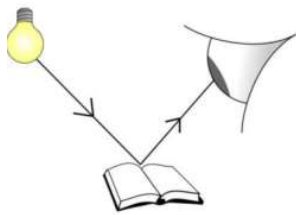
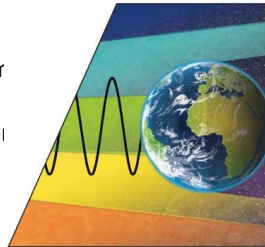




How light behaves and how we see Knowledge Organiser

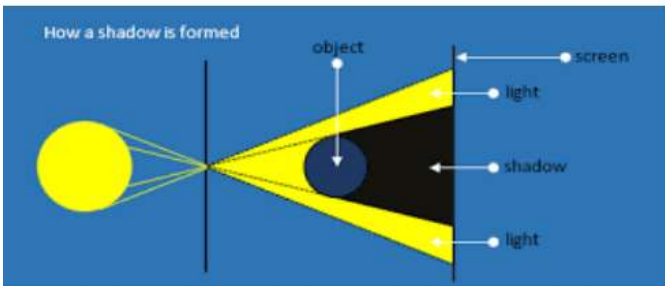
How we see

We need light to be able to see things. Light waves travel out from sources of light in straight lines. These lines are often called rays or beams of light.



Light from the bulb travels in a straight line and hits the book. The light ray is then reflected off the book and travels in a straight line to the eye, enabling us to see the book.

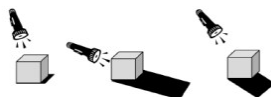
Shadows



Light travels in straight lines. This leads to shadows being formed because, if an object is in the way, the light will move in a straight line past it rather than surrounding it. The shadows shape will be the same as the object which has blocked the light.



The size of the shadow changes as the light source moves, the further away from the light source the smaller the shadow is and the closer the light source is to the object the bigger the shadow. The angle of the light source also makes a difference to the size of the shadow.



Isaac Newton

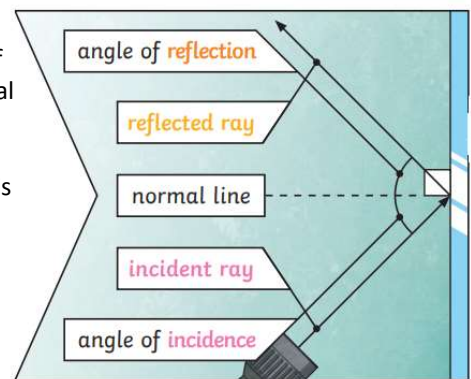
Isaac Newton shone a light through a transparent prism, separating out light into the colours of the rainbow (red, orange, yellow, green, blue, indigo and violet) - the colours of the spectrum. All the colours together merge and make visible light.

Key vocabulary

Light	A form of energy that travels in a wave from a source.
Light source	An object that makes its own light.
Reflection	Reflection is when light bounces off a surface, changing the direction of a ray of light.
Incident ray	A ray of light that hits a surface.
Reflected ray	A ray of light that has bounced back after hitting a surface
The law of reflection	The law states that the angle of the incident ray is equal to the angle of the reflected ray.
Refraction	This is when light bends as it passes from one medium to another. E.g. Light bends when it moves from air into water.
Visible spectrum	Light that is visible to the human eye. It is made up of a colour spectrum
Prism	A prism is a solid 3D shape with flat sides. The two ends are an equal shape and size. A transparent prism separates out visible light into all the colours of the spectrum
Shadow	An area of darkness where light has been blocked.
Transparent	Describes objects that let light travel through them easily, meaning you can see through the object.
Translucent	Describes objects that things let some light through, but scatters the light so we can't see through them properly.
Opaque	Describes objects that do not let any light pass through them.

The laws of reflection

The law of reflection states that the angle of incidence is equal to the angle of reflection. Whenever light is reflected from a surface, it obeys this law. The angle of reflection is the angle between the normal line and the reflected ray light.



The angle of incidence is the angle between the normal line and the incident ray of light.