



Big Question: How do we see?

Key Vocabulary:

Light: A form of energy that travels in a wave from a source

Light Source: An object that makes its own light

Opaque: Describes objects that do not let any light pass through them

Reflection: When light bounces off a surface, changing the direction of a ray of light

Refraction: When light bends as it passes from one medium to another

Shadow: An area of darkness where light has been blocked

Translucent: Describes objects that let some light through but scatters the light so we can't see through them properly

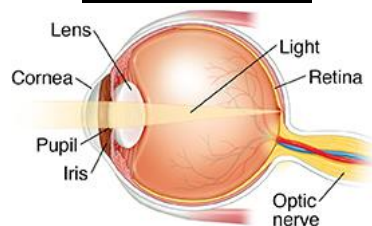
Transparent: Describes objects that let light travel through them easily

Knowledge from Y3 that will help me answer the big question:

- Dark is the absence of light and we need light to be able to see.
- A shadow is formed when light from a light source, such as the sun, is blocked by an opaque object. Transparent objects allow light to pass through them and do not create shadows.
- Shadows change shape and size when the light source moves. For example, when the light source is high above the object, the shadow is short and when the light source is low down, the object's shadow is long.
- Light can be reflected from different surfaces. Some surfaces are poor reflectors, such as some fabrics, while other surfaces are good reflectors, such as mirrors.

New knowledge that will help me answer the big question:

How Vertebrates See



Light from a source or reflected light enters the eye via the pupil

The cornea and lens refract the light that enters the eye.

The light is focussed on the nerve tissue at the back of the eye, which is called the retina.

Light travels from the retina to the brain via the optic nerve.

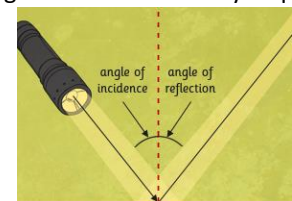
New knowledge that will help me answer the big question:

When light hits an object, it is absorbed, scattered, reflected or a combination of all.



New knowledge that will help me answer the big question:

Reflection is when light bounces off a surface, changing the direction of the ray of light. All objects reflect light. When rays of light reflect, they obey the law of reflection: the angle of incidence always equals the angle of reflection.



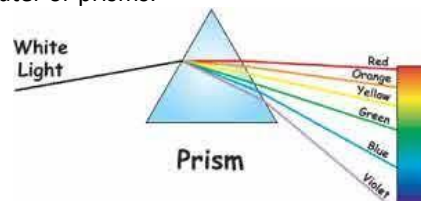
When light travels from air through water, glass or anything that lets light through, it gets bent. This bending is called refraction. When light passes through a lens, it is refracted.



The spoon in this water looks as if it is bent. This is because light bends when it moves from air to water. When light bends in this way, it is called refraction.

New knowledge that will help me answer the big question:

'White' light is a term used to describe visible, ordinary daylight. White light can be split into a spectrum of colours (rainbow) by droplets of water or prisms.



As a scientist, the essential knowledge I need to answer the big question is:	Date
<p>Questions can help us find out about the world and can be answered using a range of scientific enquiries, including fair tests, research and observation.</p>	
<p>Light sources give out light. They can be natural or artificial. When light hits an object, it is absorbed, scattered, reflected or a combination of all three. Light from a source or reflected light enter the eye. Vertebrates, such as mammals, birds and reptiles, have a cornea and lens that refracts light that enters the eye and focuses it on the nerve tissue at the back of the eye, which is called the retina. Once light reaches the retina, it is transmitted to the brain via the optic nerve.</p>	
<p>A shadow appears when an object blocks the passage of light. Apart from some distortion fuzziness at the edges, shadows are the same shape as the object. The distortion or fuzziness depends on the position or type of light source.</p>	
<p>Mirrors and lenses are used in a range of everyday objects (telescopes, periscopes, cards and on roads). The human eye has a lens that bends and focuses light on the back of the eye (retina) so that we can see.</p>	
<p>'White' light is a term used to describe visible, ordinary daylight. White light can be split into a spectrum of colours (rainbow) by droplets of water or prisms.</p>	