

# Light

# Knowledge Organiser



## Vocabulary

Word	Meaning
incident ray	A ray of light that travels towards a surface
light	Light is a type of energy that makes it possible for us to see the world around us
light ray	A path of light that can also be called a beam
light source	Something that makes light
opaque	An object that does not let light through
prism	A prism is a 3D shape with flat sides. The two ends are equal in shape and size.
reflect	To bend or throw back light from a surface
reflected ray	A ray of light that has bounce back after hitting a surface
refract	The bending of a light ray through a material, such as water
scatter	Some rays of light hit particles that change the direction of the light
shadow	The dark shape made when something blocks light from a light source
transparent	An object that let's light through so it is 'see through'
translucent	An object that let's some light through but it is scattered so we can't see through them properly
visible spectrum	Light that is visible to the human eye. It is made up of a colour spectrum.

## Science

## What is light?

Light is an energy that makes it possible for us to see the world around us. Created by light sources, light travels in straight lines called light rays or beams. Our main natural light source is the sun, however there are many others, for instance fire and the stars. Remember, the moon is not a light source as it doesn't produce its own light! We also have manmade sources of light, such as light bulbs.

### Natural Light Sources



fire

aurora

sun

lightning

### Manmade Light Sources



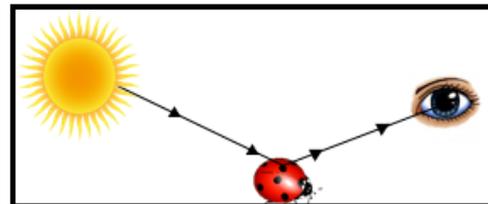
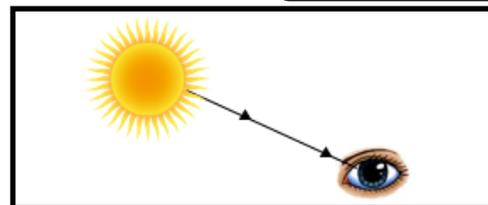
bulb

screen

match

torch

## We need light to see



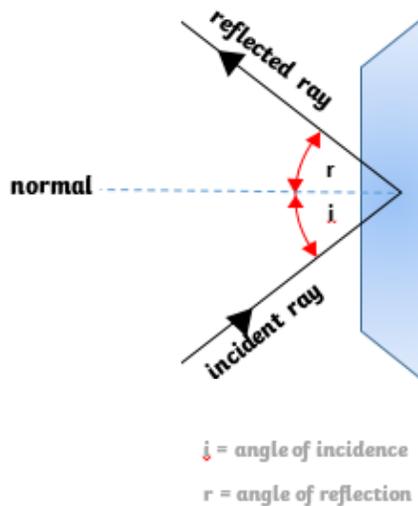
To see things around us, we need light. The light rays travel from the light source, in a straight line, until it meets a surface; the light is then reflected by the surface in a straight line to our eye. Notice the direction the light travels by following the arrows.

Year 6 Autumn Term

## The Law of Reflection

The law of reflection states that the angle of incidence is equal to the angle of reflection. The incidence ray is the path of light travelling from the light source towards the surface. The reflected ray is the path of light that has reflected off the surface.

The angles are measured from these paths the 'normal line' which is perpendicular to the surface.



## Refraction

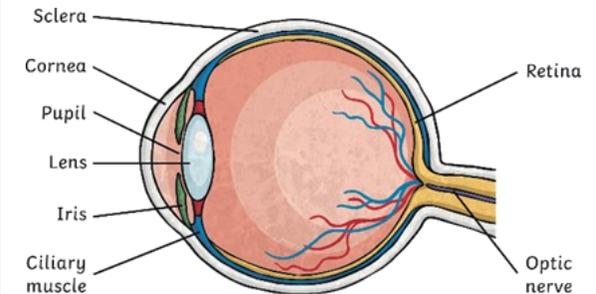
The path of light can also be changed through refraction. Refraction is when the light bends when it travels from one medium to another.

See how the pencil looks as though it is bent- it is not, it is the light bending when it travels from air to water.



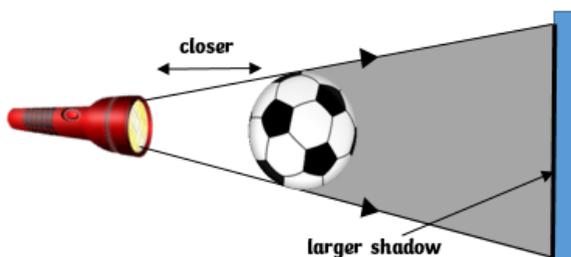
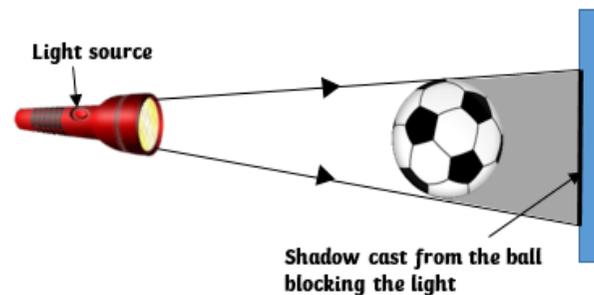
# Light

## Parts of the eye



## Shadows

A shadow is the absence of light: when an opaque object is in the path of light, the light rays that hit it are blocked. The light rays travelling past the outside of the object continue, creating a shadow. A shadow will always be the same shape as the



Although the shape stays the same, shadows can be elongated or shortened depending on the angle of the light. Shadows can also be made larger or smaller by changing the distance between the light source and the object.

## Extending your learning

- Design and make a periscope. Using the idea that light appears to travel in straight lines to explain how it works.
- Look at the world around, can you see light reflecting or refracting? You may see rainbows, colours on soap bubbles or objects looking bent in water. What colours can you see?
- Try making your own rainbow using a clear glass of water with a small mirror put inside and a source of light. Try playing around with the angles.
- Make a shadow puppet theatre. How can you change the size of the shadows?
- Whilst walking on a sunny day, have a look at your shadow. Is it short or long? Is it angled? What happens when you walk around a corner? Does your shadow look different in the morning compared to the afternoon? Think about why this might be.