

Light Topic Summary Sheet

Light travels in straight lines from a **source**. Light travels as **transverse** waves. It travels much faster than sound, and does not need a substance to travel through.

Light travels through **transparent** objects but not through **opaque** objects. **Shadows** are made when light is blocked by an object. Opaque objects block all light. **Translucent** objects allow some light to pass through, but it is scattered so you do not see a clear image.

Transmission and absorption

Transparent materials let light pass straight through. We say they **transmit** light. Opaque surfaces can **absorb** or **reflect** light. White surfaces reflect most of the light that hits them. Black surfaces absorb light very well and reflect very little. This is why they look so dark.

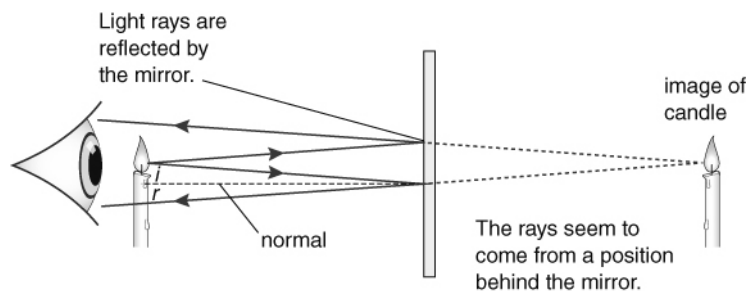
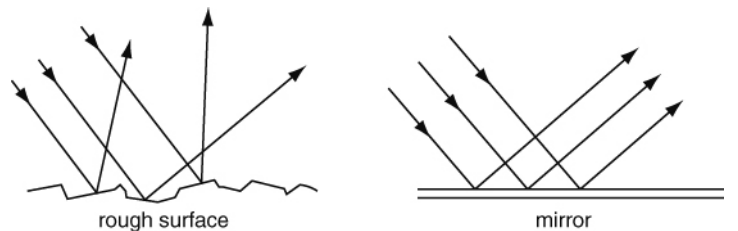
Reflection

Light rays are scattered by rough surfaces (**diffuse reflection**), which means that you cannot see an **image** in an object with a rough surface.

Mirrors and shiny materials such as polished metals reflect light evenly. This is called **specular reflection**. The **angle of incidence** (i) is equal to the **angle of reflection** (r) – this is known as the **law of reflection**. Angles are measured between the light rays and the **normal** (a line drawn at right angles to the reflecting surface).

You can see an image in a mirror because the reflected rays of light appear to come from a point behind the mirror.

The image in a plane mirror is the same size as the object, and the same distance away from the mirror. In the image, left becomes right and right becomes left.



Refraction

When light hits something transparent it changes speed and direction. This is called **refraction**. Refraction takes place at the **interface** between two substances. When light is transmitted through glass it slows down and changes direction towards the **normal**. When it travels back out it speeds up again and changes direction away from the normal.

