

SCIENCE KNOWLEDGE ORGANISER

Y3 Light and Shadow The Big Ideas of Science P1, P3

Key Questions:

- Can you explain using precise scientific vocabulary how a shadow is formed?

- Recognise that they need light in order to see things and that dark is the absence of light
- Notice that light is reflected from surfaces
- Recognise that shadows are formed when the light from a light source is blocked by a solid object
- Recognise that light from the sun can be dangerous and that there are ways to protect their eyes
- Find patterns in the way that the size of shadows change.
- Make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- Set up simple practical enquiries, comparative and fair tests
- Gather, record, classify and present data in a variety of ways to help in answering questions

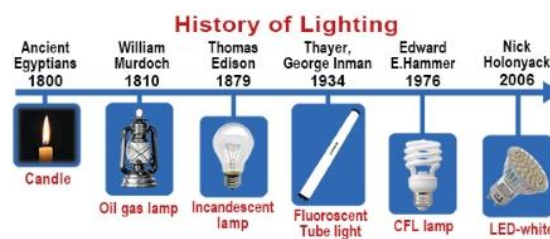
Key Dates

In 1802, Humphry Davy invented the first electric **light**. He experimented with electricity and invented an electric battery. When he connected wires to his battery and a piece of carbon, the carbon glowed, producing **light**. His invention was known as the Electric Arc lamp.

Revision
absorption, energy, property, reflection

New vocabulary
wave, mirror, incident ray, image, beam, photons, solid, opaque, transparent, object, source, data logger

Key Vocabulary / People



Key Content

- Light is a form of energy
- Energy comes in different forms and can be neither created nor destroyed, only changed from one form to another
- We need light to see things and that darkness is the absence of light
- Light travels in straight lines
- Light is reflected when it travels from a light source and then 'bounces' off an object
- Everything that we can see is either a light source or something that is reflecting light from a light source into our eyes
- The Sun is a light source, but that the Moon is not and is merely reflecting light from the Sun
- Many light sources give off light and heat
- The Sun gives off light and heat when hydrogen turns into helium
- Filaments in traditional bulbs heat up until they glow, giving off light and heat
- Fluorescent bulbs glow when electricity adds energy to a gas within the bulb
- Sunglasses can protect eyes from sunlight but looking at the Sun directly - even with sunglasses - can damage the eyes
- Opaque objects block light creating shadows and that light passes through transparent objects
- Opacity/transparency and reflectiveness are properties of a material
- As objects move towards a light source, the size of the shadow increases
- Know how to show the changing of shadow size by drawing a diagram with straight lines representing light
- A data logger can keep track of light levels and that this can be plotted on a graph to show how this changes over the course of a day