

Key Learning

Year 3

Recognise that light is needed to see things and that dark is the absence of light.

Recognise that shadows are formed when light from a light source is blocked by a solid object.

Notice that light is reflected from surfaces.

Recognise that light from the sun is dangerous and that there are ways to protect the eyes.

Year 4

Describe what happens to a light source in the dark.

Find patterns that determine the size of shadows.

Describe the way in which light is reflected from surfaces.

Describe in simple terms how light travels and what happens.

ROSES Year 3/4 Science: LIGHT

AUTUMN 1st half



Morda CE Primary School

Key Knowledge

What is light?

What is dark?

We need light to be able to see things



We are able to see things because our eyes sense light. We need light so that we are able to see in the dark, this is because dark is the absence of light. The sun and stars give us light. We must never look directly at the sun as it is dangerous and can damage our eyes.

What a light source is



A light source is something that emits light by burning, electricity or a chemical reaction. There are many light sources. The sun, stars and flames are examples of burning light sources.



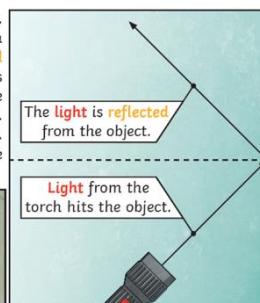
Electric light sources include lamps, car headlights and torches. Glow sticks are caused by chemical reactions. The moon is not a light source. It reflects light from the sun.



It simply reflects light from the sun.

What is reflective light? What are reflective materials?

We need light to be able to see things. Light travels in a straight line. When light hits an object, it is reflected (bounces off). If the reflected light hits our eyes, we can see the object. Some surfaces and materials reflect light well. Other materials do not reflect light well. Reflective surfaces and materials can be very useful...



What are

reflective surfaces? How does a mirror work?

Key Scientific Vocabulary

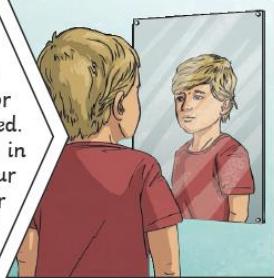
Key Vocabulary

light	A form of energy that travels in a wave from a source.
light source	An object that makes its own light.
dark	Dark is the absence of light.
reflection	The process where light hits the surface of an object and bounces back into our eyes.
reflect	To bounce off.
reflective	A word to describe something which reflects light well.
ray	Waves of light are called light rays. They can also be called beams.

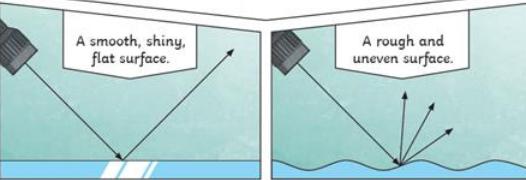
Key Vocabulary

pupil	The black part of the eye which lets light in.
retina	A layer at the very back of the eye. The retina takes the light the eye receives. It then changes it into nerve signals to send to the brain.
shadow	An area of darkness where light has been blocked.
opaque	Describes objects that do not let any light pass through them.
translucent	Describes objects that let some light through, but scatter the light so we can't see through them properly.
transparent	Describes objects that let light travel through them easily, meaning that you can see through the object.

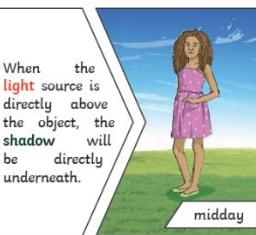
Mirrors **reflect light** very well, so they create a clear image. An image in a mirror appears to be reversed. For example, if you look in a mirror and raise your right hand, the mirror image appears to raise its left hand.



The surfaces that reflect **light** best are smooth, shiny and flat.



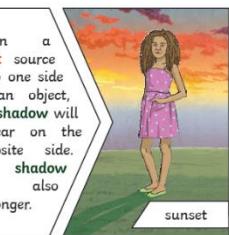
What is a shadow? What do you know about their shape and size?



When the **light** source is directly above the object, the shadow will be directly underneath.

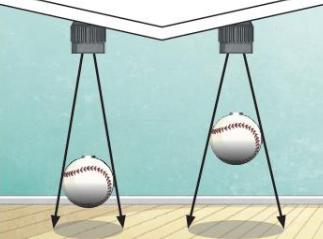
midday

A **shadow** is caused when **light** is blocked by an **opaque** object. A **shadow** is larger when an object is closer to the **light** source. This is because it blocks more of the **light**.



When a **light** source is to one side of an object, the shadow will appear on the opposite side. The shadow will also be longer.

sunset





Which materials are the best for blocking light?

opaque translucent transparent

How does an eye work?

Key Knowledge

pupil
retina

The pupils control the amount of light entering the eyes. If too much light enters, then it can damage the retina. To help protect the eyes, you can wear a hat with a wide brim and sunglasses with a UV rating.

Enquiry types

To recognise that we need light in order to see things and that dark is the absence of light.

To notice that light is reflected from surfaces.

To investigate which surfaces reflect light.

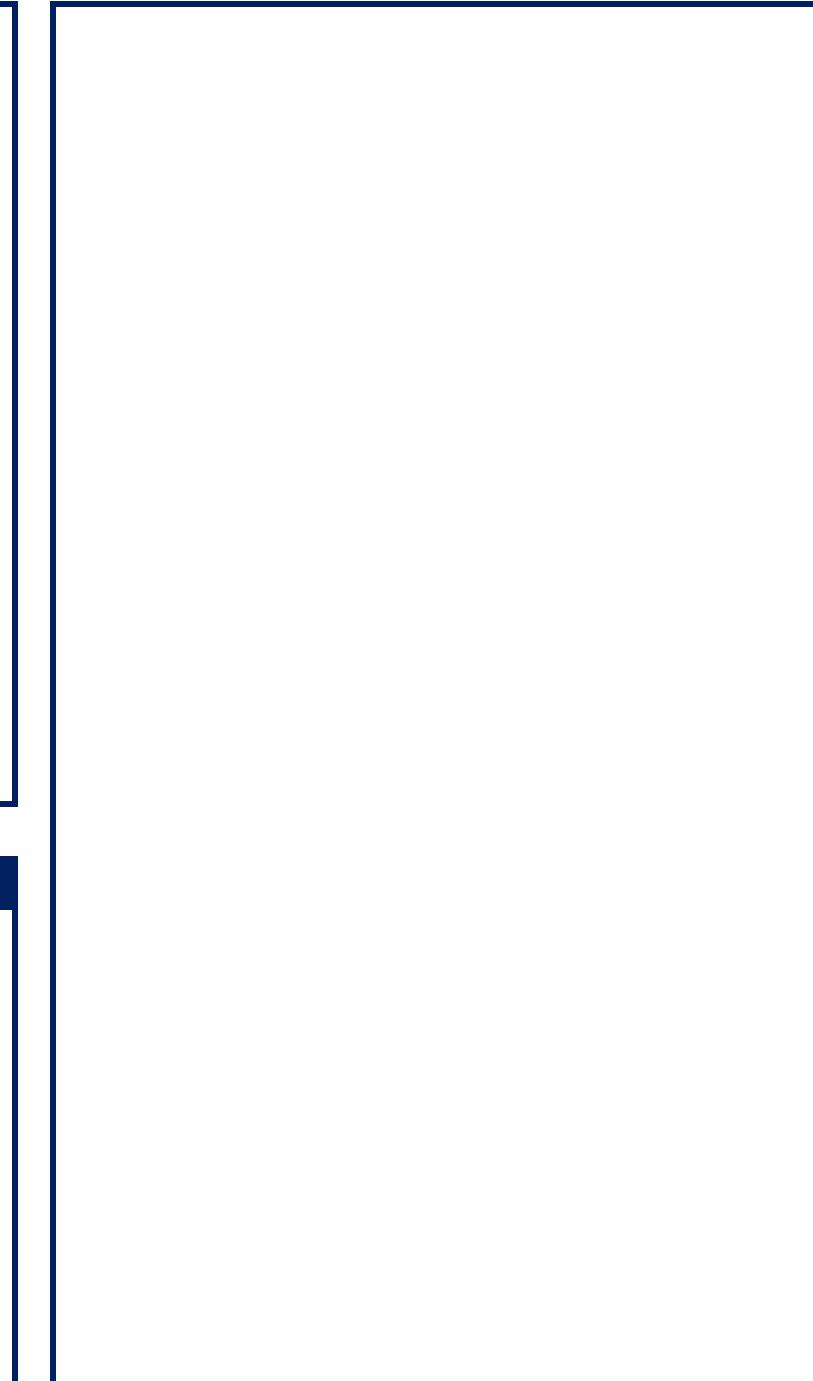
To recognise that light from the sun can be dangerous and that there are ways to protect our eyes.

To recognise that shadows are formed when the light from a light source is blocked by a

Common Misconceptions

Some children may think:

- we can still see even where there is an absence of any light
- our eyes 'get used to' the dark
- the moon and reflective surfaces are light sources
- a transparent object is a light source
- shadows contain details of the object, such as facial features on their own shadow
- shadows result from objects giving off darkness.



solid object by investigating the best material for curtains for a baby's bedroom.

To find patterns in the way that the size of shadows change by investigating what happens when you change the distance between the object and the light source.