

Reversing Arrows

You will need:

- Glass
- Paper
- Pen
- Water



1. Draw an arrow on a piece of paper and prop it up against something so it stands. Make sure you pay attention to the direction the arrow is pointing!
2. Put an empty, transparent (see-through) glass in front of the arrow.
3. Fill the glass with water and watch what happens to the direction of the arrow!

Does it still work with different sizes and shapes of glass?

Try writing backwards messages to reveal as you fill the glass!

THE SCIENCE

This concept is called *refraction* which means the bending of light as it passes from one 'medium' to another. During the experiment, the light travelled from the image, through the air, into the glass and water, then out of the glass and into the air once more before it reached our eyes. This means that the light bends once when it travelled through the glass into the water, and then it bends again when it travelled out of the glass and into the air. As a result, the light paths cross and the image appears to be flipped horizontally (left/right).