

# On the move

Can you imagine what it would be like without cars or trains, boats, or planes? It would take a long time to get anywhere using just the power of your legs. Without energy none of these things would exist. We use the stored energy of fuels and batteries to power our everyday means of transportation. Even sailboats use the energy of the wind to push them along. So you see, energy really is on the move.



## Discover how wind can power a racer

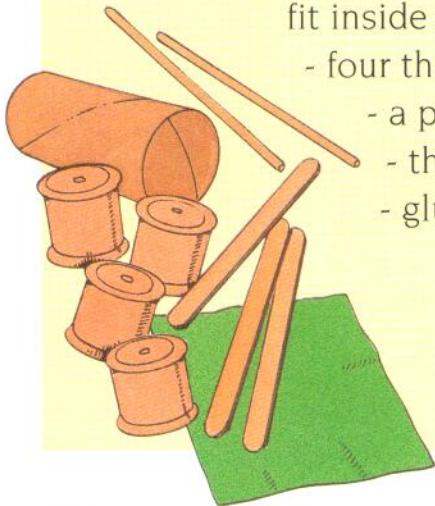


### METHOD NOTES

If you can't find doweling, try thin plastic straws instead.

### Materials

- a cardboard tube
- a sharp pencil
- two lengths of doweling (to fit inside a thread spool)
- four thread spools
- a paper napkin
- three popsicle sticks
- glue

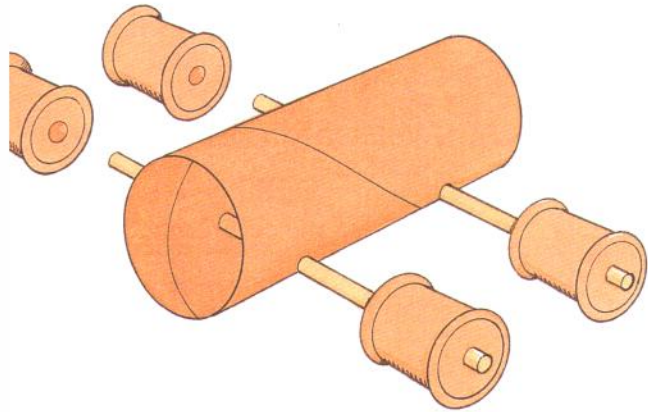


1. Using the point of a pencil, make two holes that go from one side of the cardboard tube through to the other. Make the holes at either end of the tube and position them just below the halfway point (see Figure 1).



Figure 1

**Figure 2**



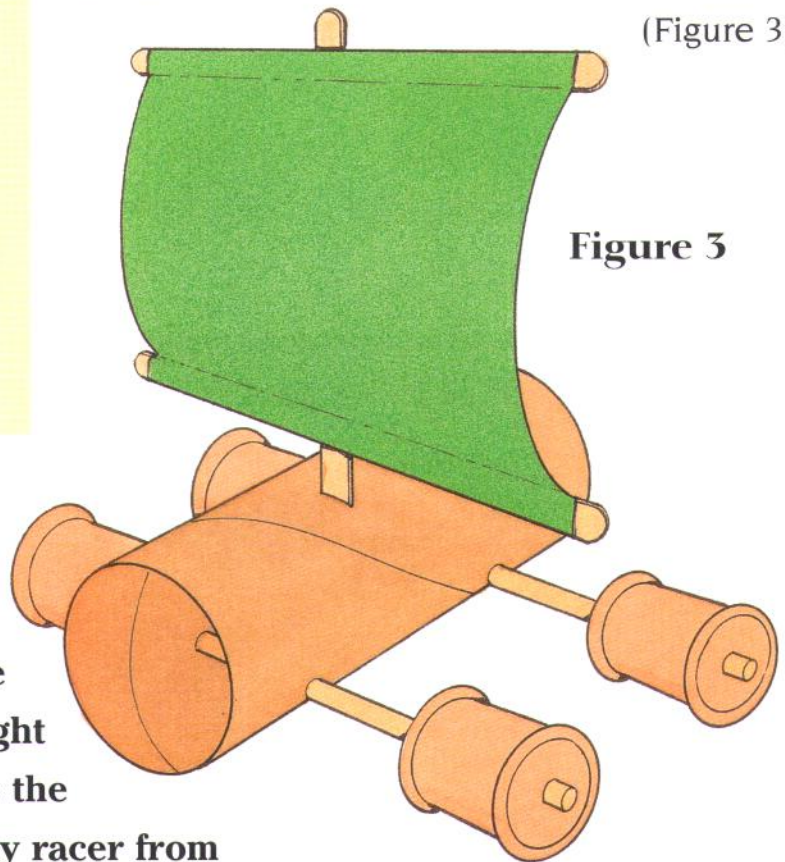
## WHY IT WORKS

The sail of your racer catches the “wind” that you blow behind it. The force of the wind pushes the sail. Since it is attached to the racer, it is pushed along. Without wind your racer would not move at all. Try blowing the wind from a different angle.

**You can experiment with the design of your racer. Adjust the size of your sail—does a big sail make it go faster than a small sail? The weight of the racer may make a difference to the speed it travels at. Try making a heavy racer from a shoe box. Can it go as fast? Can you find a way to use the energy of a twisted rubber band or a balloon?**

2. Thread a piece of doweling through each set of holes.
3. Push a thread spool onto the end of each piece of doweling—these are your wheels (Figure 2).
4. Make a small hole in the top of the cardboard tube and push through a popsicle stick as a mast.
5. Make a sail, using the paper napkin and two popsicle sticks. Glue the sail onto the mast.
6. Use a hairdryer or blow hard behind the sail and watch what happens to your racer

(Figure 3).



**Figure 3**