

Waves

2. Light

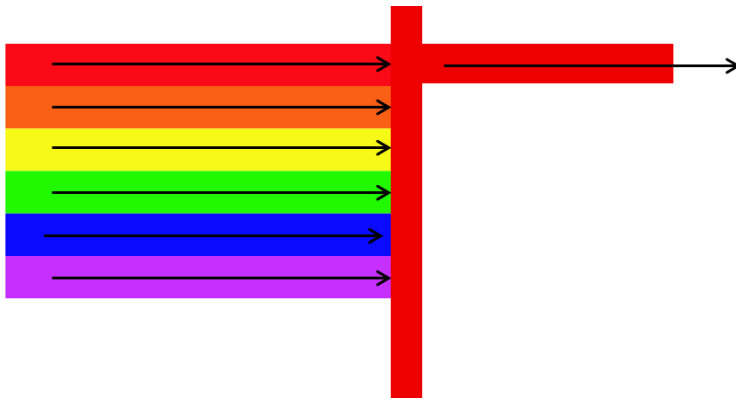
CONCEPT 4

COLOURS

NOTES

Sunlight is a mixture of many light waves, each with a different colour. The range of colours that our eyes can detect is called the visible spectrum (Red, Orange, Yellow, Green, Blue, Indigo and Violet). When all these colours are mixed together they make what we call white light. Conversely, white light can be split up into all the colours of the rainbow.

When sunlight or white light is shone through a transparent coloured filter, the light that emerges is coloured too. So, for example if white light is shone through a red filter the light emerging is red. This happens because white light is made up from all colours, including red. The filter is made from a material that transmits only red light but absorbs all the other colours, therefore only red light passes through.



When an object is opaque light cannot be transmitted through it. Instead light is either absorbed by it or reflected off its surface. How the different colours of light are absorbed or reflected will depend on the material the object is made from and this determines the colour we see. For example, if white light or sunlight is shone on a red object then the material that the object is made from will absorb all colours apart from red which is reflected into our eye.



All the other colours of light are absorbed

Objects that appear white in white light reflect all colours. Objects that appear black in white light absorb all colours.

If a red light is shone through a green filter, no light will be transmitted. This is because the green filter absorbs all colours apart from green.

If a red light is shone on a green ball the ball will appear black. This is because the material that the ball is made from will absorb all colours apart from green. The red light will be absorbed therefore no light will be reflected.