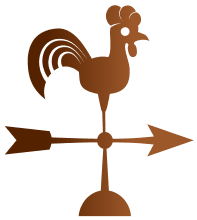
WHIMSICAL WIND VANE

A personable wind vane with its beak to the wind



Build a simple, playful wind vane which will point to the source of the wind!

Curriculum topics:

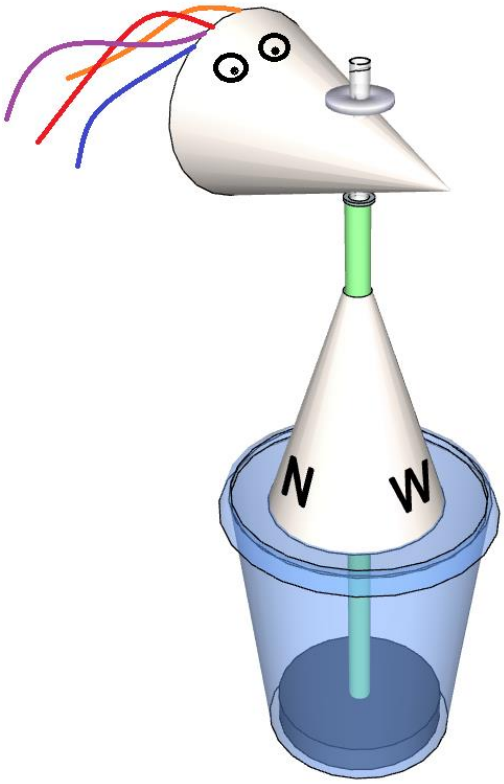
- Wind
- Weather & Climate
- Forces & Motion
- Interacting Earth Systems

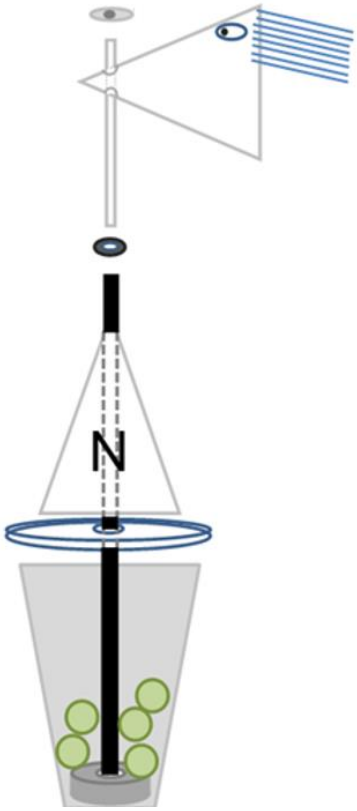
Subjects:

- Physical Science
- Earth & Space Science

Grade range: 1 – 8

Who we are: Resource Area for Teaching **(**RAFT) helps transform the learning experience by inspiring joy through hands-on learning





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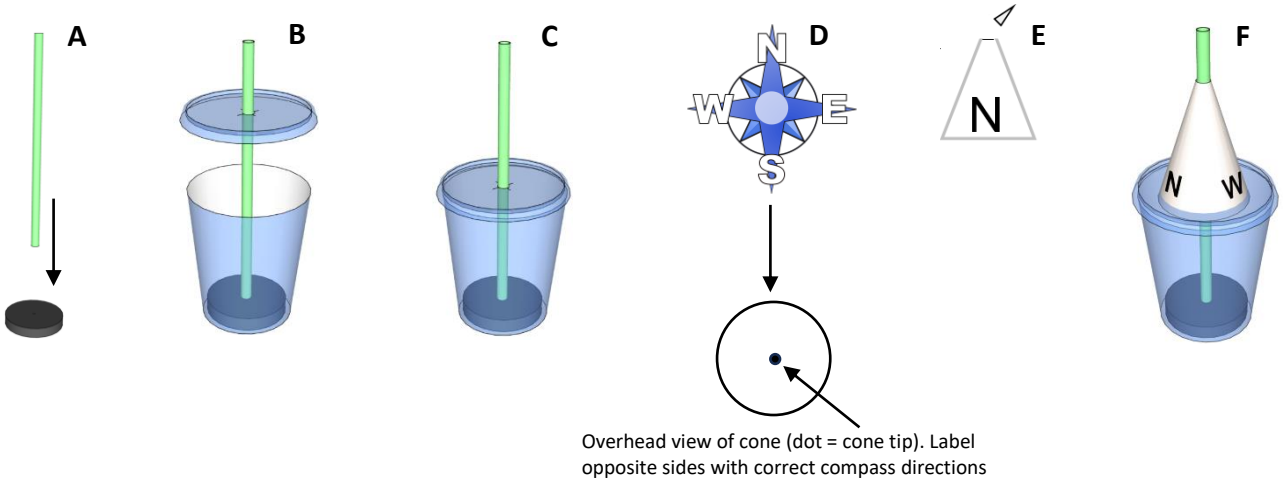
Materials

Materials in the kit may vary but generally, this kit contains the following:

- Paper cone cup, 4 oz, w/ hole near tip (1)
- Paper cone cup, 4 oz, no hole (1)
- Jumbo, narrow straw section, 4” long (1)
- Wide straw, 8” long (1)
- Metal washer, M6, 12mm OD, 7mm ID (1)
- Cup & lid with a straw slit (1)
- Foam washer with center hole (1)
- Foam disc with center hole (1)
- **Optional:** Small weights, paper streamer, adhesive labels, googly eyes
- **Not included:** Marker, scissors, weights, glue

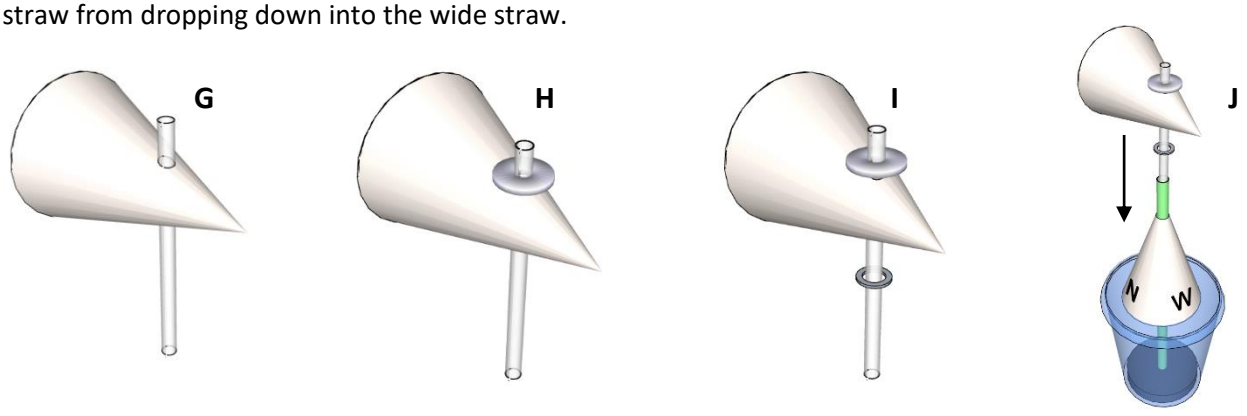
To Do and Notice

1 **Assembly (Lower Portion):** Insert one end of the wide straw into the hole in the foam disc (see **A** below). Stand the foam disc and wide straw in the plastic cup. Poke the wide straw through the lid, add weights such as marbles or rocks to the cup (optional), and attach the lid to the cup (**B** and **C**). Use a marker to write compass directions (N, E, S, W) correctly on the sides of the paper cone without the hole (**D**). Clip off the point of the paper cone cup (**E**). Slide the labeled cone onto the wide straw (**F**).



Overhead view of cone (dot = cone tip). Label opposite sides with correct compass directions

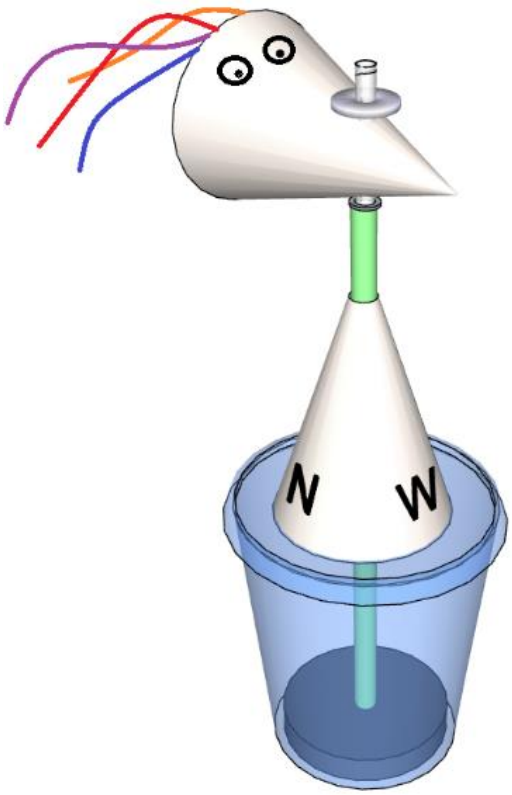
2 **Assembly (Upper Portion):** Insert the narrow straw section through the holes in the remaining paper cone cup (**G**). Slip the foam washer over one end of the narrow straw, closer to the end (**H**). Slip the metal washer over the opposite end of the narrow straw (**I**). Insert the metal washer end of the narrow straw into the wide straw in the lower portion previously assembled in step 1 above (**J**). The metal washer should allow the mounted cone to swivel freely. The foam washer on top should prevent the narrow straw from dropping down into the wide straw.

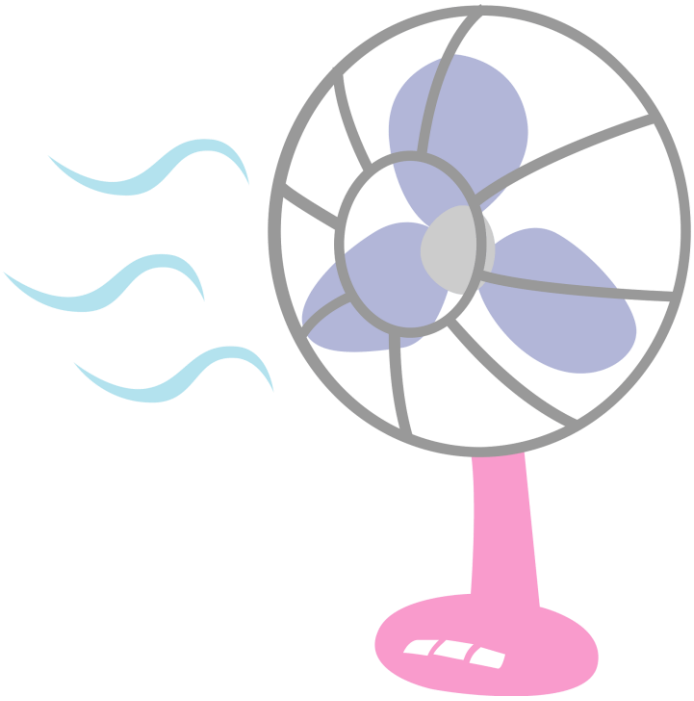


3 **Add Whimsy! (Optional):** Draw or glue a pair of googly eyes on the top side of the mounted paper cone, making it look like a head with a pointy snout (see title page). Cut a piece of paper streamer to the desired length. Cut the length into several thin strips. Use glue, tape, or adhesive labels to attach the strips ("hair") to the cone head. Yarn or string (not included) can also be used as hair (see below).

4 **Investigate:** (TEACHER NOTE) This activity works best outside on a day without rain and with mild to medium wind, away from buildings and trees. An electric fan can be a source of wind indoors. Students can also walk/run to simulate blowing wind. Students will need to know where the north is and then orient the cone labeled with compass directions accordingly. Otherwise, they will not be able to determine wind direction. Students should record (write and/or draw) the directions from which wind is blowing at several regular time intervals to practice scientific investigation. Provide or have them make journals/lab notebooks for data collection and reflection.

5 (STUDENT PROCEDURE) Blow toward the wind vane. Watch how it turns. Does the wind vane point towards you (does it appear to look at you)? Put the wind vane down on a table or the ground outside. Orient the cone with compass directions so the "N" points towards the north. Does it point away or towards the source of the wind, based on your observations? Record the wind's direction at regular time intervals. What patterns, if any, do you notice in the data?





Core Content Skills:

Science & Engineering (NGSS)

Developing and Using Models, Planning and Conducting Investigations, Generating and Comparing Design Solutions, Properties of Matter, Forces and Motion, Weather & Climate, Interactions Between Earth Spheres, Earth Systems, Cause and Effect

Social Emotional Learning

- Self-awareness
- Self-management
- Responsible decision-making

The Content behind the Activity

On the Earth, wind is caused by the uneven warming of the water and land by sunlight. Rocks and sand warm up much more quickly than water when exposed to sunlight. The land and water, in turn, heat the air above. When a volume of gas is heated the gas expands and become less dense. When cooled, gas will contract and become denser. Gravity will cause denser air to sink down which in turns pushes up less dense air. The resulting air movements cause wind.

A **wind vane** is a device that points in the direction from which the wind is blowing (that is, towards the source of the wind). For the wind vane to point correctly, the part of the wind vane in front of the pivot point must be much smaller than the rear part. The larger section will have more wind resistance than the narrower front. Below are some artistic examples of wind vanes.

Reuse

This kit uses 100% reusable materials designed for other uses. To continue making a positive impact in reducing waste, reuse these materials in other projects. Additionally, any unused materials can be collected and delivered back to RAFT.

Feedback

Please comment on this kit by taking this short survey: http://bit.ly/RAFTkitsurvey. Let us know of any material concerns (missing, broken, or poorly fitting parts) as well as any suggestions for improvement.

Visit https://raft.net to view related activities!

As the Clouds Go Bye
Thar She Blows
Interactions Between Earth's Spheres
Wind-O-Meter

Resources

- Reading a weather vane (video, 1:05 - https://bit.ly/3bRxDxS
- Weather-related student research - https://bit.ly/35lNHFv