



SUPER POWER: Sail power!

WIND RACER

LAB NOTES...



WHAT IS GOING ON?

Sails catch the wind by having wide, curved surfaces. The force of the wind pushes on the sail and drives our wind-racer *forwards*.

You have just engineered a car that runs on renewable energy. It's designed to be light with all the main parts of a real car. You've built a triangle chassis or body that holds everything together, wheels on an axle to keep them in line with each other, and bearings which allow the wheel axles to turn freely without getting stuck.

You are using the renewable energy of the wind to power this car. Instead of an engine, you've got a sail!

TO MAKE YOUR WIND-RACER...

1. Watch the video of Nanogirl making her wind-racer
2. Measure and cut two rectangles out of paper, 3cm wide and 8cm long.
3. Roll each one into a tight tube around your wooden skewer from the short end, and tape each one into place. These are your bearings.
4. Draw around a coin or bottle top on your card four times.
5. Cut each circle out and make a hole in the centre of each with the point of your skewer - these are your wheels.
6. Measure and cut out a square of card with 9cm long sides.
7. On opposite sides measure and mark at 3cm and 6cm then draw horizontal lines connecting these marks.
8. Use your scissors and ruler to score across these lines then fold across these scores to make a triangle shape. Tape together - this is the chassis or body of your wind-racer.
9. Tape the two bearings spaced apart but in line onto one of the flat faces of your prism.
10. Measure and cut two 5cm long pieces of skewer. Feed one skewer through each bearing.
11. Place one wheel at the end of each skewer.
12. Use your leftover skewer to make the mast for your sail.
13. Measure and cut a rectangle of paper 7cm wide and 10cm long. This will be the sail.
14. Poke the paper mast through the top and bottom of your paper.
15. Place your chassis wheels down on the table and use scissors to cut a small notch in the top centre.
16. Feed your mast through this notch and secure with a bit of blue tack inside the chassis to secure in place.
17. Blow into the sail to move the car!

YOU WILL NEED

- Thin card e.g. cereal box card
- Ruler.....
- Pencil
- Tape.....
- Scissors
- Paper
- Small lump of blue tack.....
- Wooden skewer
- Large coin (to draw around).....

How far does your car travel with one breath?

What happens when you put some more weight inside your car - does it travel faster or slower, and do you have to blow harder to get it to move?

Can you use other forms of moving air like a fan or hairdryer to power your car?

How big a wind-racer do you think you could build?

Cardboard wheels don't have much grip - what else do you think you could make wheels from?

Do you think a bigger sail made from fabric would help your wind-racer?