

Light

Why do shadows have the same shape as the objects that cast them?

Physics

Lesson sequence

LF: To recap prior learning

LF: To explain how I see things

LF: To understand how mirrors work

LF: To understand how shadows are formed

LF: To understand why shadows change

LF: To investigate how we can show shadows have the same shape as the object which casts them

LF: To explore light phenomena



Enquiry Types



Working Scientifically Skills

Sticky learning

New Knowledge:

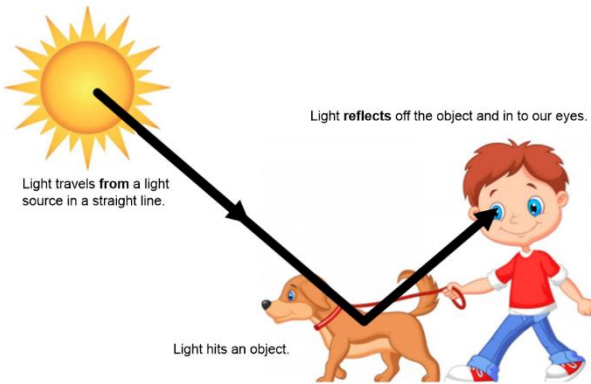
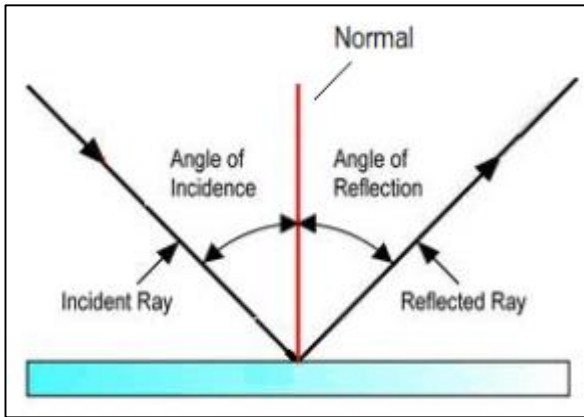
- recognise that light appears to travel in straight lines
- use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye
- explain that we see things because light travels from light sources to our eyes or from light sources to 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 Skills:

- taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs

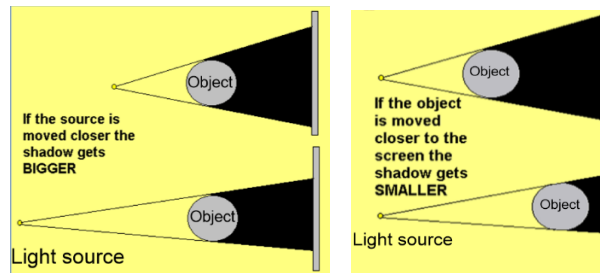
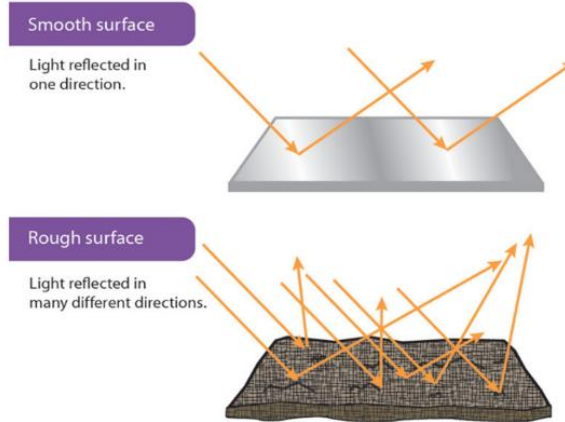
Prior Knowledge

- 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.



Isaac Newton

In 1672 Isaac Newton became the first person to show that white light was made up of many different colours. He used glass prisms to separate white light into colours and combine them back into white light again. He conducted these experiments in his room at Cambridge University.



Vocabulary revision (vocabulary I have been taught before)

- **light source** - something that makes light
- **opaque** - cannot see through
- **reflection** - when light bounces off a reflective surface
- **shadow** - a dark area or shape produced by an object coming between rays of light and a surface
- **transparent** - can see through
- **translucent** - can see through partially, but not in detail
- **artificial light** - light made from a man-made object (torch, lamp)

New vocabulary I will learn:

- **dark** - the absence of light
- **direction** - the way that something is moving
- **light ray** - an imaginary line that represents the line of light
- **light beam** - a group of light rays
- **reflective** - something that reflects well
- **refraction** - when light changes direction when going through the boundary of a state of matter
- **see** - to perceive with the eyes
- **periscope** - an instrument people use to look at things from a hidden position.