

# Science Knowledge Organiser

# Year 6 Autumn 2

Light

Year 6

Main Foci: Physics

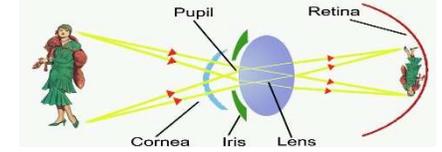
### What should I already know?

- Certain things produce light, usually by burning (e.g. the Sun) or electricity (e.g. street lights)
- Shiny materials do not make light but do reflect it.
- Shadows are caused when certain materials block light.
- Light travels in straight lines. When light is blocked by an opaque object, a dark shadow is formed.
- The further away the light source is, the smaller the shadow is. The closer the source of the light, the bigger the shadow.

### What will I know by the end of the unit?

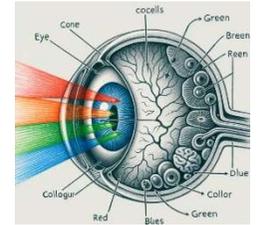
How do we see?

- The image appears upside down because light rays cross each other in the eye. The brain interprets the image so that we see it the right way up.



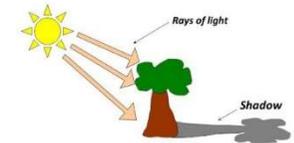
Why do we see in colour?

- Light from sources like the Sun appears white. This white light is actually made of many different colours combined.
- Our eyes have special cells called **cones**. There are three types of cones, each sensitive to a range of colours: **red, blue, and green**.
- The **cones** work together to detect combinations of these colours. When cones sense different amounts of **red, blue, and green** light, our brain sees a mixture of these colours.
- Objects **absorb** some colours of light and **reflect** others.
- The colour we see is the colour the object reflects.



What are shadows and how are they formed?

- Because **light** travels in straight lines, when there is an **opaque** object blocking the **light**, a **shadow** is formed.
- These **shadows** have the same shape as the objects that cast them.
- The size of a **shadow** changes as the **light source** moves.

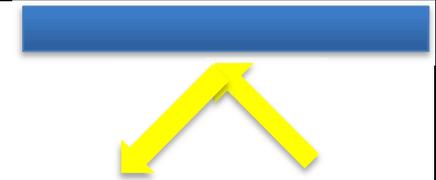


What happens to light when it is refracted?

- **Refraction** is the bending of light as it passes from one material into another.
- Light travels at different speeds in different materials.
- When light moves from air into water or glass (or vice versa), its speed changes.
- Because of this change in speed, the light bends.

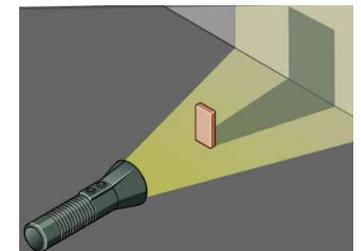
What happens when light is reflected?

- Light **reflects** off a mirror like a ball hitting a hard surface. The **angle** it hits the mirror at is the same that it is **reflected** at.



How does light travel?

- **Light** travels in a straight line.
- When you place a torch on a table in a **dark** room, the beam travels in a straight line.
- **Reflection** is when **light** bounces off a surface – this changes the direction in which the **light** travels.



light	a <b>brightness</b> that lets you see things.
mirror	a flat piece of glass which <b>reflects light</b> , so that when you look at it you can see yourself <b>reflected</b> in it
opaque	if an object or substance is <b>opaque</b> , you cannot see through it
reflects	sent back from the <b>surface</b> and not pass through it
shadows	a dark shape on a <b>surface</b> that is made when something stands between a <b>light</b> and the <b>surface</b>
source	where something comes from
surface	the flat top part of something or the outside of it
torches	a small <b>electric light</b> which is powered by batteries and which you can carry
translucent	if a material is <b>translucent</b> , some <b>light</b> can pass through it
transparent	If an object or substance is <b>transparent</b> , you can see through it
emits	to <b>emit</b> a sound or <b>light</b> means to produce it