

Windmills



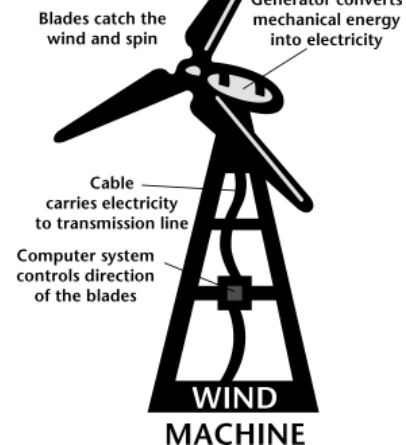
What Do I Need?

- windmill template
- scissors
- straw
- paper cup
- pennies
- pencil
- single hole punch
- rubber bands
- string
- skewer

What Do I Do?

1. Cut out the windmill template.
2. Use a pencil to poke a hole through the center circle and insert a straw through the center hole.
3. Use a hole punch to punch a hole through the corner circles. Fold each corner along the dotted line and insert the straw through each corner hole.
4. Slide the windmill to the center of the straw and wrap a rubber band around the straw on each side to keep the windmill in place. Set aside the windmill for now.
5. Cut one foot of string. Punch two holes on either side of a small paper cup and thread one end of the string through both holes and tie it to the middle of the string. Wrap the other end of the string around the straw twice before tying it to the straw.
6. Slide a skewer through the straw and hold the skewer with both hands and blow on the windmill. As the windmill turns, the straw should rotate, winding the string and lifting the cup.
7. Place some pennies in the cup and try to lift them using your windmill. How many pennies can you lift?

HORIZONTAL

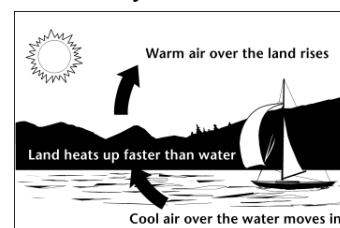


source: <http://tonto.eia.doe.gov/kids>

What's Going On?

Wind is air in motion. It is caused by the uneven heating of Earth's surface by the sun. The different types of land and water that make up Earth's surface absorb the sun's heat at different rates. Land heats up faster than water. When warm air over the land rises, cool air over the water rushes in to take its place. At night, the winds are reversed because the air cools more rapidly over land than over water.

Like old-fashioned windmills, today's wind machines use blades to collect the wind's kinetic energy. Windmills work because they slow down the speed of the wind. The wind flows over the airfoil-shaped blades, creating lift and causing them to turn. These blades are connected to a drive shaft that turns an electric generator to produce electricity.



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Windmill Template

