



LIGHT

LIGHT AND SOUND

We are learning 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.
- Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.

WORKING SCIENTIFICALLY

- Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
- Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
- Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
- Use test results to make predictions to set up further comparative and fair tests.
- Gather and record data to help in answering questions.

PRIOR LEARNING

- That they see with their eyes.
- That light can be reflected from some surfaces.
- How to make a shadow.
- About transparent, opaque and translucent objects.

OVERVIEW

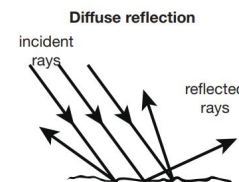
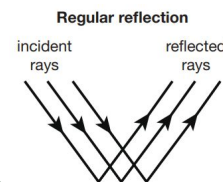
The topic introduces the concept of light travelling in straight lines. It starts by looking at beams of light and how light travels to enable children to understand how we see things. This understanding is then applied to the production of shadows and starts to look at how light is reflected. The topic then takes the learning into the realm of coloured light and rainbows, using scientific skills to raise and answer questions. It builds on the work carried out in Year 3 on light, shadows and reflection.

SHADOW

- 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.

LIGHT WAVES

- Light travels as a wave. But unlike waves of water or sound waves, it does not need a medium to travel through. This means light can travel through a vacuum - a completely airless space.

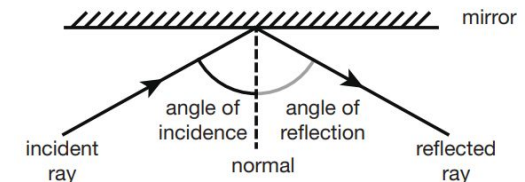


LET'S THINK LIKE SCIENTISTS

- An eye is like a camera. Can you spot the similarities? How are they different? Compare and contrast them.
- Some animals have much larger eyes than humans. Why is this?
- Light can go round corners! But it needs a helping hand to bend. What can be used?

KEY KNOWLEDGE

- We need light to be able to see things. Light waves travel out from sources of light in straight lines. These lines are often called rays or beams of light. Light from the sun travels in a straight line and hits the chair. The light ray is then reflected off the chair and travels in a straight line to the girl's eye, enabling her to see the chair.



REFLECTION

- When light passes from one material into another, it
- changes direction. The change in direction is known
- as refraction. When it passes from air into a more
- dense material, such as glass, Perspex or water,
- it changes direction towards the normal. When it passes from a more dense material into air, it changes direction away from the normal.

Vocabulary

cornea: the outer clear covering over the eye.

iris: the coloured part of the eye.

lens: the part of the eye that focuses the light.

light ray: the path light takes.

pupil: the black hole in the centre of the coloured part (iris) that lets light into the eye.

rainbow: occurs when sunlight hits rain, splitting the light into its colours.

reflection: light bouncing off the surface of an object.

symmetry: when one shape becomes exactly like another if you flip, slide or turn it. The simplest type of symmetry is 'reflection' (or 'mirror') symmetry.

