



Light (Physics)

Year 6

End Points:

- Light enables us to see by entering our eyes
- Light travels in straight lines
- Some light sources are natural, and some are artificial
- The iris helps the pupil to open and close
- Inside the retina, light rays become electrical signals which are sent to the brain
- Shadows are always the same shape as the object that made the
- The size of shadows can change but the outline shape stays the same as the object
- Light from the sun is made up of the colours of the rainbow
- When light travels through a prism, the glass slows it down and changes its course
- Different colours are slowed down different amounts when going through a prism
- A periscope uses reflects an image out of sight using light and mirrors

This unit builds on directly from Year 3 Light. It is really important to check how much prior knowledge children come to this unit with, and if necessary, clarify conceptual understanding about how light behaves. If pupils have not studied the Year 3 unit on light, please read it, and adjust lesson 1 of this unit to cover content such as light sources and how shadows are made.

In this unit, pupils will look more closely at light and how it behaves. They will learn that light is the visible part of a spectrum of energy. Pupils will be reminded that some surfaces reflect light, some allow it to pass through them and some block it. They will look again at shadows and how light travels. Pupils will test the hypothesis that shadows are always the same shape as the object that made them. They will work scientifically to plan how to test the hypothesis, before carrying it out. Pupils will also look at how the eye functions, how light travels through it and how our brain receives messages from the eye.

Going beyond the national curriculum requirements, pupils will also look at prisms and how they split white light into its constituent colours. This will give pupils some prior knowledge when they come to study the different frequencies of light and prisms in KS3 Physics.

Finally, pupils will use their knowledge of how light behaves to make a periscope. This will help them to see that by understanding the behaviour of light, scientists and engineers have harnessed light to create a device that can help us see something that is out of our line of sight. They will need to work carefully using measurement to ensure their mirrors are at a 45° angle, recognising the precision required by scientists at work.

Lesson Sequencing:

In lesson one, children will learn that light enables us to see and that it travels in straight lines. This knowledge will be built upon in the second lesson where pupils will look at the parts of the eye and the process of light travelling from a source to the brain. In lesson three, children will test a hypothesis that shadows are always the same shape as the object that made them. Lesson four will explore what light is made up of and what happens to it when it travels through a prism. In lesson five, children will learn how periscopes use mirrors to reflect an image that is out of sight. In the assessment lesson, children will use the knowledge learnt to explain why it is important to understand how light behaves.

Misconceptions:

- We can still see when there is an absence of light
- Light is only found in bright areas
- The moon and reflective surfaces are light sources
- We see things because light travels from our eyes to objects
- Our eyes 'get used' to the dark
- Shadows contain details of the object and not just the outline
- Shadows result from objects giving off darkness

Working Scientifically criteria met in this unit:

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- using test results to make predictions to set up further comparative and fair tests
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations
- identifying scientific evidence that has been used to support or refute ideas or arguments