



# ALICE'S ADVENTURES IN WONDERLAND SCIENCE EXPERIMENTS

This Way

That Way

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# Alice's Adventures in Wonderland



## REFLECTIONS IN A MIRROR

### You'll need

Mirror

Pen

Paper



### Instructions

Try to write a short word backwards using the hand you normally write with. Use a mirror to check you've done it correctly.

This time draw a circle and add numbers so it looks like a backwards clock. Use the mirror to help you.

**Extension idea** - try again using the hand you don't normally write with.



### What's happening?

If you look into a mirror you see an image of yourself reflected back. The image appears to be behind the mirror, is the right way up, but reversed.

Mirrors flip images front to back. If you write a word on a piece of paper and hold it up to a mirror the letters are backwards but still the right way up. We call this a mirror image. Only mirrors that are perfectly flat ( plane mirrors ) give a mirror image.

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# Alice's Adventures in Wonderland



## ALICE INVESTIGATES LIGHT

### You'll need

Glass or plastic containers

Water

Card

Pens



### Instructions

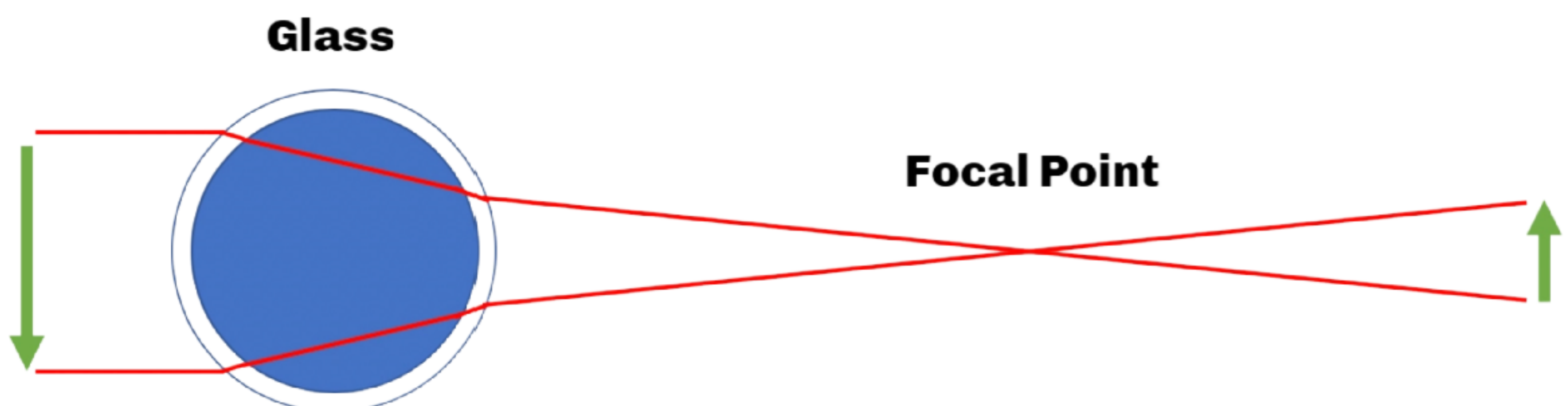
Fill the glass to almost the top with water.

Draw arrows on one piece of card or paper. Place the paper behind the glass and watch as the arrow points the other way.

**Extension idea** - try with different liquids such as vegetable oil.

### What's happening?

Refraction ( bending of light ) happens when light travels between two mediums. Light travels from the arrow through the air, through the glass, the water, the glass again and air again before reaching your eyes, which is why the image looks flipped!







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## ALICE MAKES FIZZY POTIONS

### You'll need

Containers and jars

Spoon

Bicarbonate of Soda ( Baking Soda )

Water

Food colouring

Vinegar

Dish soap/washing up liquid



### Instructions

Spoon or pour the ingredients into different containers, leaving the vinegar till last.

Experiment with different combinations of food colouring, water, vinegar and bicarbonate of soda. You should find it fizzes beautifully as soon as the bicarbonate of soda and vinegar mix.

### What's happening?

Vinegar is an acid and baking soda an alkali ( also called a base ), when they are mixed they react to neutralise each other.

The reaction releases a gas called carbon dioxide which is the bubbles you see in the potion. Adding dish soap gives a thicker foam!

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# Alice's Adventures in Wonderland



## ALICE INVESTIGATES DISSOLVING

### You'll need

Glass or plastic containers

Sugar

Salt

Sand

Warm water

Spoon

Timer



### Instructions

Pour 100ml cold water into one container and 100ml of warm water into a second container.

Place a teaspoon of sugar into the cold water and stir continuously. Time how long it takes for the sugar to dissolve completely.

Repeat with the warm water.

Repeat with the sand and salt.



### What's happening?

Soluble solids dissolve faster in warm water than cold water as in a warmer mixture the particles move around faster bumping into each other more.

Sugar and salt are soluble - they dissolve in a liquid

Sand is insoluble - it will not dissolve in a liquid

When the sugar and salt have dissolved they are still there (no mass has been lost). If you heated the water until it evaporated the sugar or salt would be left behind.