

Light

Overview of unit

In this unit pupils will build on the work on light in year 3/4, exploring the way that light behaves, including light sources, reflection, refraction and shadows. They will develop this understanding through practical investigations and experiments.

Key Questions

How does light help us to see?

How can we use mirrors to help us see things using your knowledge of how light travels?

Explain how and why refraction can change the appearance of objects.

What colour is light? (show a prism changes a ray of light to show the spectrum)

Why do shadows have the same shape as the object that casts them?

Key Vocabulary

light	A form of energy that travels in a wave from a source.	reflected ray	A ray of light that has bounced back after hitting a surface.
light source	An object that makes its own light.	the law of reflection	The law states that the angle of the incident ray is equal to the angle of the reflected ray.
reflection	Reflection is when light bounces off a surface, changing the direction of a ray of light.	refraction	This is when light bends as it passes from one medium to another. E.g. Light bends when it moves from air into water.
incident ray	A ray of light that hits a surface.	visible spectrum	Light that is visible to the human eye. It is made up of a colour spectrum.
prism	A prism is a solid 3D shape with flat sides. The two ends are an equal shape and size. A transparent prism separates out visible light into all the colours of the spectrum.	shadow.	An area of darkness where light has been blocked.
transparent	Describes objects that let light travel through them easily, meaning you can see through the object	translucent	Describes objects that things let some light through, but scatters the light so we can't see through them properly
opaque	Describes objects that do not let any light pass through them.		

Key Knowledge and Understanding:

We need light to be able to see things. Light waves travel out from sources of light in straight lines. These lines are often called rays or beams of light. Light from the sun travels in a straight line and hits the chair. The light ray is then reflected off the chair and travels in a straight line to the girl's eye, enabling her to see the chair. Isaac Newton shone a light through a transparent prism, separating out light into the colours of the rainbow (red, orange, yellow, green, blue, indigo and violet) - the colours of the spectrum. All the colours together merge and make visible light. The spoon in this water looks as if it is bent. This is because light bends when it moves from air to water. When light bends in this way, it is called refraction. A shadow is always the same shape as the object that casts it. This is because when an opaque object is in the path of light travelling from a light source, it will block the light rays that hit it, while the rest of the light can continue travelling. Shadows can also be elongated or shortened depending on the angle of the light source. A shadow is also larger when the object is closer to the light source. This is because it blocks more of the light.