

# Year 6 Science Knowledge Organiser: Light

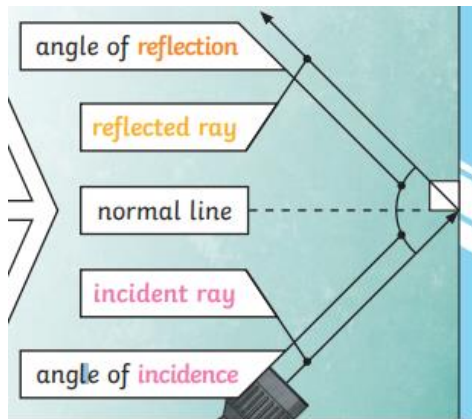
## Subject Specific Skills

- I can recognise that light appears to travel in straight lines
- I can use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye
- I can explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes
- I can use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.

## Prior Learning

- I can recognise that they need light in order to see things and that dark is the absence of light
- I can notice that light is reflected from surfaces
- I can recognise that light from the sun can be dangerous and that there are ways to protect their eyes
- I can recognise that shadows are formed when the light from a light source is blocked by an opaque object
- I can find patterns in the way that the size of shadows change.

## Key Knowledge: The Law 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 line.

The angle of incidence is the angle between the normal line and the incident ray of 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 – when light bounces off a surface, changing the direction of the 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.  
 Refraction – when light bends as it passes from one medium to another.

Visible spectrum – light that is visible to the human eye.  
 Shadow – an area of darkness where light has been blocked.

## Key Individual:

**Lewis Howard Latimer**



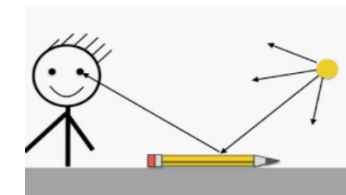
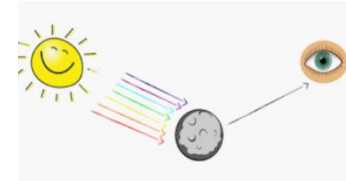
**Key Knowledge: Our eyes** have a small window at the front called a pupil, through which light can enter.

When it is dark, our pupils go larger to let more light in so that we can see better. In bright lights, our pupils go smaller.  
 - At the back of our eye is a sheet of nerves called a retina. They detect light through the pupil, and send messages to the brain about what we can see.

We see things because:

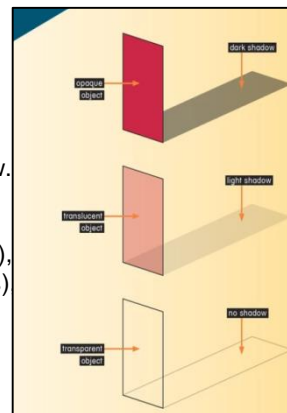
- A) there is a light source sending light into our eyes,
- B) light is reflected from a light source off them and into our eyes.

When the light enters our eyes, we see the object!



## Key Knowledge: Light originates from light sources.

- Light sources can be natural (e.g. The Sun, the stars) or man-made (e.g. street lamp, glow stick, mobile phone, TV).
- We can see that light travels in straight lines when we shine a torch in a dark room, or when a ray of light comes through a window.
- When an object passes in front of a ray of light, the light can be blocked, creating a shadow.
- Opaque objects let no light through (creating the darkest shadows), translucent objects let some light through (creating fainter shadows), transparent objects let all light through (no shadow).
- Shadows can be elongated or shortened depending on the angle Of the light source.



Light Spectrum

Red

Orange

Yellow

Green

Blue

Indigo

Violet

Isaac Newton shone a light through a transparent prism, separating out light into the colours of the rainbow – the colours of the spectrum. All the colours together merge and make visible light.