



4-H Grab and Go: *Design and Build a Wind Vane*

Concept:

A wind vane shows wind direction.

Age Level:

Upper Elementary and Middle School: Grades 4-8

Education Standard:

NSES: Physical Science, Science and Technology

SET Ability:

Design and Build, Observe, Compare

Life Skill:

Problem solving, Critical thinking

Success Indicator:

Youth will be able to design and build a wind vane and use it to show wind direction.

National 4-H Curriculum:

The Power of the Wind
(www.4-H.org/curriculum/wind)

Background Information:

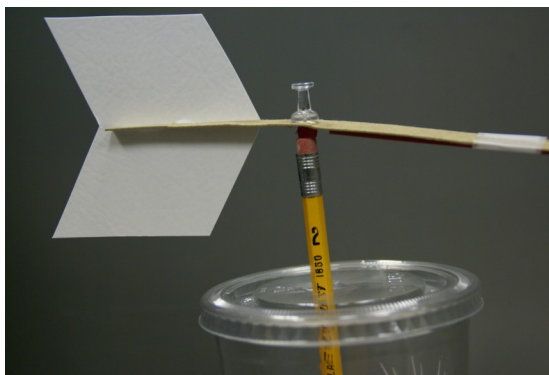
A wind vane, or weather vane, is used to determine wind direction and it may be one of the oldest weather tools. The most common wind vane is an arrow shape that rotates on an axis and points into the wind. Wind vanes are often seen on tops of buildings where the wind is not blocked. Some wind vanes also designate the directions of the compass.



This is a common wind vane shape, but there are also decorative wind vanes shaped like roosters, eagles, and many other shapes.

Instructions :

1. Use your imagination to design the arrow shape of the wind vane. This portion needs to balance on the pencil eraser, which is the axis of the wind vane, and also be designed so that the area of the pointer is small compared to the area of the fin. The wind pushes against the larger area and the pointer then points into the wind.



2. Use a push pin to attach the wind vane to the eraser of an unsharpened pencil. Be sure the wind vane can spin freely.

3. Build a base.

PREPARATION

Time: 5 minutes

Space: Tables

Materials:

- Cardboard
- A plastic cup with a straw slot lid for each project
- Paper plates
- Scissors
- Marking pens
- Compass
- Push pins
- Rulers
- Unsharpened pencils
- Small pebbles for weight

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Design and Build a Wind Vane

YOUTH DEVELOPMENT TIPS

Encourage youth to be creative with their wind vane designs (the arrow and fin). Talk about why certain designs might be better than others.

QUESTIONS

- What materials are used for wind vanes that you may see on the tops of buildings?
- How are these wind vanes like the wind vane you designed and built?
- Why is it useful to know the direction of the wind?

LEARN MORE

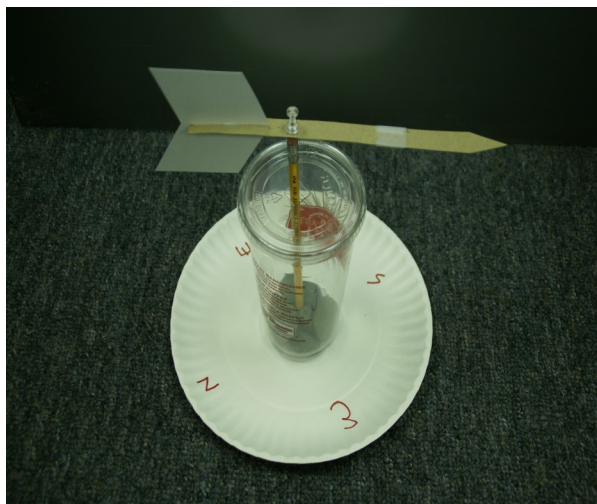
- Make a Weather Station with help from The Miami Museum of Science <http://www.miamisci.org/hurricane/weatherstation.html>.
- Find photos of various shapes of wind vanes.
- Consult your local library or county historical archives for photos or information about wind vanes in your community.

(a) Put several small pebbles or marbles into a plastic cup that has a lid with a straw slot.

(b) Write bearings on a paper plate: N, S, E, W.

(c) Glue the plastic cup at the center of the paper plate.

4. Insert the pencil with wind vane into the straw slot of the lid so the pebbles hold it vertical.



5. Use a fan to test the wind vane. The wind should blow against the larger area so that the pointer points into the wind. Make adjustments and test again. Be sure the wind vane is balanced. If the wind vane doesn't spin well, you may want to insert a tiny bead or spacer between the push pen and the eraser of the pencil.
6. Use your wind vane outdoors. Modify the wind vane for better performance. Think creatively and make it work better.
7. Use a compass to match the bearings from the paper plate in order to determine a direction of wind.

Extend

- Explain how your wind vane works.
- Try various other materials to make the wind vane such as plastic board or heavy foil. What differences do you notice? Which materials are the best for your wind vane?

