

Light



UKS2 Science: Light

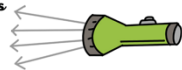
Scientific Concepts

Light	A form of energy that travels in a wave from a source.
Properties	A quality that something is known by e.g., characteristic.
Core Vocabulary	
Refraction	when light changes direction when going through the boundary of a state of matter
Incidence ray	A ray of light that falls on any surface is called as an incident ray; this allows us to see the object.
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.

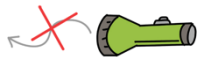
Images/diagrams

Travelling light

Light travels very fast in **straight lines** called **light rays**. Even though light travels in straight lines, it travels in **different directions**.



Light rays from a torch travel in different directions but **always in straight lines**.



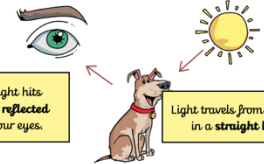
Isaac Newton shone a **light** through a transparent **prism**, separating out **light** into the colours of the rainbow (red, orange, yellow, green, blue, indigo and violet) - the colours of the **spectrum**. All the colours together merge and make visible **light**.



Reflective light

We can see things because light is **reflected**. Some materials reflect light better than others. Light travels in straight lines. When light from an object is reflected by a surface, it changes direction.

Smooth, shiny surfaces such as mirrors and polished metals **reflect light well**. **Dull and dark surfaces** such as dark fabrics do **not reflect light well**.



The Sun is a **light source** so it creates light.

When the light hits the dog, it is **reflected** and enters our eyes.

Light travels from the sun in a **straight line**.

When light hits an object, it is **reflected** (bounces off) and enters our eyes. This is how we see the object.

We need **light sources** to be able to see; otherwise, there is no light to reflect off surfaces and into our eyes. This is why we cannot see in the dark.

Refraction

Light doesn't always travel in straight lines like it wants to; it can **change direction**. Light rays change speed when they pass across the boundary between two states of matter, such as gas and liquid. This causes them to **change direction**, and this effect is called **refraction**.

An example of refraction is a straw in a glass of water.



Seeing objects

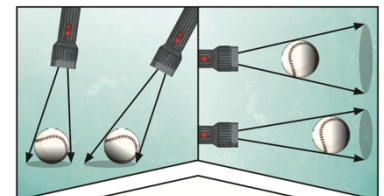
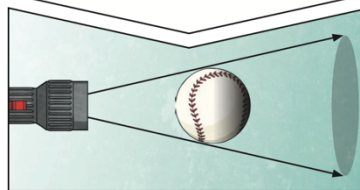
The light rays have special names.



The ray from the light source to the object is called the **light ray** or **incident ray**.

The ray from the object to the eye is called the **reflected light ray**.

A shadow is always the same shape as the object that casts it. This is because when an **opaque** 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.



Shadows can also be elongated or shortened depending on the angle of the **light source**. A shadow is also larger when the object is closer to the **light source**. This is because it blocks more of the **light**.

Key Knowledge

1	Light travels in straight lines from a source and reflects off an object into the eye, allowing us to see the object
2	Light travels as a wave. It does not need a medium to travel through which means it can travel through a completely airless space e.g., a vacuum.
3	Light bends when it moves from air to water. This can make objects appear bent and is known as refraction
4	Reflection is when light bounces off a surface and changes direction
5	A shadow is always the same shape as the object that casts it. This is because when an opaque 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.
6	Shadows can also be elongated or shortened depending on the angle of the light source. A shadow is also larger when the object is closer to the light source