

Year 6 – Light

ALP Trust Science 2020

Language for Learning

Through the activities in this topic pupils should **understand and precisely use key scientific words - spelling these words correctly**. This includes - words with **different meanings** in scientific and everyday contexts (e.g. drag), words with **precise** scientific meanings (e.g. weight and mass) and words relating to **scientific enquiry** (e.g. variable).

Key Scientific Words

Key Word	Definition (Meaning)
Light source	An object which creates and is a source of light
Ray	One piece of travelling light
Ray diagram	A diagram showing light rays travelling - using straight lines with an arrow (to show the direction the light ray is travelling)
Eye	The part of our body that receives/detects light - we see things when light enters our eyes
Opaque	A substance that does not allow light to pass through
Transparent	A substance that allows light to pass through
Translucent	A substance that allows some light to pass through (For example, a stained glass window)
Shadow	A place where there is no light because the light is blocked by an object
Reflect/Reflection	When light bounces back from a surface
Absorb	When light is 'taken in' by an object
Transmit	When light passes through a substance
Prism	A block of glass or plastic that light can travel through. A prism can split light
Spectrum	The range of visible light - seen as seven colours (Red, Orange, Yellow, Green, Blue, indigo and Violet)
Filter	A material that allows only specific colours of light to pass through
Primary colours	Red, blue and green light
Secondary colours	Cyan, magenta and yellow light - made when the primary colours of light are mixed

Key Concepts

Objects which **create** and **give out** light are called **light sources**

Light travels at a speed of **300,000 km/s (kilometers per second)**. This is known as the speed of light and is as fast as it is possible to travel.

Light appears to travel in **straight lines**

Travelling light can be shown using a **ray diagram**. A ray diagram shows how light travels using a **straight line (drawn with a ruler)** and an **arrow head** (to show the direction the light is travelling)

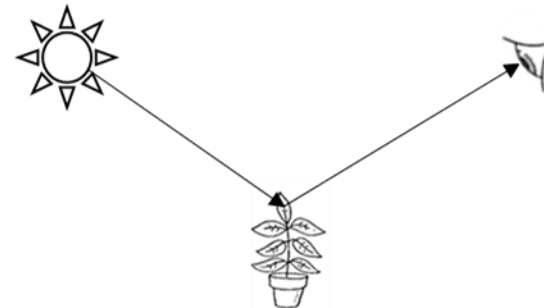


We see objects when light enters our **eyes**

We see **light sources** because they give out light, the light travels in a straight line and enters our eyes



We see objects which are **not light sources** because light travels in straight lines from a light source - to the object - and is **reflected ('bounces off')** into our eyes. We need a source of light to be able to see objects which are not light sources.



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Key Concepts

Types of Object

Light can travel through **transparent** objects

Translucent objects let some light pass through and show a glow of light through them

Light cannot travel through **opaque** objects

Shadows are made because light cannot travel through opaque objects.

As light travels in straight lines - **shadows have the same shape as the objects that cast them.**

Mirrors

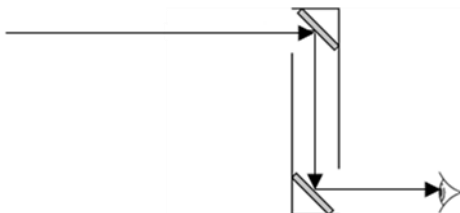
A **plane mirror** is a flat mirror. Light is reflected evenly by a plane mirror.

When an object is viewed in a mirror – the image appears the **same size** as the object and the **same distance** from the mirror. However, the image is **laterally inverted** – left is right and right is left



Some **emergency vehicles** use laterally inverted writing – when the writing is viewed in the **mirrors of a car** – the writing is seen **correctly**

Mirrors can be **helpful** to us in other ways. For example, a **periscope** can allow us to see over objects



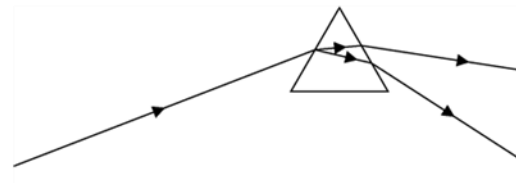
Colour

White light is a **mixture** of colours.

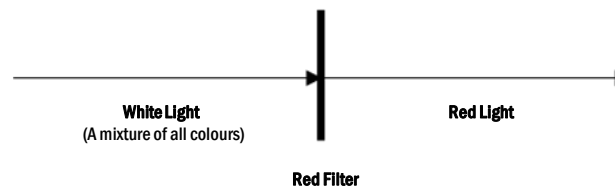
White light can be split (using a **prism**) to give a **spectrum** of seven colours

- * **Red**
- * **Orange**
- * **Yellow**
- * **Green**
- * **Blue**
- * **Indigo**
- * **Violet**

The splitting of colour into a spectrum is called **dispersion**.



A **filter** is a substance that allows certain colours of light to pass through but not others. A red filter lets red light through, but **absorbs** ("takes in") all of the other colours.



We are able to **see colours** because objects do not reflect all the colours in light.

White objects reflect all colours.

Red objects reflect only red light and all other colours are absorbed.

This idea applies to all colours except black. Black objects **absorb** all colours