

Build an Anemometer

Questions

- How can an anemometer be used to calculate wind speed?
- How can its design be improved to be more reliable for measuring wind speed?

Materials

- 1 Pencil
- 5 Snow cone cups
- 2 Extra-long straws
- Masking tape
- Hole punch
- Scissors
- 1 Straight pin
- Marker
- Stopwatch or timer
- Ruler

Procedure

- Cut the end off one cup to make a hole large enough for the pencil to fit in. Use the hole punch to make four holes in the top of the cup: two holes opposite each other very near the rim and two holes on opposite sides about a half-centimeter below the first holes, as shown in Diagram 1.
- Slide the straws through the holes in the cup, as shown in Diagram 1.
- Color one cup so that you can count the revolutions of the anemometer.
- Use the hole punch to make two opposite holes in the other cups about 1 centimeter from the rim. Slide one cup onto the end of each straw, making sure the cups face in the same direction. Tape the cups to the straws.
- Center the straws in the base cup. Slide the base cup over the pencil as shown in Diagram 2 and push the pin through the middle of both straws and into the pencil eraser as far as you can to anchor the apparatus. Lift the straws slightly away from the eraser on the pin so that the apparatus spins easily. You might need to stretch the pin holes in the straws by pulling gently on the straws while holding the pin in place.
- Take your anemometer outside and measure the speed of the wind in several areas around the school by counting the number of revolutions in 10 seconds and using the chart to determine miles per hour (mph). Record the time at which each measurement is taken. Compare your results with those of other students in the class.

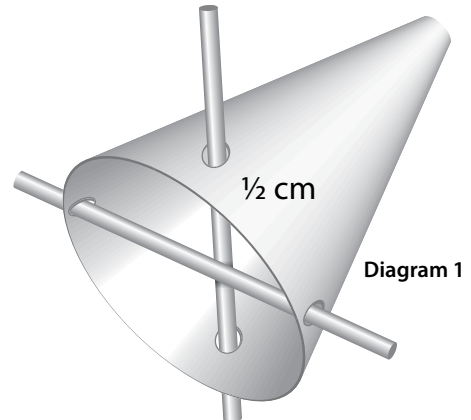


Diagram 1

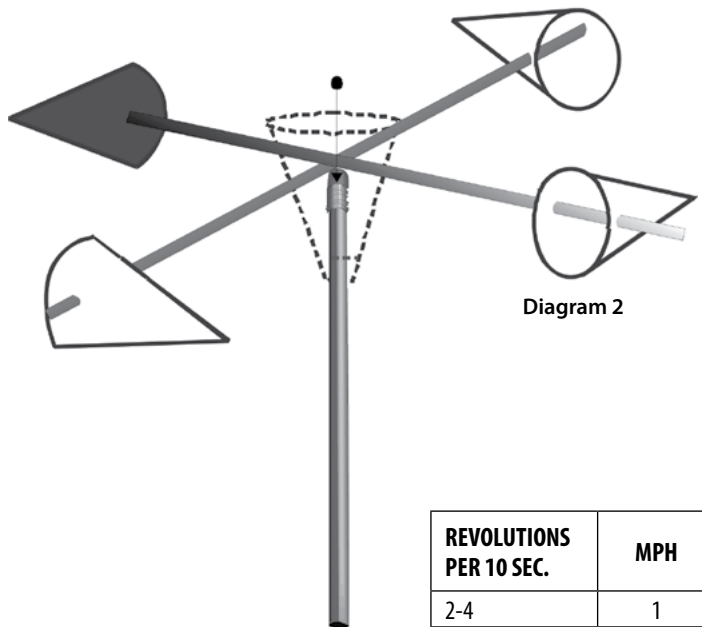


Diagram 2

| REVOLUTIONS PER 10 SEC. | MPH |
|----------------------------|-----|
| 2-4 | 1 |
| 5-7 | 2 |
| 8-9 | 3 |
| 10-12 | 4 |
| 13-15 | 5 |
| 16-18 | 6 |
| 19-21 | 7 |
| 22-23 | 8 |
| 24-26 | 9 |
| 27-29 | 10 |
| 30-32 | 11 |
| 33-35 | 12 |
| 36-37 | 13 |
| 38-40 | 14 |
| 41-43 | 15 |
| 44-46 | 16 |
| 47-49 | 17 |
| 50-51 | 18 |
| 52-54 | 19 |
| 55-57 | 20 |

** Conclusion

- How did your data compare to that of your class? Why might classmates have differing results?
- How could you change the design of your anemometer to make it more reliable?