



How we see

HOW TO CREATE YOUR ELEMENTS

STORAGE

The material needed for this box can fit in a shoe box.

CRAFT THE ELEMENTS

A. Turn it around

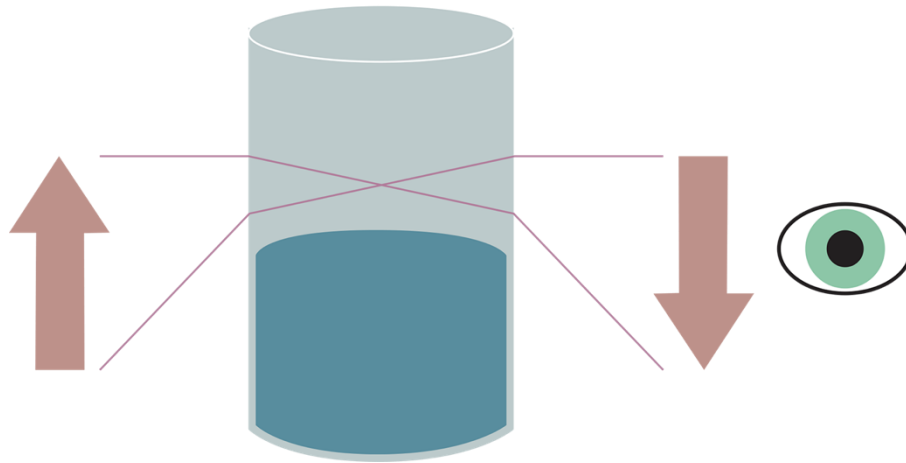
1. Take the cup, fill it with water and place it on the table
2. Take a piece of paper and draw an arrow on it
3. Place the drawing behind the cup, so that it is pointing left
4. Look at it through the cup, and you will see that it is now pointing right

Note: When looking at the object, make sure that you are looking at it horizontally, and not from the above or below.

As illustrated in the image below, light travels differently through water, then through air. It follows a straight line while traveling through both of them, but it bends two times, once when entering the glass, and once when exiting it. By the time it reaches our eyes, it is completely turned around, and that's why we see an inverted image.



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POTENTIAL ISSUES

Depending on the glass that you are using, the distance between the drawing and the glass (or the observer and the glass) may vary. If the object is too close to the glass (closer than the focal point) the experiment won't work. Test it out before doing it in class, so you know the minimal distance the object needs to be from the glass.

ALTERNATIVES

A. See the magic

Instead of putting the object behind the glass of water, put it behind an empty glass, and position your students so they can see it. Pour in the water, and the arrow will turn around in front of their eyes. If the object is big enough, you can stop pouring when water covers half of it, so half of the arrow is pointing left and half to the right.



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