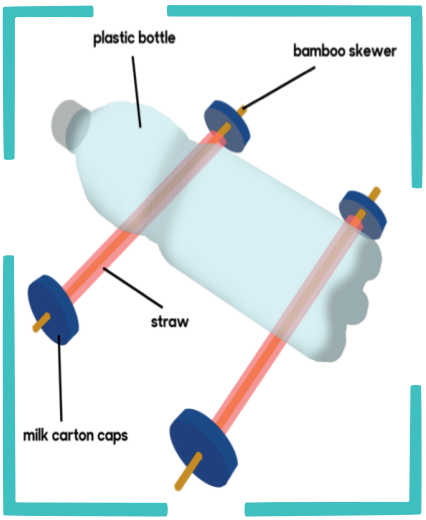
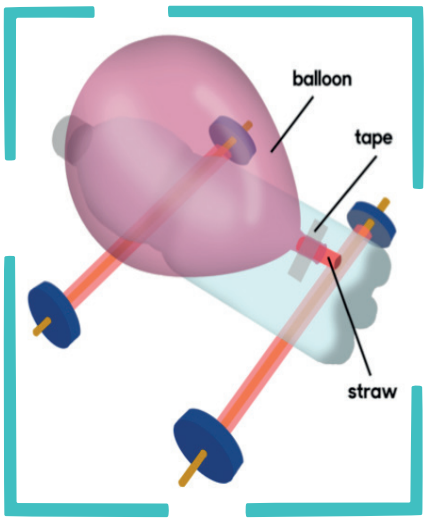
DIY Balloon car



What Do I Need?

- A lightweight disposable bottle
- Four bottle caps from plastic milk cartons
- Two bamboo barbecue skewers
- Two thin straws
- Balloons
- Wide straws
- Sticky tape
- Scissors



How Do I Do It?

1. Tape the two thin straws to the bottom of the bottle. Take care to make the two straws parallel, otherwise your car might not go in a straight line.
2. Ask an adult to carefully poke a small hole in the middle of the milk carton caps. This needs to be in the centre of the cap.
3. Thread the bamboo skewers through the straws and then poke the ends of the bamboo skewers into the holes in the milk carton caps. You should now be able to roll the car across the ground smoothly.
4. Cut a short length of the wide straw to form a small mouthpiece.
5. Put the mouthpiece in the mouth of the balloon, and tape the balloon and the mouthpiece securely together so the balloon forms a tight seal around the mouthpiece. You should be able to blow up the balloon by blowing into the mouthpiece.
6. Tape the balloon and mouthpiece to the bottle car, with the mouthpiece facing the back of the bottle.
7. Now when you blow up the balloon and then release the air inside, the air in the balloon should propel the car forwards.

Skill Level:

Medium

Time:

20 minutes

Continued overleaf

Go to bbc.co.uk/terrificscientific for a video showing a balloon car in action.

DIY Balloon car (continued)

Safety Advice:

IMPORTANT GENERAL SAFETY NOTE FOR SUPERVISING ADULTS: This Terrific Scientific investigation has been devised so that with adult supervision, reasonable care and by following the instructions provided, no special safety equipment or knowledge is required to enjoy the experience safely. These safety reminders are designed to assist the supervising adult when planning and carrying out the investigation. Please read the instructions fully before starting.

- Be careful when piercing the milk bottle tops as a skewer/bradawl could slip and cause an injury

What's Happening? The Sciency Bit:

When you blow up the balloon, the pressure inside increases and becomes greater than the air pressure outside. When the air is released from the balloon, the escaping gas exerts a force upon the balloon. Demonstrating Newton's Third Law of Motion: "for every action, there is an equal but opposite reaction", the balloon pushes back with a force called thrust and the balloon car moves forward.

How can you make your balloon car move faster/further? Try experimenting with different shapes and sizes of balloon.

My car is not working... What Can I Do?

- The wheels are not turning properly. If the bamboo skewers are not central in the bottle tops, the wheels may not spin smoothly. Try using a new bottle top and place the hole right in the centre. Another problem can be if the bottle tops are pushed on too tightly. This can cause them to rub against the edges of the straw and so will not turn properly.
- If the neck of the balloon is not pointing directly backwards, the thrust can cause the balloon car to move sideways, rather than forwards.