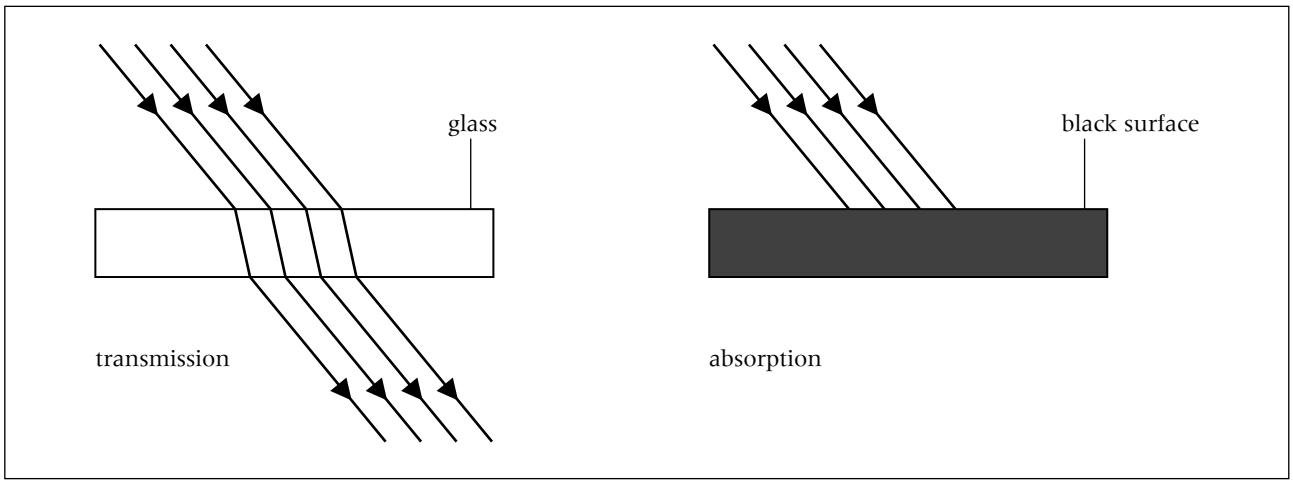
Light

Objects which create light are **luminous sources**. Light travels in *straight lines*.

Light waves travel through **transparent** objects but not through **opaque** objects. **Shadows** are made because light cannot travel through opaque objects. **Translucent** objects show a glow of light through them.

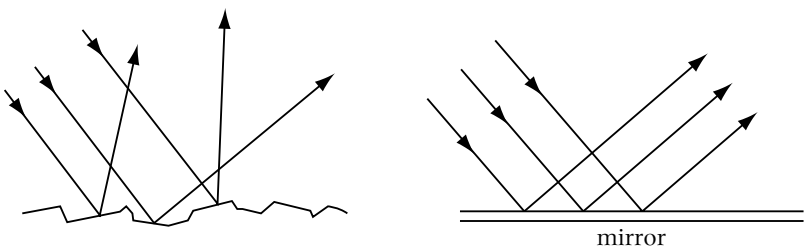
Transmission and absorption

Transparent materials let light pass straight through. We say they **transmit** light. Opaque surfaces can **absorb** light. Black surfaces absorb light very well and reflect very little. This is why they look so dark.



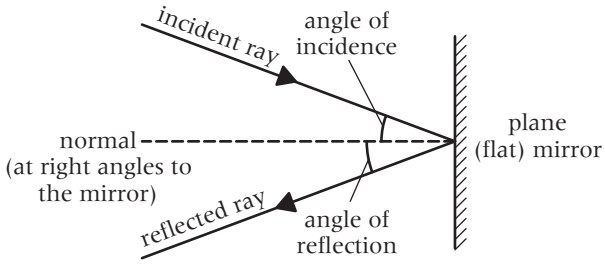
Reflection

Light rays are **scattered** by rough surfaces, and a **reflection** cannot be seen.
A **plane** mirror is a flat mirror. Light is reflected evenly by a plane mirror.



The **angle of incidence** is equal to the **angle of reflection**.

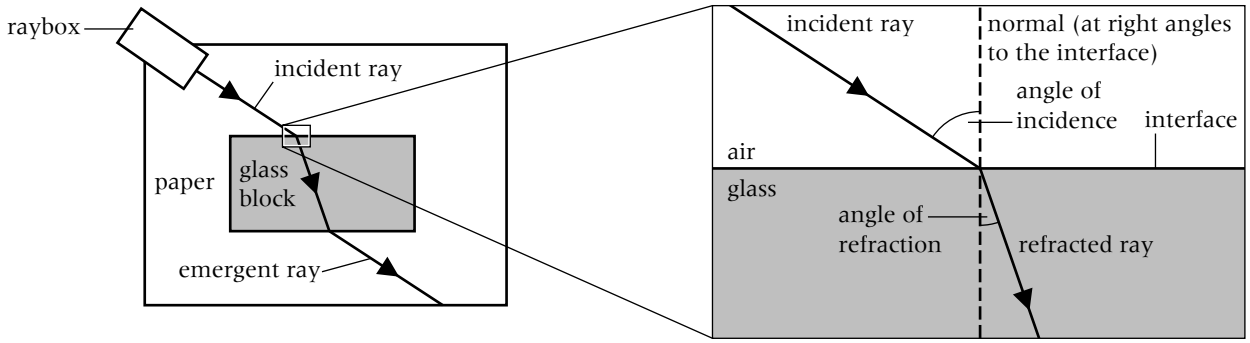
When light shines on to an object viewed in a mirror, the rays are **reflected** into the eye. They seem to come from a position behind the mirror. The **image** is the **same size** as the object and the **same distance** from the mirror. In the image left is right and right becomes left.



Refraction

When light hits something **transparent** it changes direction. This is called **refraction**.

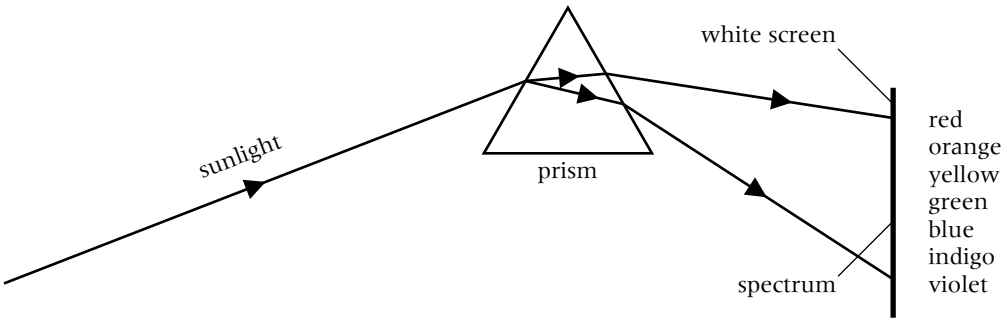
Refraction takes place at the **interface** between two substances. When light is transmitted through glass it slows down and bends towards the **normal**. When it travels back out it speeds up again and bends away from the normal.



Colour

White light is a mixture of colours. White light can be split up using a **prism** to give a **spectrum** of seven colours (red, orange, yellow, green, blue, indigo, violet).

The splitting of colour into a spectrum is called **dispersion**.



A **rainbow** is produced when water droplets in the air refract sunlight.

Different colours can be made by mixing light of the three **primary colours** (red, green and blue).

Coloured light can be made using a **filter**. A red filter lets red light through, but **absorbs** all the other colours.

We are able to see colours because objects do not reflect all the colours in light:

White objects reflect all the colours.
A red object only reflects red and all other colours are absorbed.
This idea applies to all colours except black.
Black objects absorb all colours.

