

Knowledge Organiser

Year Group	Subject	Topic
6	Science	Light

The Big Picture

Children learn how we can see things with light, the sources of light, and how they travel in straight lines through air, water and other materials. We investigate how shadows are formed and to what shape via experimentation and how a rainbow is formed.

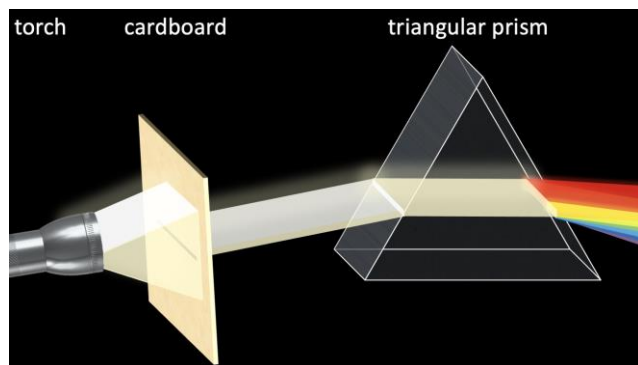
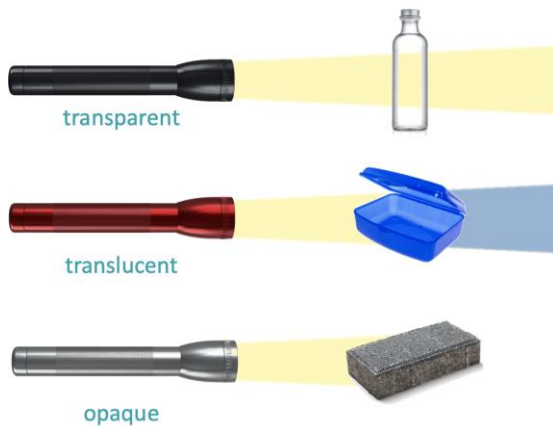
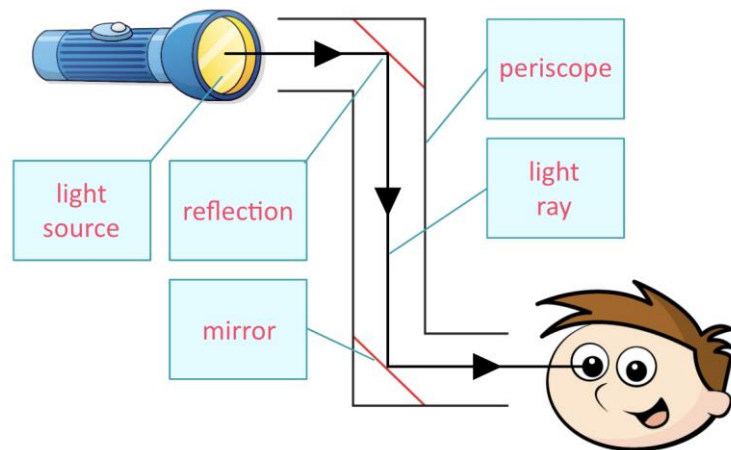
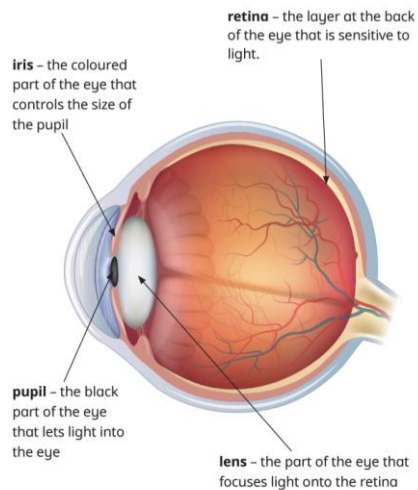
Enquiry Question

What is a natural and an artificial light source?
 What is the pupil/retina/lens/iris, and what are their functions? How can we see objects?
 How does light travel? Can light pass through objects like walls or doors?
 How does light reach our eyes from a light source?
 What is a shadow and what causes it to form?
 How does the shape of an object affect the shape of its shadow?
How does the distance from a light source affect the size of the shadow?
 What do you predict will happen? How will you set up your experiment?
 What distances are you choosing to use in your experiment?
How does the distance from a light source affect the size of the shadow?
 How will you prevent other light sources in the room from affecting the investigation?
 What did you find out in the experiment? What conclusions can you make from your data?
 What happens to light when it travels from air to water?
 What causes the change in the direction of light during refraction?
 What is a spectrum of light? How are rainbows formed?

Key Vocabulary

light source:	object that produces light
pupil:	the black part of the eye that lets light into the eye
retina:	the layer at the back of the eye that is sensitive to light.
iris:	the coloured part of the eye that controls the size of the pupil
lens:	the part of the eye that focuses light onto the retina
reflection:	when light bounces off an object
ray diagram:	a diagram showing how light travels
angle:	where two lines meet at a point
periscope:	an instrument that uses mirrors to make objects visible around barriers
shadow:	a dark area caused by an object blocking a source of light
opaque	an object or material that does not allow any light to pass through it
translucent	an object or material that allows some light to pass through it
transparent	an object or material that allows all light to pass through it
solar eclipse	when the Moon passes between the Earth and the Sun and blocks the sunlight from reaching the Earth. This casts a shadow of the Moon on the Earth

independent variable:	(what will change) – the distance between the light source and the opaque object
dependent variable:	(what will be measured) – the size of the shadow on the wall
controlled variable:	(what is kept the same) – the size of the opaque object and the distance from the object to the wall
conclusion:	what has been found out during an investigation based on experimental measurements and observations
evaluate:	to consider the quality of the results obtained and suggest improvements to the investigation
refraction:	the changing of direction of light when it passes from one medium to another.
Medium:	any substance which can allow sound or light to pass through it
rainbow:	an arc of colours in the sky, caused when light from the Sun passes through raindrops
prism:	a triangle-shaped block of glass or transparent plastic
spectrum of light:	the range of different colours seen when white light is passed through a prism



Key People	
Ibn al-Haytham	Born in Iraq in 965 A.D, al-Haytham wrote the Book of Optics. He discovered and proved that light does not emanate from the human eye but rather is emitted by certain objects (like lanterns) and travels from these objects in straight lines. He also discovered the laws of refraction and carried out the first experiments on the dispersion of light into its constituent colors.
Sir Isaac Newton	Born in England in 1642, Isaac Newton is most famous for discovering the laws of gravity. Alongside his work on gravity, he stated that light did not reveal colour, but was actually responsible for producing colour and reflecting it in the human eye. This disproved previous theories that that light was originally white and was corrupted by the material the light would go through.