Bending light

Amaze your friends with this surprising trick of the light and learn about the science of refraction.

What you need

- Paper
- Tall round glass
- Marker pen
- Jug of water

DID YOU KNOW?

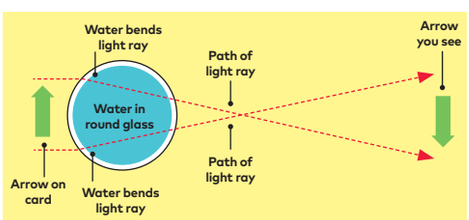
Rainbows are a result of refraction. Rays of white light bend as they hit and travel though water droplets in the air, splitting into individual colours.

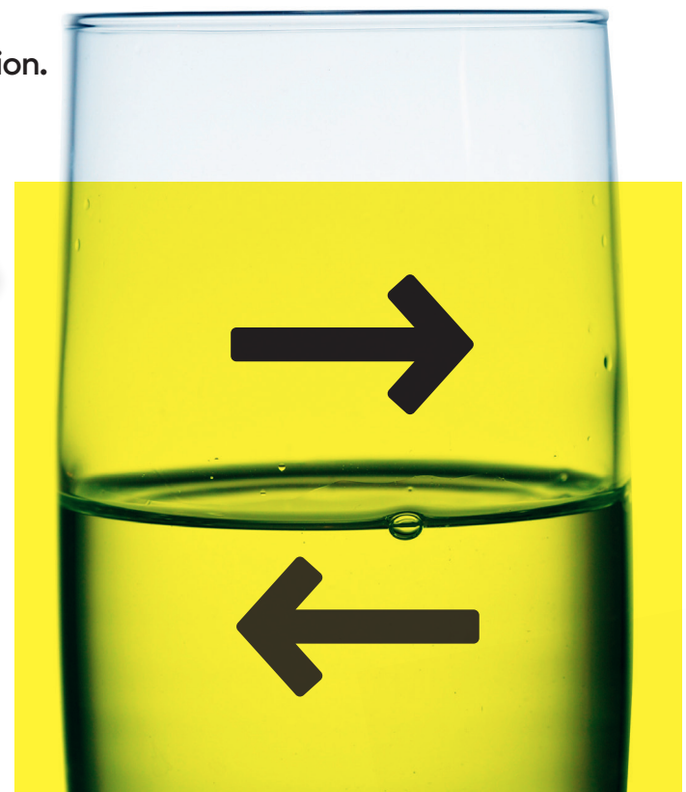
How does it work?

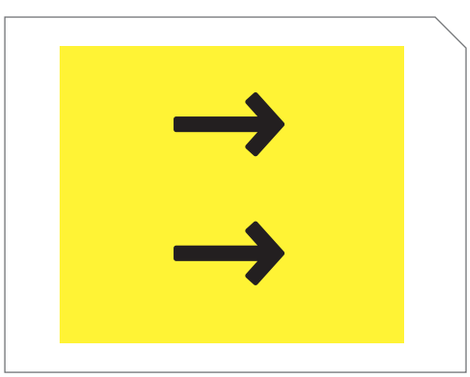
This experiment relies on the power of refraction, or bending the path of light rays. Light rays normally travel in straight lines from objects to enter your eyes and create images, so bending the paths of these rays changes how you see an object.

Refraction occurs because light travels at different speeds in different materials. For example, as light passes from air into water it slows down, and this causes rays of light to bend. You can see this effect simply by putting a pencil in a glass of water: where the pencil enters the water, it appears broken.

In this experiment, as rays from the lower arrow enter and leave the water, they are bent onto paths that cross over in between the glass and your eyes. This causes the image of the arrow to flip around (see diagram below).







1 Draw two arrows facing the same way on a piece of paper. Make sure they are no bigger than the width of your glass.

2 Prop the piece of paper against a wall and place the empty glass directly in front of it so that the arrows are roughly in the middle.

3 Pour water into the glass until the level is above the lowest arrow, but below the top arrow. Watch as the arrow flips direction.

Film your light-bending experiment and share your video with us by sending it to scienceandnature@dennis.co.uk