

Science

### Key Questions

- What is darkness?
- Why do I need light to see things?
- How can I protect my eyes from direct sunlight?
- How is a shadow formed?
- Why does the size of a shadow change during the day?
- How is light reflected from a surface?

### Light and Shadows

By the end of this unit, children will recognise that they need light in order to see things and that darkness is the absence of light. They will notice that light is reflected from different surfaces as well as understand that direct sunlight can be dangerous. They will recognise that shadows are formed when light from a light source is blocked by a solid object and they will look for patterns in the way that the size of shadows change.

#### Significant scientists

**Lewis Latimer**  
(1848- 1928)



Lewis Latimer was an inventor and a scientist who helped develop the electric light bulb. He was also an artist and an expert on the laws that cover inventions.

**Nicky Fox**  
(b. 1969)



Nicola Fox is a Nasa scientist who studies the sun. She says: - *The key to being a scientist is to love asking questions. If you are fascinated about how and why things work – you are already a scientist.*

### Key Vocabulary

light	A form of energy that travels in a wave from a source. Waves of light are called light rays or beams of lights.
dark	Darkness is the absence of light.
light source	Some objects emit their own light and are sources of light. Others are man-made and need electricity to produce light.
transparent	A material that is completely see-through so all of the light can pass through it.
translucent	A material that lets some light through but not all of it.
opaque	A material that light cannot pass through so you can't see through it.
shadow	An area of darkness where light has been blocked.
reflect reflective	To bounce off/ a word that describes something which reflects light well.

mirror

A sheet of glass or metal that reflects light.

## Why do we need light?

We need light to see things.



If it's completely dark then there is no light.



The more light there is, the easier it is to see objects.

## Sunlight



- The light from the sun can be dangerous.
- It can damage our eyes.
- We must never look directly at the sun.
- We can protect our eyes by wearing sunglasses or sunhats in bright sunlight.

## Shadows

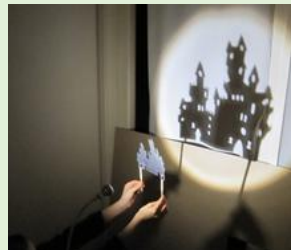
Shadows are formed when an opaque object blocks the light.



The child is blocking the sun's light.

We can change the size of the shadow by changing the position of the:

- light source
- object
- surface where the shadow is being made.



## Reflecting Light

Shiny surfaces such as polished metal and plastic and glass reflect light very well.



Matte surfaces such as cloth and wood don't reflect light very well.

## Home Learning Suggestions

- Design and make your own shadow puppet. You could even create your own shadow play.
- Design and make a sundial in your back garden to show what time it is.
- Research different sources of natural light. How is the light made?
- Investigate "Bioluminescence" (animals that can produce their own light), which animals can do this?