raft resource area for teaching
www.raft.net

Curriculum topics:

- Wind
- Weather
- Fluids
- Atmosphere

Subjects:

Physical Science, Earth/Space Science

Grade range: 1 – 8

Who we are:

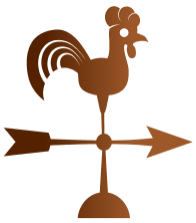
Resource Area for Teaching (RAFT) helps educators transform the learning experience through affordable "hands-on" activities that engage students and inspire the joy and discovery of learning.

For more ideas and to see RAFT Locations

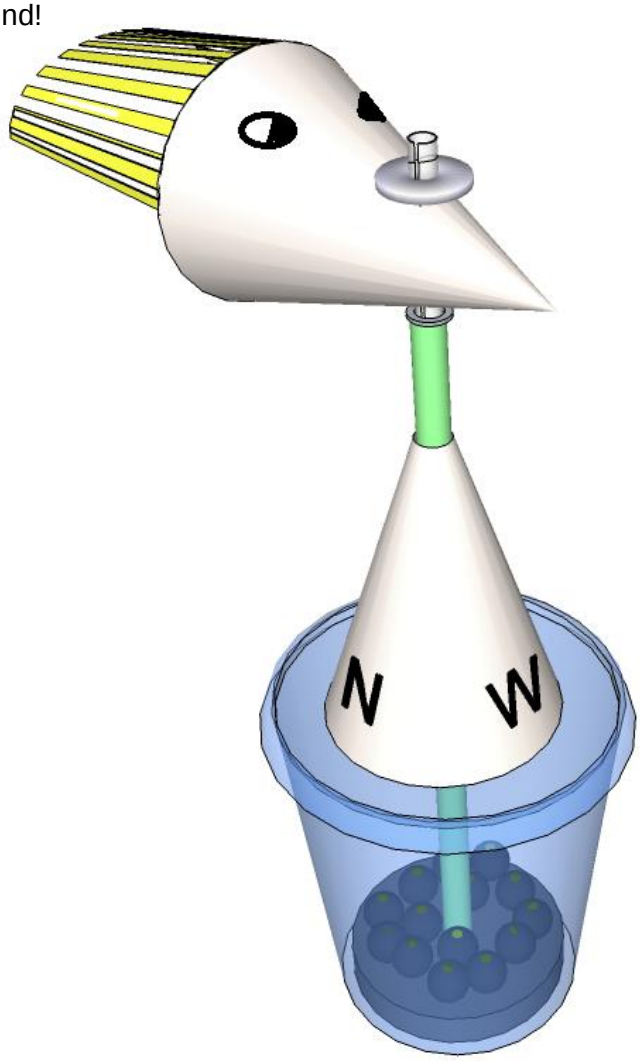
www.raft.net/visit-raft-locations

WHIMSICAL WIND VANE

A personable wind vane with its beak to the wind



Create a playful, easy to make wind vane which will point to the source of the wind!



http://www.raft.net/raft-idea?isid=683

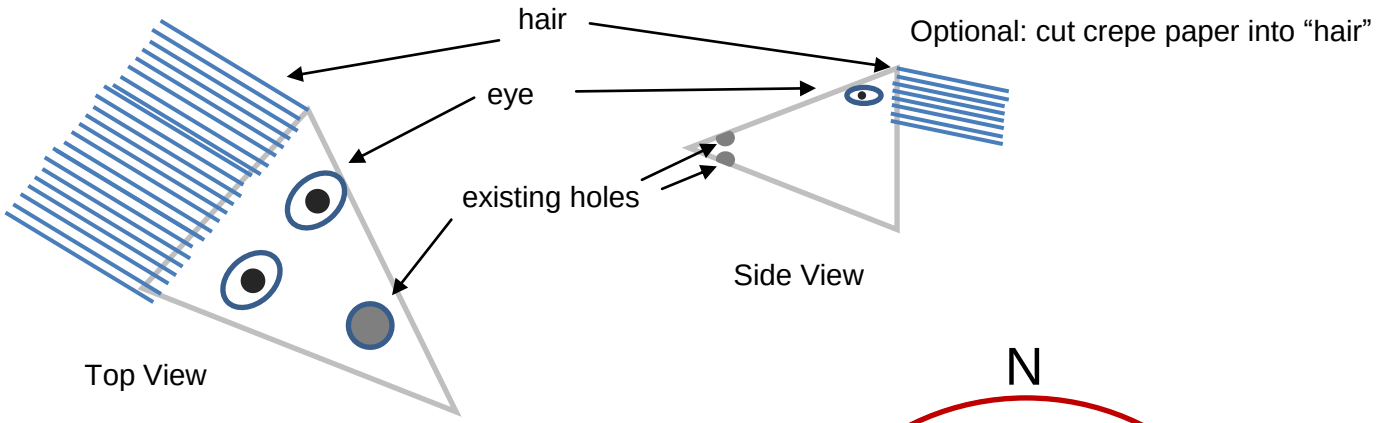
Materials required

Per Wind Vane

- Paper Cup, cone shaped ~120 ml (4 oz) size, with a ~6.4 mm (¼") hole punched ~2.5 – 3 cm (1" to1.25") from the tip
- Paper Cup, cone shaped ~120 ml (4 oz) size
- Straw, jumbo, a section ~10 cm (4") long
- Straw, wide, ~20 cm (8") long, with a diameter larger than the jumbo straw
- Washer, metal (M6) – [outer diameter ~12 mm, inner diameter ~6 mm]
- Cup with a fitted lid which has a straw slit, ~360ml (12 oz) size works well
- Foam washer, thin with center hole, ~ 2.5 cm (1") in diameter & ~3.2 mm (1/8") thick
- Foam cylinder with center hole, ~ 6 cm (2 3/8") in diameter
- Optional: Weights (e.g., marbles, pebbles, or sand)
- Optional: Crepe paper streamer
- Optional: Adhesive label or tape
- Optional: Googly eyes, adhesive
- Marker

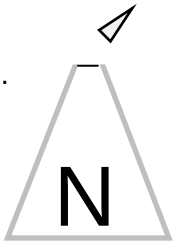
How to build it

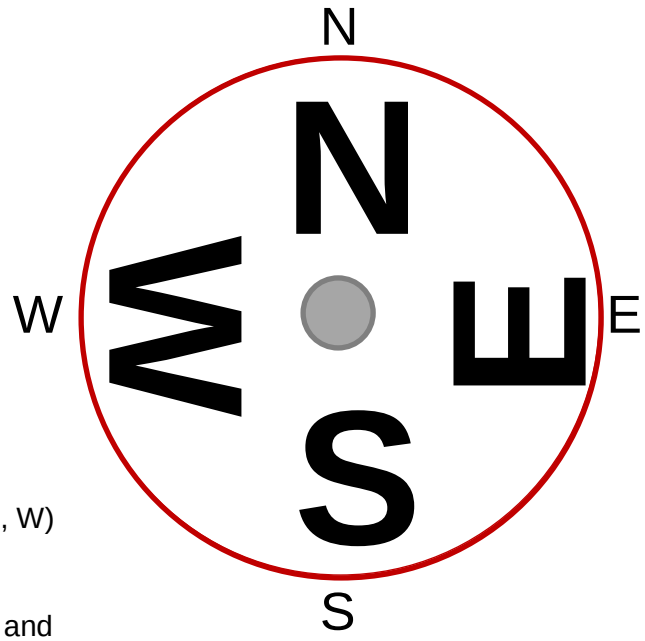
1 **Decorate cone head**. Add a face (to the paper cone with hole) to make the wind vane whimsical!



2 **Label and trim directional cone**.

Clip point off the **other** cone.

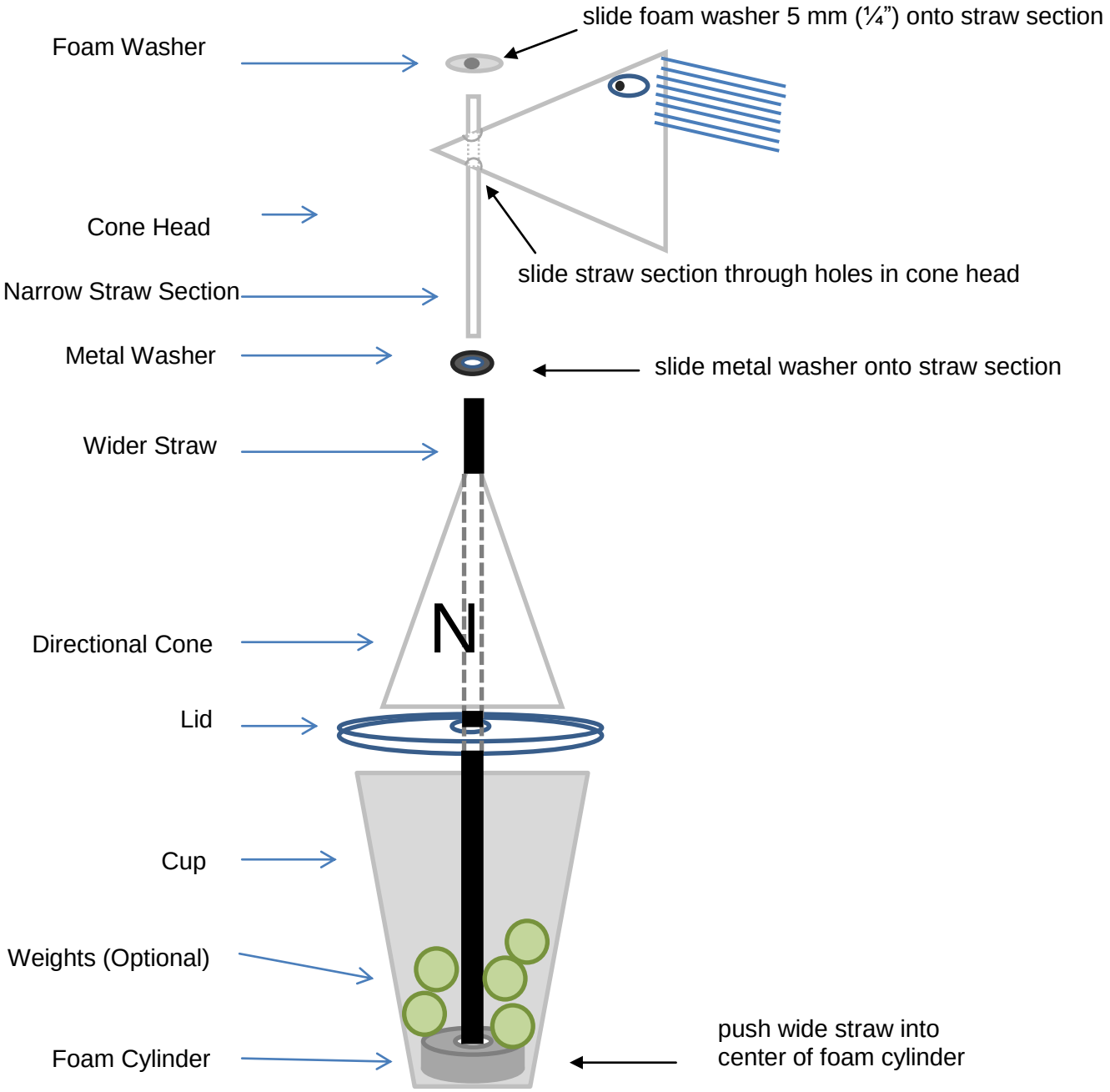




Use a marker to write compass directions (N, E, S, W) on the four quadrants of the cone.

(Teaching tip: Place cone on the circle to the right and use as a template for the placement of the directions. Teachers may want to make a sample cone for students to use as a guide.)

3 Slide cone head and washers onto straw section. Assemble remaining components of Wind Vane.



To do and notice

1 Blow toward the wind vane. Does the vane point toward the source of the "wind"?

2 Use the wind vane outside. Choose a location away from buildings, trees.

3 Orient the compass rose correctly by using a directional compass to find North.

4 Record the wind's direction at regular time intervals.

Curriculum Standards:

Forces & Motion (Next Generation Science Standards: Grade 3, Physical Science, 2-1)

Weather conditions (Next Generation Science Standards: Grade 3, Earth and Space Science, 2-1)

Wind (Next Generation Science Standards: Middle School, Earth and Space Science 2-5)

Science & Engineering Practices (Next Generation Science Standards: Grades 1-8)

Additional standards at: http://www.raft.net/raft-idea?isid=683

The science 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. A gas, when cooled, will contract and become more dense. 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.

Learn more

- Keep a weather journal over several weeks or months and graph the data.
- Measure the wind speed with an anemometer, see RAFT Idea Sheet ***Catching the Wind***.

Related activities: See RAFT Idea Sheets:

As the Clouds go Bye -
http://www.raft.net/ideas/As the Clouds go Bye.pdf

Better Wind Vane -
http://www.raft.net/ideas/Better Wind Vane.pdf

Catching the Wind –
http://www.raft.net/ideas/Catching the Wind.pdf

Everybody Talks about It… -
http://www.raft.net/ideas/Everybody Talks about It.pdf

Thar She Blows -
http://www.raft.net/ideas/Thar She Blows.pdf

Resources

Visit www.raft.net/raft-idea?isid=683 for “how-to” video demos & more ideas!

See these websites for more information on the following topics:

- **Student oriented wind information** - http://www.weatherwizkids.com/wind1.htm
- **Global wind patterns and an activity** - http://kids.earth.nasa.gov/archive/nino/global.html
- **Information on weathervanes** - http://en.wikipedia.org/wiki/Weather_vane
- **For general information on wind** - http://en.wikipedia.org/wiki/Wind