



Things to make and do

# Gravity-defying ball

Discover how to make artificial gravity with this ace trick.

## What you need

- A small and light plastic ball (we used a table-tennis ball)
- A wine glass

## How does it work?

A moving object wants to head in a straight line. To make something move in a circle, you need a constant force pulling it towards the centre. When you spin the glass, the ball wants to move in a straight line, but the walls of the glass keep pushing against the ball, making it turn in a circle. This creates an effect, sometimes called artificial gravity. It appears as if the ball is pulled towards the glass, just like (real) gravity pulls us to Earth. If you move the glass fast enough, the effect gets stronger than the downward pull of gravity.

## IN A WHIRL

Space scientists think that they can create artificial gravity for long voyages. A giant spinning space station would push astronauts toward its outer edges.



**1** Place the ball on a table. Then put the glass upside down over the ball. Take a deep breath and prepare to defy gravity.



**2** Hold the stem of the glass and move it in small, tight circles. Aim to get the ball moving around the inside edge of the glass.



**3** As you speed up, the ball moves higher inside the glass. Keeping spinning and lift the glass up. Can you make the ball stay inside the glass?