Y6 Knowledge Organiser Science: Light

What is light?

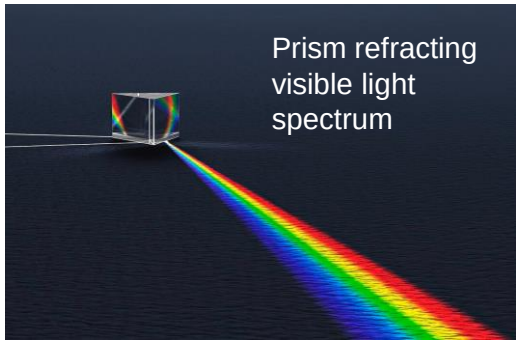
Light is a form of energy that enables us to see all the things around us.

The main **source of light** on the earth is the sun. Light also comes from other sources such as fire, stars and man-made light sources such as light bulbs and torches.

Some animals, such as fireflies and glow-worms, are **light sources**. They make their own light to attract mates.

Thanks to light, we see life in glorious colour: our eyes see different wavelengths of light as different colours. These colours are called the **visible spectrum.** Although light looks white, it is actually made up of all the colours of the rainbow!

Light also powers the technology around us: laser beams make CD and DVD players and printers possible, microscopes and telescopes use lenses to bend light (**refraction**), cameras record light as it reflects off objects and fibre-optic cables and lasers allow us to communicate at incredible speed.



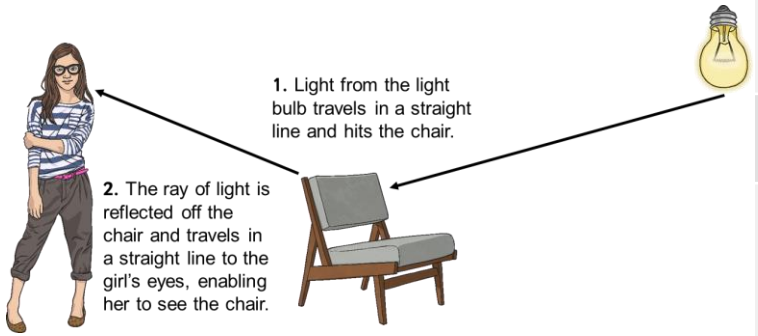
Prism refracting visible light spectrum

How do we see?

Light travels in straight lines. When light hits an object, it is **reflected** (bounces off) and enters our eyes. This is how we see the object.

Rays of light travel from a light **source** and hit objects around us.
The rays of light reflect, or bounce, off an object, and then travel into our eyes.

This **reflection** of light allows us to see the object.



What is refraction?

Light waves travel at a different speed when they go through other **transparent** materials, such as water or glass. This causes the rays of light to change direction and bend. This is known as **refraction**.

Refraction creates illusions. Because light bends when it travels between air and water or glass, objects seen through these materials look bent or distorted.

Key Vocab

Light	Light is a type of energy that makes it possible for us to see the world around us
Source of light	The Sun and other stars, fires, torches and lamps all make their own light and so are examples of sources of light.
Reflection	Reflection occurs when a light ray hits a surface and bounces off.
Refraction	Refraction is the bending of light as it passes from one substance to another
Visible spectrum	The range of colours we can see with our eyes
Prism	A prism is a three-dimensional shape with identical ends, called bases, and flat sides called faces. A prism allows us to see the visible spectrum
Shadow	A dark area or a shape produced by an object coming between rays of light and a surface
Opaque	An opaque material does not let light through. It does not reflect light
Translucent	A translucent material lets light pass through, but objects on the other side can't be seen clearly
Transparent	Transparent materials allow you to see clearly through them

What are shadows?

When an object passes in front of a beam of light, the light can be blocked, making a shadow.

Opaque objects let no light through.

Translucent objects let some light through.

Transparent objects let all light through

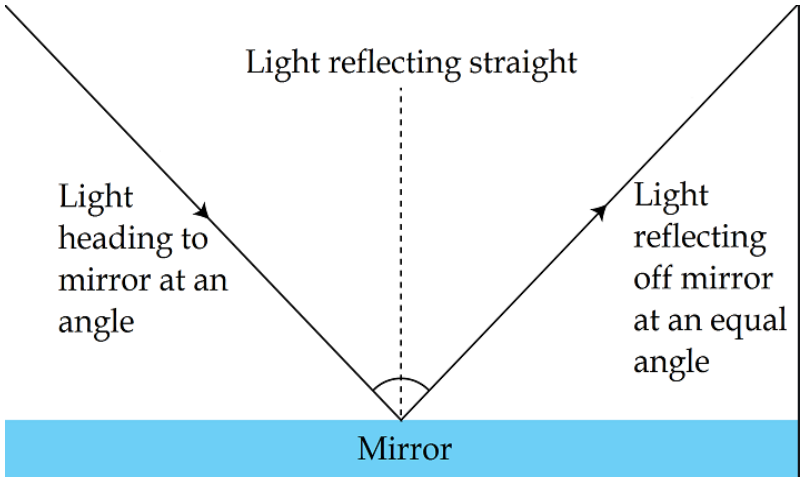
The closer an object is to the source of light the bigger the shadow.

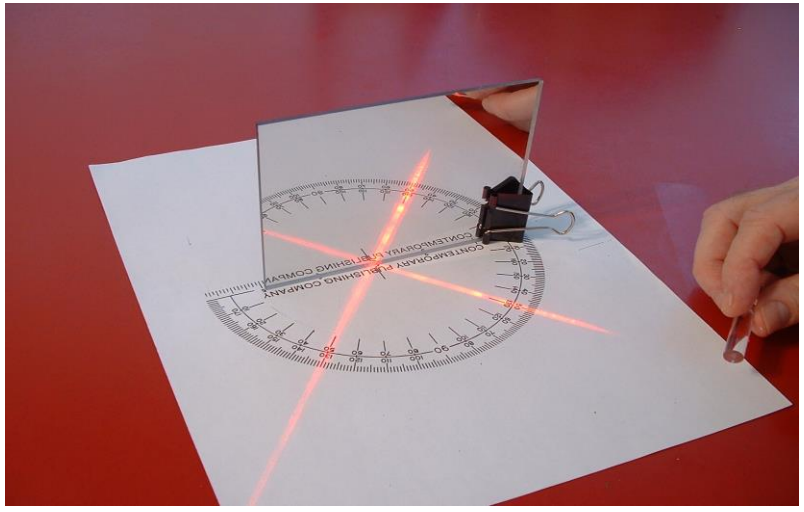
Shadows from the sun can be used to tell the time in a sundial.

How is light reflected?

We see objects because light rays enter our eyes after bouncing off rough surfaces

When light rays hit a smooth surface the light is reflected at equal angles.





Seeing Reflections

The law of reflection is what allows us to see an object reflected in a mirror

1. Light from the bulb hits the boy's face and bounces off.
2. The light reflected from the boy's face hits the mirror.
3. The light reflected from the mirror travels to the boy's eyes, so he can see the image of his face reflected in the mirror.