straw assembly and the remaining one-hole cup.
- ⤴ Align the four cups so that their open ends face in the same direction either clockwise or counter-clockwise around the center cup.
- ⤴ Push the straight pin through the two straws where they intersect.
- ⤴ Push the eraser end of the pencil through the bottom hole in the center cup. Push the pin into the end of the pencil eraser as far as it will go.
- ⤴ Now your anemometer is ready to be tested outside.

Part 2:

An anemometer is useful because it rotates with the wind. To calculate the velocity at which your anemometer spins, determine the number of revolutions per minute (RPM). Next, calculate the circumference (in feet) of the circle made by the rotating paper cups. Multiply your RPM value by the circumference of the circle and you will have an approximation of the velocity at which your anemometer spins (in feet per minute). Your anemometer doesn't need to be pointed in the wind for use.

Note: Forces like drag and friction are being ignored for this elementary illustration, so the velocity at which your anemometer spins may not be the same as wind speed.