

TORNADO IN A BOTTLE

SCIENCE
CHALLENGE

07

Designed by Adam,
Design engineer at Dyson

The brief

Create a water vortex in a bottle.

The method

1. Fill the plastic bottle with water until it reaches around three quarters full.
2. Add a few drops of washing up liquid.
3. Sprinkle in a few pinches of glitter (this will make your tornado easier to see).
4. Put the cap on tightly.
5. Turn the bottle upside down and hold it by the neck. Quickly spin the bottle in a circular motion for a few seconds. Stop and look inside to see if you can see a mini tornado forming in the water. You might need to try it a few times before you get it working properly.

Materials

Water
A clear plastic bottle
Glitter
Washing up liquid



How does it work?

The water is rapidly spinning around the centre of the vortex due to centripetal force. This is an inward force directing an object or fluid such as water towards the centre of its circular path.

Did you know?

Vortices found in nature include tornadoes, hurricanes and waterspouts.



WEATHER BALLOON

SCIENCE CHALLENGE

14

Designed by Chris,
Design engineer at Dyson

The brief

Make a barometer and predict the weather.

The method

1. Cut the bottom half off the balloon.
2. Pull the top half of the balloon tight over the jam jar.
3. Use the elastic band to keep the balloon tight over the jar.
4. Fix the straw to the centre of the balloon skin using a piece of sticky tape.
5. Place the paper so that it is lined up against the straw. Draw a line at this position.
6. Above the line write the word "high" and below the line write "low".
7. Note down the pressures each day to see if you can notice a pattern between your air pressure readings and the weather outside.

Materials

A glass jar
A balloon
A rubber band
Scissors
(with adult supervision)
A straw
Sticky tape
Some paper
A pen



How does it work?

As the air is sealed inside the jar, any changes to the air pressure outside the jar will result in direct movement of the balloon rubber. As the outside air pressure increases, the rubber will be forced down into the jar. The straw pivoting on the glass will rise upward. The opposite is true when the pressure decreases.

Design icons

Barometers are used by weather forecasters to help predict the weather.

