

# Vortex



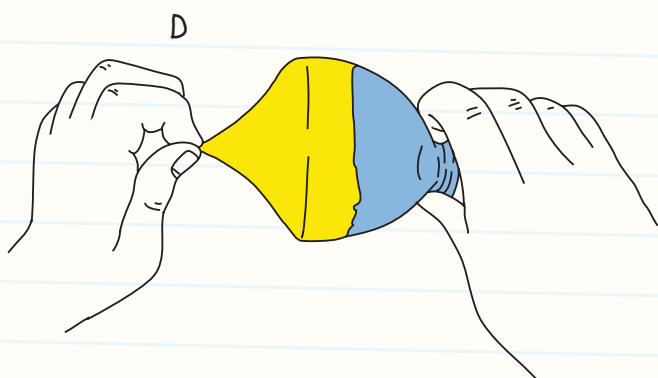
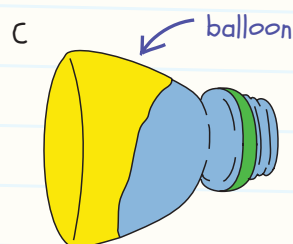
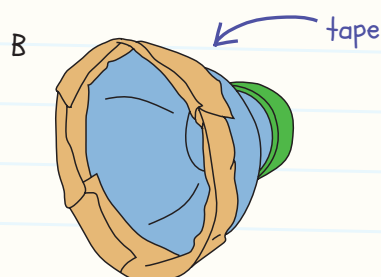
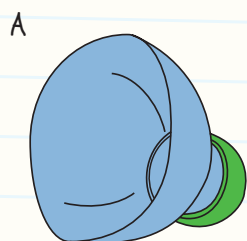
Magnificent  
machines



45 mins



Challenge  
yourself



## Aim of activity

Come fly with us and find out how vortices help us soar through the skies. Create your own vortex air cannon and knock out the competition!

## What you'll get out of it

- Discover what a vortex is.
- Find out how vortices help planes fly.
- Make an air cannon.
- Work as a team.

## What you'll need

- 1 set of 5 paper cups per 4 girls

### For each pair:

- 1 plastic bottle, capacity of at least 0.5 litres
- A balloon
- Scissors
- Masking tape

## Note to leader

- Get your girls to bring plastic bottles to the meeting.
- If anyone in your group has a latex allergy, swap the balloons for stretchy material.



## What to do

- 1 Sit in a circle. What does a plane need to fly? Talk about all the parts an aeroplane has – wings, wheels... what else?
- 2 In your Sixes, make the shape of an aeroplane including all the parts you've mentioned. Practise getting into the right shape.
- 3 Take turns to stand in the centre as a Six. When your leader says, 'ready for take-off', get into your aeroplane shape. Everyone else, try to work out all the different aeroplane parts.  
  
Did all your planes have wings? Hope so! Wings are really important to keep planes in the air. As planes travel, air rushes around the wings at different speeds which causes a **vortex** that stops the plane falling. A vortex is a spinning flow of air.
- 4 It's time to create your very own vortex cannon! In pairs, get a plastic bottle, a balloon, scissors and masking tape.
- 5 Cut your bottle into two pieces just below the neck, as in picture A. Be careful – the edge of the bottle might be sharp.
- 6 Put a layer of masking tape around the sharp edge, as in picture B. Now cut the neck off your balloon and stretch it across the bottle, as in picture C, so the balloon is tight. Take the lid off the bottle.

- 7 To try out your cannon, pull back the balloon and let go, as in picture D. Take turns to aim it at a Brownie's hand to see if they can feel the air rush.

Your cannon creates a vortex. The balloon pushes out a spinning flow of air. This is like the air travelling around an aeroplane's wing, keeping it up.

- 8 Competition time! Each pair, join with another pair. Line up on the opposite side of your space from a set of five paper cups. Your team's aim is to knock over all your paper cups using your vortex cannons. When your leader says 'Go', take turns to pretend to be an aeroplane and fly towards your cups.

- 9 Take aim and knock as many over as possible. You only get one go. Even if you don't knock any over, fly back to your team and the next Brownie can go.

## Top tip

Aim your cannon at the particular cup you want to knock over.

- 10 Keep taking turns until you knock all your cups over. Which team was fastest?
- 11 Dismantle your vortex cannons and recycle the bottles.