

Light

Science

Knowledge organiser

Learning Lens: Physics
Class: Year 6

Previous Knowledge

Shadows are caused when certain materials block light. e
Light travels in straight lines. When light is blocked by an opaque object, a darker shadow is formed. The further away the light sources of the light, the bigger the shadow

Project Hook or 'Wow' memory

Making a periscope

Learning Steps

Key Knowledge (answers)

How light travel and investigate which material is most reflective?

Skills in comparative tests

Light travels in a straight line and hits an object. The ray of light is reflected off the object and travels in a straight line to the eye allowing it to see the object. These lines are often called rays or beams of light. 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. Different colours reflect different amounts of light. The material that items of made of reflect light differently. Retro reflective material.

How do we see things through light entering the eyes

Research

Eye actually sees everything upside down before the brain turns it the right way around again? To understand and draw a diagram explaining how he eyes work. Light from a source enters our eyes• To understand that light does not come from our eyes? • To recognise the main parts of the eye and how they work • How do we see? Why do some people need to wear glasses? Cover how the eye works and that light travels in a straight line. How light travels is revision from Y3.

Why do objects look bent when you look at them through water?

Identifying and classifying

An object e.g. spoon, will look as if it is bent in the water. This is because light bends when it moves from air to water. When light bends in this way, it is called **refraction**. What is refraction?

Why do shadows have different length shadows?

Create a shadow to show how light travels and to demonstrate that a shadow has the same shape as the object

Fair Test/Observing over time

To be able to understand the relationship between light sources and shadows. Because light travels in a straight line, when there ia 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 sources moves.
How does my shadow change over the day? Think about the size, shape and direction of the shadow.

How does a periscope work? Use the idea that light travels in straight line.

Create a periscope

Skills in fair tests

Light can only travel in a straight line. It cannot bend or turn around corners. To use a mirror to bend light• Mirrors reflect light and that they can be used to change the direction of a light beam. Children to understand how to make a rear-view mirror and a periscope. How does the angle that a light ray hits a plane mirror affect the angle at which it reflects off the surface? Do the periscope work here

Who was Isaac Newton and what did he discover?

Research How ideas have changed over time.

Scientific ideas have changed over time.

Isaac Newton shone a light through a transparent prism, separating out light into colours of the rainbow (red,orange, yellow, green, blue, indigo and violet) - the colours of the spectrum. All the colours together merge and make visible light. What is Sir Isaac Newton's Theory of colour? Cameras detect light—how has our understanding of light and its effects changed camera design throughout history. To identify all the colours of light which make white light.

The key skills we want pupils to use during this topic:

Ask relevant questions and use different types of scientific enquires to answer them. Set up simple practical investigations, compare things and make fair tests. Make careful observations and take accurate measurements using the right units using a range of equipment.

Gather, record, sort and present data in a variety of ways to help in answering questions. Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts or tables.

Developing children's skills in exploring how scientific ideas have changed over time.

Key vocabulary

Periscope

An apparatus consisting of a tube can hep see things that are out of sight.

Light Source

An object that makes its own light

Prism

It separates out visible light into all the colours of the spectrum

incident ray

A ray of light that hits a surface

Reflective ray

A ray of light that has bounced back after hitting a surface

Translucent

Allowing light to pass through

Refraction

When light passes rom one medium to another

Statutory Requirements

Recognise light appears in straight lines. Use the idea that light travels in straight lines. Objects are seen because they reflect light into the eye.

Light travels in straight lines and shadows have the same shape as the objects that cast them.

