WIND ENERGY ~ LIFTING A LOAD
UC IRVINE CENTER
ELEMENTARY MESA DAY 2010

GRADE LEVEL: 3RD – 5TH GRADE
TYPE OF COMPETITION: TEAM (ON SITE)
COMPISITION OF TEAM: 1 - 3 STUDENTS
MAXIMUM NUMBER OF ENTRIES: 3 Teams per Advisor

Overview: To design and construct a device which will use wind energy to lift a load. The device which lifts the load the fastest is the winner.

Materials:
- One square pinwheel template (on cardstock)
- One triangular pinwheel template (on cardstock)
- 1 pencil (unsharpened with eraser intact)
- 10 standard paper clips
- 2 medium binder clips
- 1 straight pin or push pin
- 1 3 oz Dixie cup
- 4 ft length of thread/string
- 3 ft length of masking tape
- 4 index cards
- 1 pair scissors

RULES OF CONSTRUCTION:
1. Students will have 30 minutes to build a pinwheel which will use wind energy (standard box fan) to lift a load of 6 standard paper clips in a small Dixie cup 12 inches off the ground.
2. Windmill devices must be constructed using only the materials above. Not all of the materials must be used. Materials will be provided by the host center.
3. Windmill devices must be built entirely by the participating students. Advisors, parents, or chaperones will not be allowed in the room with the students during construction of the device.

JUDGING:
1. See Figure 1 for competition area set up.
2. The device shall be placed within the device testing area. The device testing area shall be 9” x 9”.
3. The device may extend over the tables edge.
4. The device may be secured to the table.
5. At the start of competition the Dixie cup must be in contact with the ground.
6. The device will be powered solely by a standard box fan set to HIGH. The fan shall be placed 18” from the edge of the table.
7. Each team is allowed two nonconsecutive runs.
8. Each team will be given 1 minute to transport and secure their device to the testing area.
9. Time will start once the fan is turned on.
10. Time will stop once the bottom of the Dixie cup has reached the designated height.
11. Time is judged to the nearest hundredth.
Figure 1:
1. Cut out the pinwheel.
2. Cut the lines from the corners to the center circle.
3. Curl the dots at the corners to line up with the dot in the center circle.
4. Push the pin through all five dots and into the eraser of a pencil.
5. Blow straight into the front of the pinwheel and see it turn.
1. Cut out the pinwheel.
2. Cut the lines from the corners to the center circle.
3. Curl the dots at the corners to line up with the dot in the center circle.
4. Push the pin through all five dots and into the eraser of a pencil.
5. Blow straight into the front of the pinwheel and see it turn.
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