




# Making a Rainbow

You can show your children how to make their very own rainbow at home with sunlight, a glass of water, and a mirror!

## What Do We Need?

A glass of water	One small mirror	Sunlight or a flashlight
		

## Instructions:

1. Fill the glass with water



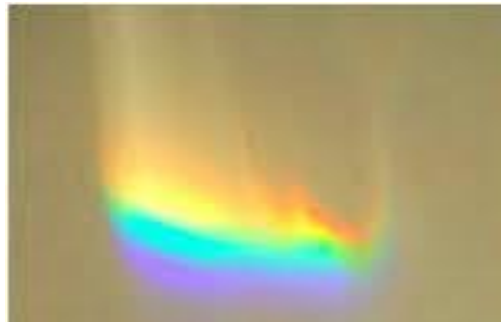
2. Stand near the window so the sun shines on the glass, if not, use your flashlight



3. Place the mirror into the water inside the glass at an angle



4. Look for a reflection on the wall. Adjust the angle of the mirror until you can see a rainbow on the wall. Remember if using a flashlight, rotate the flashlight until you can see a rainbow on the wall



### Why has this happened?

Sunlight (also known as white light) is a mixture of all the rainbow colours. The different rainbow colours are essentially mixed together to result in a white colour.

When light passes from one medium to another medium of a different density (e.g. from air to water), the light bends. This is known as **refraction of light**.

How much a light is refracted depends on the wavelength of the light. The shorter the wavelength, the more it bends.

Therefore, white light is split up after passing from air to water and the individual colours become visible. This dispersion of light allows us to see the spectrum of colours that form a rainbow!

### Some interesting facts!

You may wonder why when you mix all the different colours of paint together result in black instead of light. That is because light mixing is **additive** while pigment mixing is **subtractive**.

Red has the longest wavelength among the visible colours. It tends to bend the least and the angle between the incident light and our line of sight for red is approximate 42 degrees. As a result, red appears on the **top** of the rainbow.

Violet has the shortest wavelength. It tends to bend the most. To see violet, the angle between the incident light and our line of sight is roughly 40 degrees. So violet appears at the **bottom** of the rainbow.

### Colours of the Rainbow



ROYGBIV is an acronym for the sequence of colours commonly described as making up a rainbow: red, orange, yellow, green, blue, indigo and violet.