

Have a go at these experiments. Choose one to take photos of and explain it in your home learning book.

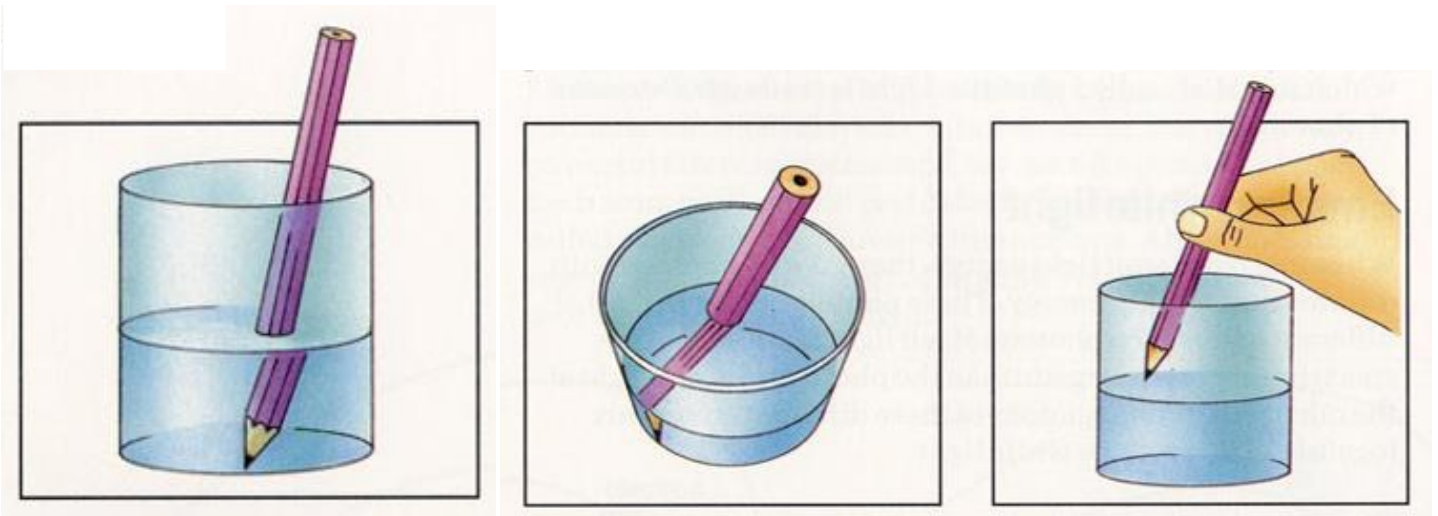
Pencil Experiment

Apparatus:

- A glass
- Water
- A pencil

Method:

- Fill your glass halfway with water.
- Put a pencil in the glass and lean it against the side.
- Look at the water from the side. **What do you notice about the pencil?**
- Now take the pencil out of the glass. **What do you notice about the pencil?**

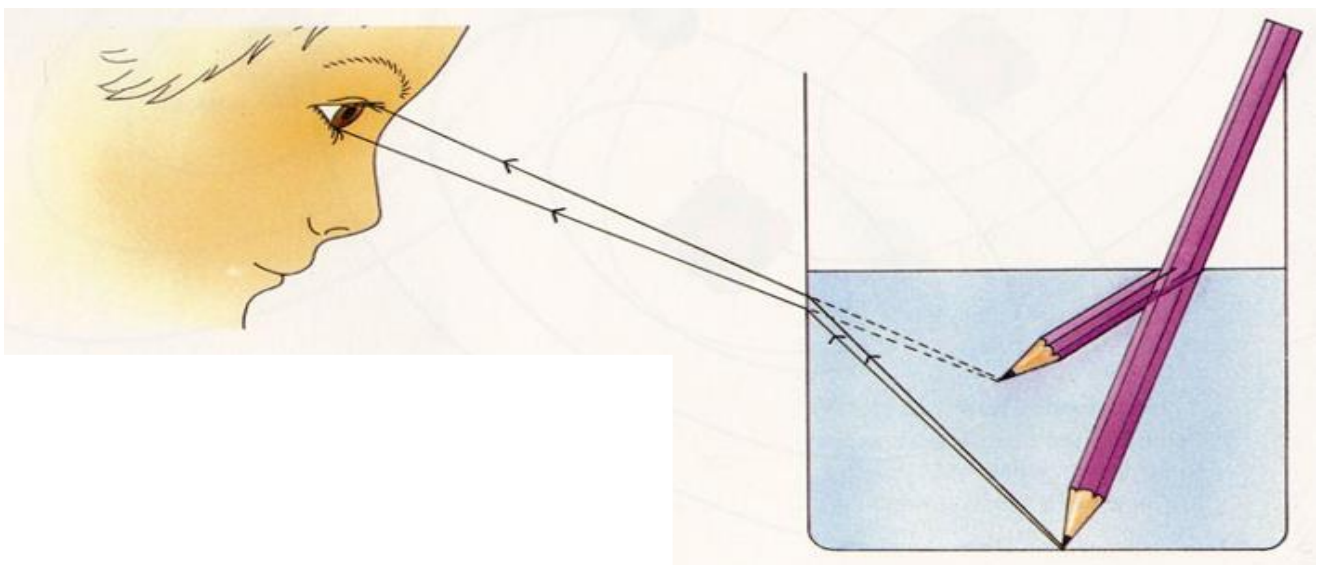


Click on the link below to watch a video of the experiment:

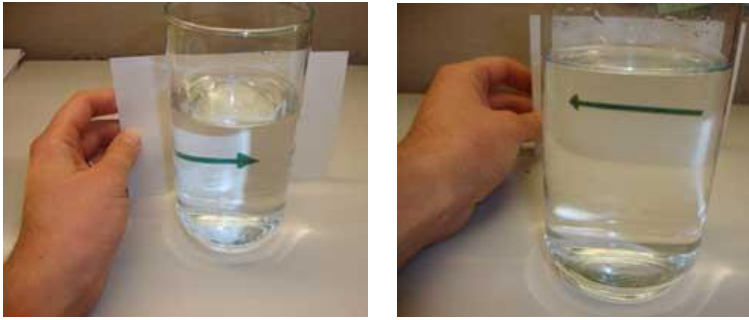
<https://www.bing.com/videos/search?q=Refraction+for+Kids&&view=detail&mid=A84A5F3BE03719CA81BEA84A5F3BE03719CA81BE&&FORM=VRD GAR&ru=%2Fvideos%2Fsearch%3Fq%3DRefraction%2Bfor%2BKids%26FORM%3DHDRSC3>

Results:

When light travels from one transparent medium (air) to another transparent medium (water), the speed of the light slows down and when it hits water it changes its direction slightly. This change in the direction of light is known as refraction of light. This makes the pencil look bent and the point of the pencil appears to be halfway up the glass.



Follow the Arrows Experiment



Apparatus:

- A glass
- Water
- A piece of card
- A pen

Method:

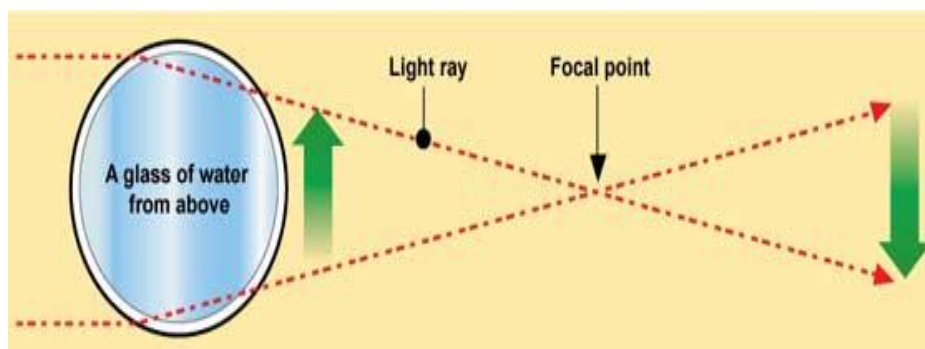
- Fill your glass of water.
- Draw a horizontal arrow on the card.
- Put the card behind the glass of water and slowly move the card back.
- Look through the glass from the front and observe the arrow. **What appears to happen to it?**

Click on the link below to watch a video of the experiment:

<https://www.bing.com/videos/search?q=reversing+arrow+trick&&view=detail&mid=158000B9541397887EDF158000B9541397887EDF&&FORM=VRDGAR&ru=%2Fvideos%2Fsearch%3Fq%3Dreversing%2Barrow%2Btrick%26FORM%3DHDRSC3>

Results:

When light travels from one transparent medium (air) to another transparent medium (water), the speed of the light slows down and when it hits water it changes its direction slightly. This change in the direction of light is known as refraction of light. This makes the arrows look like they are pointing in the opposite direction.

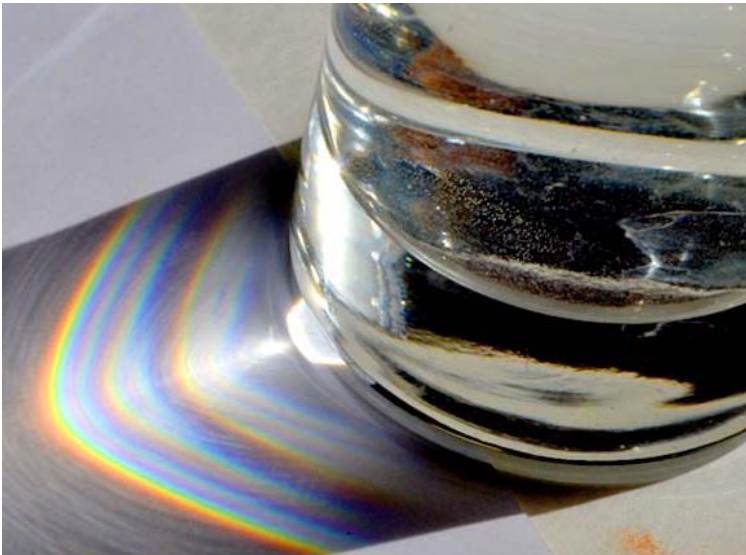


You must think of the glass of water as a magnifying glass. When light goes through a magnifying glass all of the light bends toward the centre. Where the light all comes together is called the focal point. Beyond the focal point, the image appears to reverse. This is because the light rays that were bent, pass each other. The light that was on the right side is now on the left and the left on the right, which makes the arrow appear to be reversed.

If you want to experiment further:

- Try different glasses and jars of different shapes
- Repeat the experiment drawing different images or words on the card
- Repeat the experiment using different liquids like oil, juice etc.

Rainbow Experiment.



Apparatus:

- **A sunny day!**
- A glass
- Water
- Piece of A4 plain paper

Method:

- Find a bright, sunny spot in your house –the brighter the better (e.g. next to a window)
- Put the piece of A4 plain paper down flat in the sunlight.
- Fill your glass with water, until it's a little over half full.
- Carefully, place your glass on the piece paper.
- Look at the piece of paper in front of the glass. **Can you see a rainbow on the piece of paper?**
- If you don't, try lifting the glass up off the piece of paper and angling it slightly so you can see a rainbow.

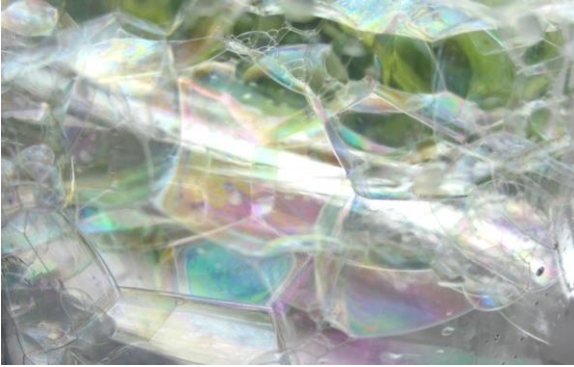
Click on the link below to watch a video of the experiment:

<https://www.bing.com/videos/search?q=light+experiment+rainbow&ru=%2fvideos%2fsearch%3fq%3dlight%2520experiment%2520rainbow%26qs%3dn%26form%3dQBVR%26sp%3d-1%26ghc%3d1%26pq%3dlight%2520experiment%2520rainbow%26sc%3d2-24%26sk%3d%26cid%3d830AB773BD0C4D1FAD3D17AF9E47B24E&view=detail&mid=6FAC4706DBB35433FEDB6FAC4706DBB35433FEDB&&FORM=VDRVRV>

Results:

A rainbow is made up of many different colours. These colours are always present in sunlight (white light) but we can't see them because they're all mixed together. When the sunlight travels from one transparent medium (air) to another transparent medium (water), the speed of the light slows down and when it hits water it changes its direction slightly. This change in the direction of light is known as refraction of light. This causes the light to separate into all the different colours.

Bubble Experiment



Apparatus:

- Washing-up liquid
- Water
- Bowl
- Straw

Optional apparatus:

- Glycerine (found in chemists and makes better bubbles)
- Different size straws
- String
- Different shape pastry cutters
- Key (it will get wet so check with an adult first)

Method for making bubbles:

- Gently mix half a cup of washing-up liquid and two cups of water in a bowl.
- Take a straw and gently **blow into** the mixture (be careful not to inhale the bubble mix!)
- **What happens?**
- **Do you think you will get a different result if you change the size of the straw you are using? Why?**
- Now dip a pastry cutter in the bubble mix. **What shape do you think the bubble will be? Why?**

Method for making BIG bubbles:

- Tie one end of a piece of string around a spoon.
- Thread a key through the string to act as a weight.
- Tie the other end of the piece of string around another spoon.
- Dip all of the string into the bubble mix.
- Holding one spoon in each hand, gently lift the string out of the tray of bubble mix.
- Carefully walking backwards, slowly pull your hands apart to create a bubble.
- When a bubble has formed, slowly bring your hands together again to close the bubble.
- Look at the bubble carefully, **can you see a rainbow?**

Click on the link below to watch a video of the experiment:

<https://www.rigb.org/families/experimental/giant-bubbles>

Results:

You can't colour a bubble since its wall is only a few millionths of an inch thick. We see colours in a bubble because light is reflected off the surface of the bubble wall. A bubble reflects colour from its surroundings.

We're also able to see rainbows on the surface of a bubble. This is because the light has been refracted. A rainbow is made up of many different colours. These colours are always present in sunlight but we can't see them because they're all mixed together. When the sunlight travels from one transparent medium (air) to another transparent medium (the soapy water that makes the bubble), the speed of the light slows down and when it hits bubble, it changes its direction slightly. This change in the direction of light is known as refraction of light. This causes the light to separate into all the different colours.

Click on the link below to investigate light and weather further:

https://www.youtube.com/watch?v=xTt8WTqv1oo&feature=emb_rel_pause