

## TOOLKIT:

- One thick drinking straw, 7 inches long
- One wood dowel, diameter: 1/4 inch; length: 10 inches
- Drill and drill bit
- Sewing thread
- One 12 x 12-inch sheet of paper
- One cork
- Two wooden blocks, 2 x 2 x 2 inches
- Two washers, 1/4 inch in diameter
- One push pin
- One paper clip
- Wood glue
- Ruler
- Pencil
- Scissors

## Make the axle:

Step 1: Have an adult drill a hole through both wooden blocks. The holes should be the same size as the wood dowel so that it fits snugly. Set one block aside to use in Step 6

Step 2: Glue one wooden block to one end of the wood dowel. Let dry, then stand up, block side down.

Step 3: Place one washer over the end of the wood dowel and slide it down to the wooden block.

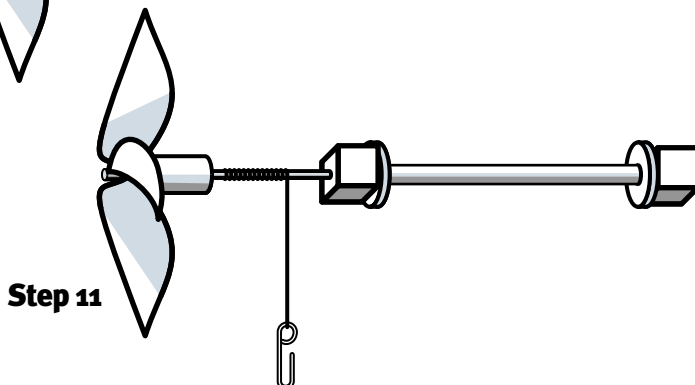
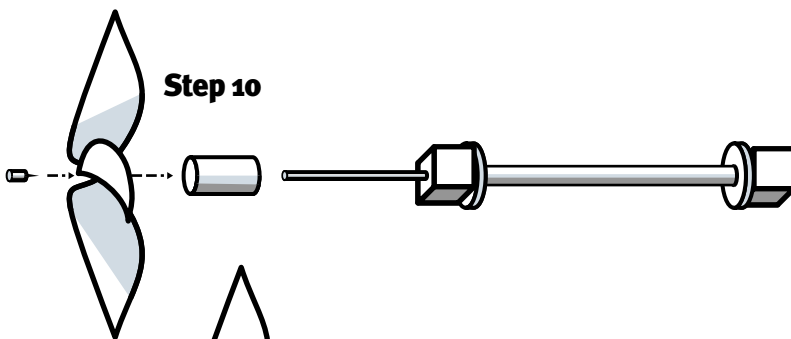
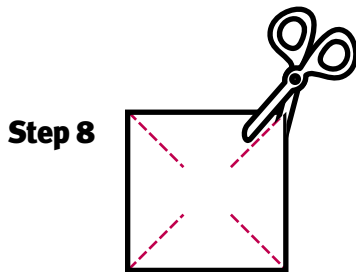
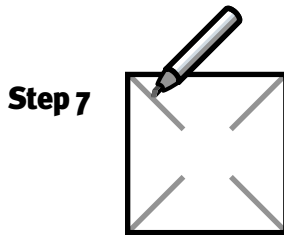
Step 4: Place drinking straw over the end of the wood dowel and slide it down to the washer.

Step 5: Place the second washer over the end of the wood dowel and slide just to the top of the straw.

Step 6: Slide the second wooden block to the second washer.

# how to build a turbine

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## Make the rotor:

Step 7: Take a 12 x 12-inch sheet of paper. Align a ruler from one corner to its opposite corner. With a pencil, draw a four-inch line from each corner toward the center. Repeat with the other two corners.

Step 8: With a pair of scissors, cut from the corner along the four-inch line toward the center.

Step 9: Bring corner A to the center and glue. You may have to press securely for a few minutes. Repeat with corners B, C and D.

## Attach rotor to axle:

Step 10: Have an adult drill a hole about a half-inch into one end of the cork. Affix the rotor to the other end of the cork with a pushpin and some glue. Hold for a few minutes.

Put some glue in the hole in the cork and insert the wood dowel. Hold for a few minutes.

Step 11: Tie one end of a 3-foot length of sewing thread to the wood dowel anywhere between the washer and the cork.

Bend a paper clip into the shape of a hook and tie it to the other end of the sewing thread.

Lightly hold the straw and face the turbine at arms length toward the wind. Hook up a lightweight object, such as a plastic toy, and watch how the power of the wind turns the rotor and lifts it up!

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