

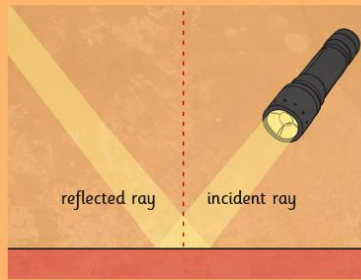
Science Knowledge Organiser: Light

Topic 1: Autumn

How Is Light Reflected?

Reflection is when light bounces off a surface, changing the direction of a ray of light. All objects reflect light; smooth and shiny surface reflect all the rays of light at the same angle, rather than scattering the rays of light like rough or dull surfaces.

The light ray that hits the mirror or other object is described as the incident ray, and the ray of light that bounces off is known as the reflected ray.



Rainbows

This happens because each colour within a ray of light has a different wavelength. Red has the longest wavelength, and violet has the shortest.



When a ray of light travels from air through a transparent material, it refracts.

Since each colour's wavelength is slightly different, the colours in the ray of light bend slightly differently. This causes them to separate and become visible to our eyes.

Red bends the least, and violet bends the most.

Key Vocabulary

Energy	A power source that can create heat and light
Electromagnetic Radiation	A form of energy, including light
Photons	A particle that carries light energy
Particles	A minute piece of something
Vacuum	A space with no air
Source	Where something comes from/ starts
Ray	A beam of light
Opaque	Not see through
spectrum	A band of colours like a rainbow
Reflection	Light bouncing off a surface
Refraction	Light changing direction and bending

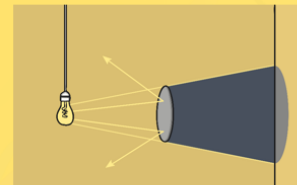
Shadows

Shadows are formed when an opaque object blocks a ray of light.

Is a shadow always the same shape as the object that casts it?

A shadow can change size depending on the distance the object casting it is from the light source. Shadows can also be elongated or shortened depending on the angle of the light source.

However, a shadow is always the same shape as the object that casts it. This is because when an object is in the path of light travelling from a light source, it will block the light rays that hit it, while the rest of the light can continue travelling. Therefore, the shadow it casts is exactly the same shape.



How Does Light Help Us See?

Rays of light travel from a light source and hit objects around us. The rays of light reflect, or bounce, off an object, and then travel into our eyes. This reflection of light allows us to see the object.



1. Light from the light bulb travels in a straight line and hits the chair.

2. The ray of light is reflected off the chair and travels in a straight line to the girl's eyes, enabling her to see the chair.



Can you describe how you can see some objects right now?

What is Refraction?

Light waves travel at a different speed when they go through other transparent materials, such as water or glass. This causes the rays of light to change direction and bend. This is known as refraction.

Refraction creates illusions. Because light bends when it travels between air and water or glass, objects seen through these materials look bent or distorted.

