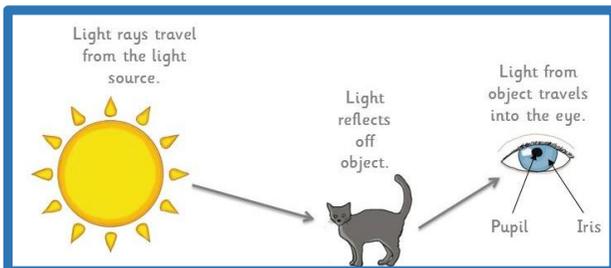




Important Information

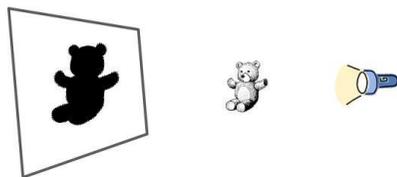
- ❖ Light travels in straight lines. Objects are seen because they give out or reflect light into our eyes.
- ❖ We see things because the light travels from light sources to our eyes or from light sources to objects and then to our eyes.
- ❖ Shadows have the same shape as the objects that cast them.
- ❖ When light from an object reflects off a surface, it changes direction. It bounces off the surface at the same angle as it hits it.
- ❖ Smooth, shiny surfaces such as mirrors and polished metals reflect light well.
- ❖ Fabrics do not reflect light well.
- ❖ Inside the eye is a lens that focuses the light onto a surface (the retina) at the back of the eyeball.
- ❖ The retina contains special cells that detect light and send messages to our brain, allowing us to see.
- ❖ Your pupil widens in dim light and is smaller in bright light.
- ❖ A light source is something that provides light, whether it is natural (e.g. the sun) or artificial (a lamp).

We need light to be able to see things. Light waves travel from a light source (sun) in straight lines and reflect off objects (cat) before being reflected back to our eyes.



How a shadow forms

Shadows form when an opaque object blocks light (from a source). A shadow is always the same shape as the object that casts it.



A sundial uses shadows to tell the time.

Vocabulary

transparent	An object or material that lets light pass through easily.
opaque	An object or material that does not let light through.
translucent	An object or material that allows some light to pass through and scatters light rays.
light source	Something that provides light artificially (e.g. torch) or naturally (e.g. the sun)
shadow	An area of darkness caused when light is blocked.
Reflection	Light waves bounce off a shiny or smooth surface.
refraction	When light bends when it travels from one medium to another or through an object e.g. through glass.
Law of reflection	The law of reflection states that no matter which direction light hits a smooth surface from, it reflects back off at an equal angle.

Top Takeaways

After studying this topic you should be able to:

- Recognise that light appears to travel in straight lines.
- 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
- 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
- Show that mirrors reflect an image of any object because light bounces off a mirror in exactly the same pattern as it arrives.
- Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them
- Explain that when light passes through objects it can bend (refraction) and that this can cause rainbows.



Light Sources

Working scientifically (Science Skills)

- i) planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- ii) taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- iii) recording results using scientific diagrams and labels, tables, scatter graphs, bar and line graphs
- iv) using test results to make predictions to set up further comparative and fair tests
- v) reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations
- vi) identifying scientific evidence that has been used to support or refute ideas or arguments