



SCIENCE OUTSIDE THE CLASSROOM

Make a prism to divide light

Recommended age group: 7-10 years

You will need:

3 x pieces of clear plastic (try cutting up an old takeaway container)
Play dough
Water
Transparent tape
Torch

What to do:

Make a prism by taping the three pieces of clear plastics together, making a tight seal, to form a triangle. On a flat surface, against a dark wall or other dark material, press one open end of the triangle into a chunk of play dough to form a base then fill the top open end with water. Shine the torch so light rays go through the prism and onto the dark surface.

How does this work?

The light we see from the sun is called white light and is made from a mixture of different colours of light. Each colour of light has its own specific wave length and each behaves differently.

Because light is a wave (and a particle, but that is a different lesson), it needs a medium, or some sort of substance, to travel through. We can't swim if there is no water, and light can travel if there are no air or water particles to "swim" through. Light will behave and move differently depending on what medium it is travelling through. In water, the light is able to bounce around more than in air.

The shape of the prism and the water inside it causes the light to bounce and bend, similar to when a billiard ball hits the edge of the table. The light hits the triangular opposite side of the prism and bends. Each wavelength will bend at a slightly different angle when it enters and exits the prism causing the white light to split into a full spectrum of colours.

Light in the sky behaves the same way. When light passes through water droplets in the sky, the light bends and splits into a full colour spectrum, causing a rainbow. The shorter the wavelength, the more it will bend, so purple colours appear at the bottom of the Prism and rainbow.