



## Arrow Reversal

Stem Activities



Ages: 3-5



Less than 30 minutes



Grownup needed



Don't blink - you're about to witness 'magic' happening before your eyes! Why does the arrow change direction when water is added? This fascinating scientific phenomenon is actually related to light refraction.

### Materials Needed

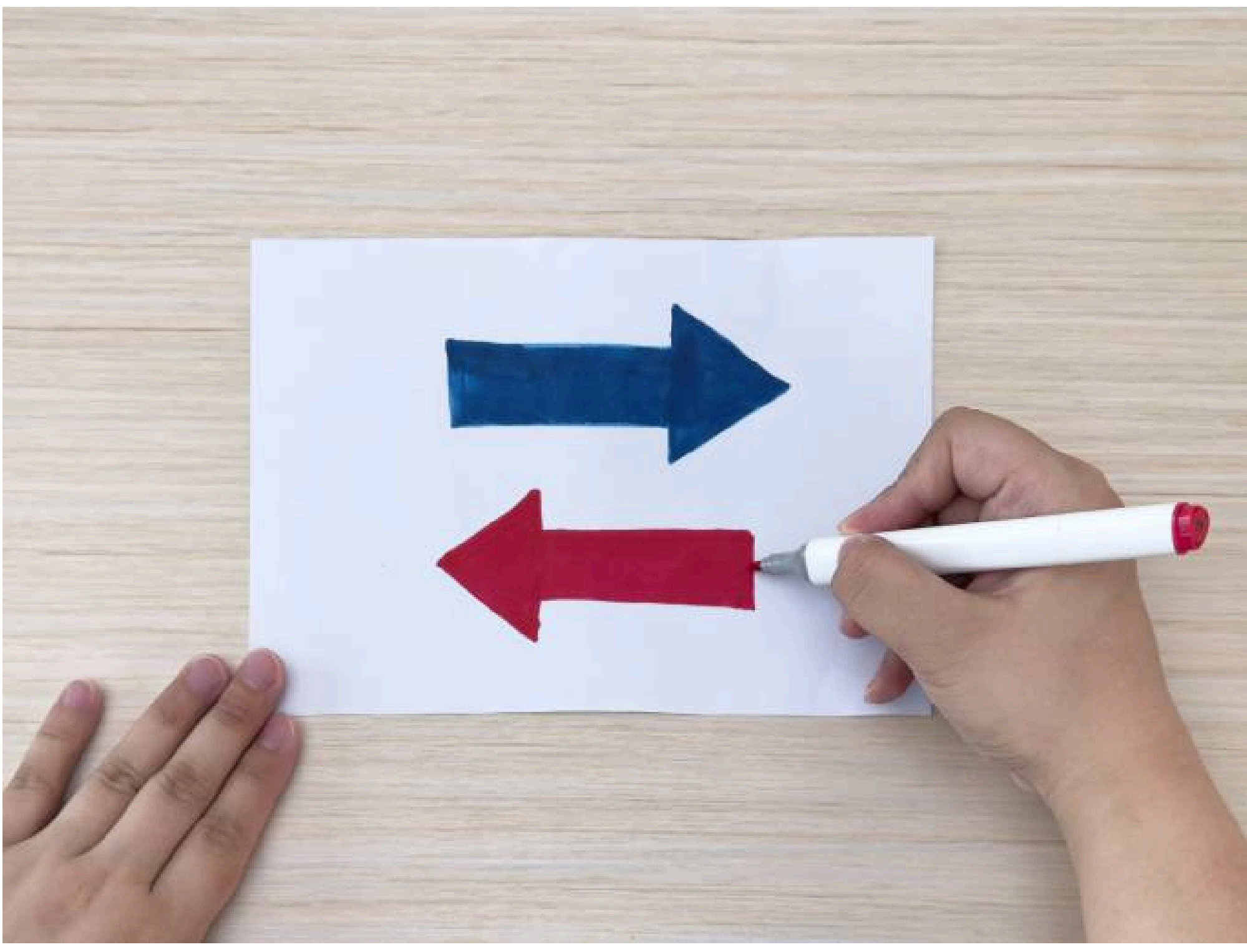
White paper  
Marker pen  
Glass  
Water



### Step-by-step tutorial

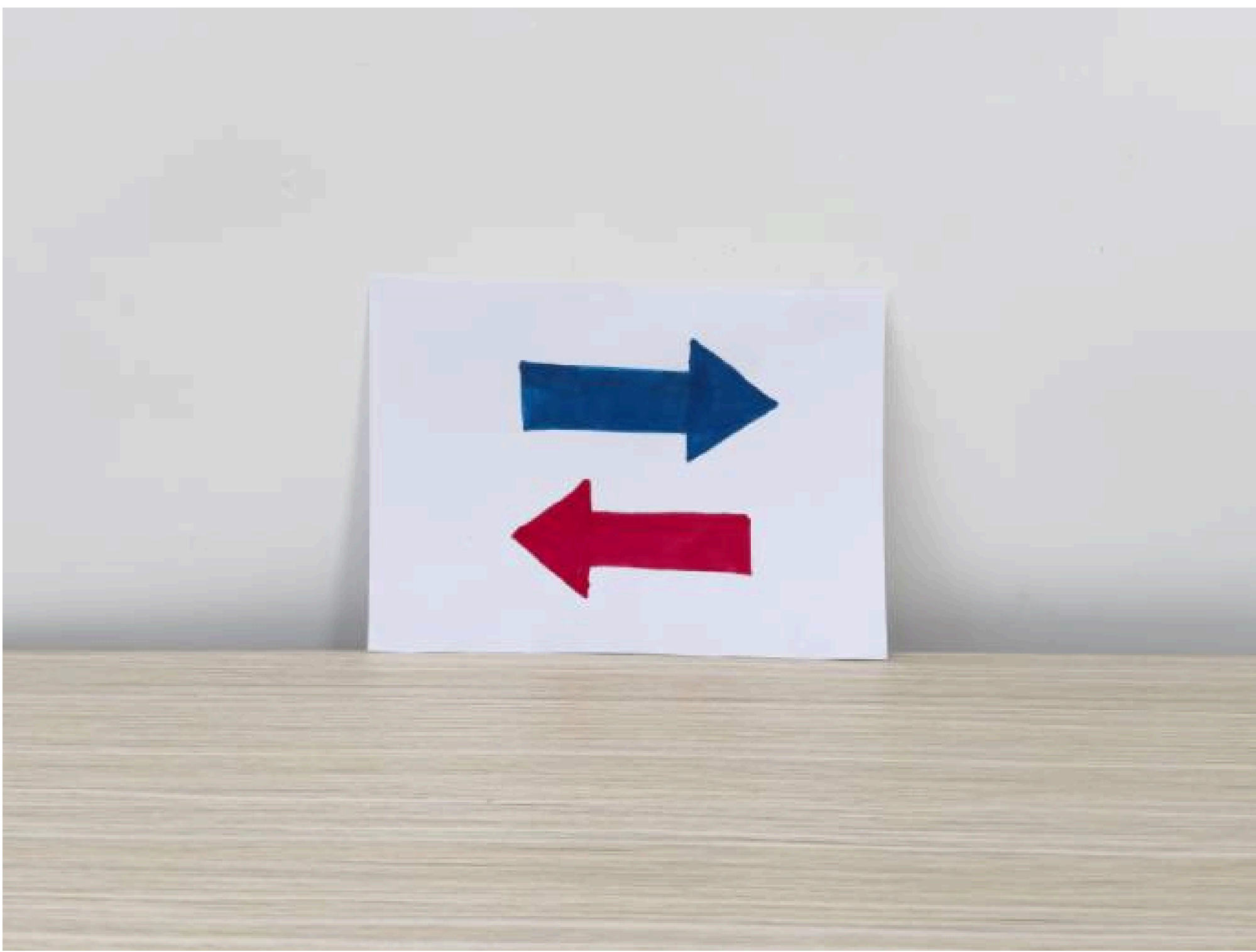
#### Step 1

Draw two arrows pointing in opposite directions on the white paper using the marker pen.



#### Step 2

Stand the paper with the arrows against a wall.



#### Step 3

Place the glass in front of the paper, ensuring you can see the arrows through it.



#### Step 4

Pour water into the glass and carefully observe what happens to the arrows.



### The Science Behind It:

When light travels from one medium (like air) into another medium with a different density (like water), it changes direction. This is called light refraction. In this experiment, when water is poured into the glass, it alters the path of light rays, causing the arrows to appear "reversed". The water acts as a lens, bending the light and creating this optical illusion.