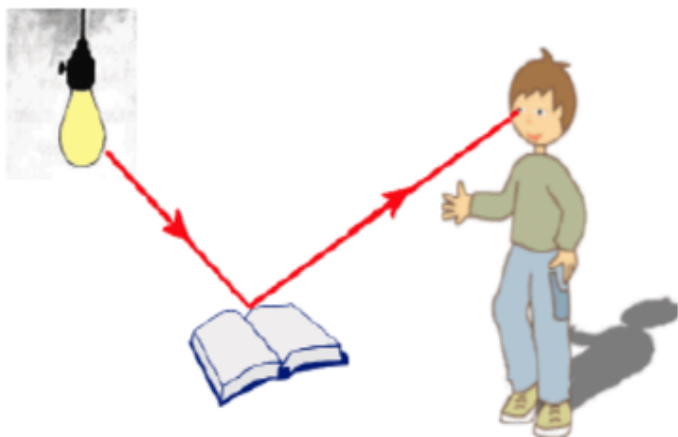




Tier 3 vocabulary	
Eyes	Globular organs of sight in the head of humans and vertebrate animals.
Filter	Pass through a device to remove unwanted material (liquid, gas, light or sound).
Light	The natural agent that stimulates sight and makes things visible.
Light Source	Something that provides light, whether it be a natural or artificial source of light (e.g. the sun, a torch).
Periscope	An apparatus consisting of a tube of attached to a set of mirrors or prisms through which an observer can see things that are otherwise out of sight.
Rainbow	An arch of colours visible in the sky, caused by the refraction and dispersion of the sun's light by rain or other water droplets in the atmosphere.
Reflection	The throwing back by a body or surface of light, heat or sound without absorbing it.
Refraction	The bending of light as it passes from one substance to another with the bending caused by the difference in density between two substances.
Spectrum	A band of colours, as seen in rainbows, produced by separation of the components of light by their different degrees of refraction.
Shadow	A dark area or shape produced by a body coming between rays of light and a surface.



Light travels in straight lines.

Objects are seen because light travels from a light source to our eyes or from light sources to objects and then to our eyes.

Objects are seen because they give out or reflect light into the eye.

We can see non-light sources because the light from a light source bounces off them and reflects into our eyes.

Rules of Reflection

Angle of Incidence = Angle of Reflection

- The reflection in a plane mirror is the same size as the object.
- The reflected image is as far behind the mirror surface as the object is in front.
- Everything in the reflected image is laterally inverted (a mirror image!).



Light Refraction

Refraction = the bending of light rays

Refraction happens as the rays travel at a slightly different speed

For Example:

- When they enter a more dense medium e.g. water - the ray slows down.
- When they enter a less dense medium e.g. air - the rays speed up.

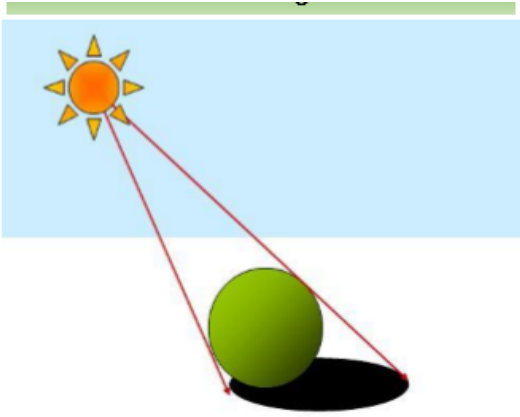


What are shadows and how are they formed?

Shadows

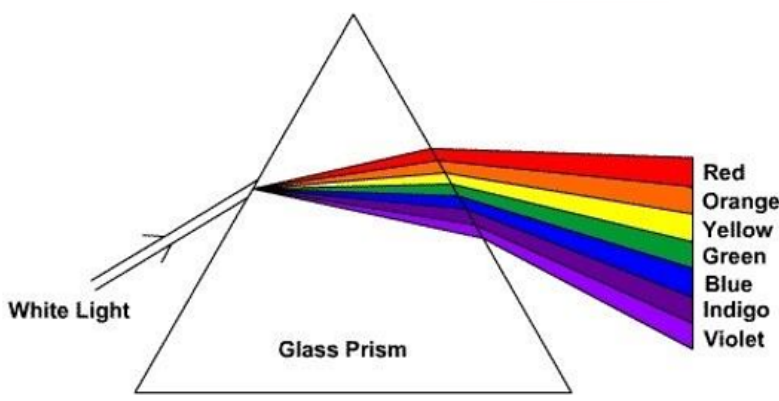
When light from a light source is blocked by an opaque or translucent object a shadow is formed.

Shadows have the same shape as the objects that cast them due to light travelling in straight lines.



Shadows can be made using a natural or artificial light source, but a light source must be present. There can not be a shadow in a completely dark room!

Where do colours come from?

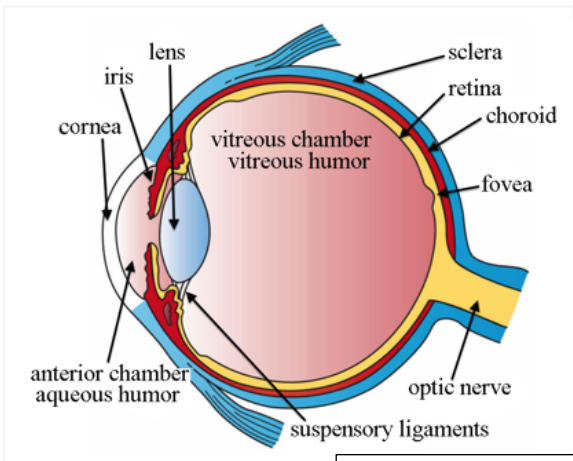


White light is made up of the following colours: **red, orange, yellow, green, blue, indigo, and violet**. Each coloured light has its own **wavelength**. Red light has the **longest** wavelength and violet light has the **shortest** wavelength.

When white light shines towards a glass prism, it splits up into the different coloured wavelengths. Each wavelength **slows down** and changes direction. Red light changes direction **least**, and violet light changes direction **most**. The light leaving the prism is spread out into its different colours - a process called **dispersion**.

When light hits a surface, some of it is absorbed and some of it is reflected. The light that is **reflected** is the colour of the object in that light.

How do we see objects?



The eye is a ball with a hole at the front, the pupil, which lets in light. Inside the eye is a lens which focuses the light onto a surface at the back of the eyeball. This surface is called the retina and is made up of special cells which detect light and send messages to our brain, allowing us to see.

Working Scientifically

Researching – How does the eye work?

Fair Testing – How are shadows formed?

Observing – What is refraction?