



Light



Useful Vocabulary

light—A form of energy that travels in a wave from a source.

light source - An object that makes its own light.

Reflection —Reflection is when light bounces off a surface, changing the direction of a ray of light.

Incident ray —A ray of light that hits a surface.

Reflected ray - A ray of light that has bounced back after hitting a surface.

The law of reflection—The law states that the angle of the incident ray is equal to the angle of the reflected ray

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.

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.

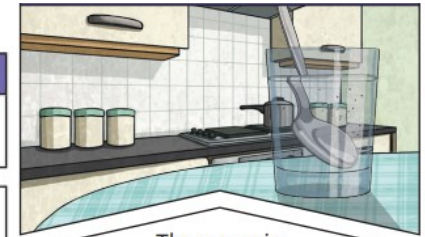
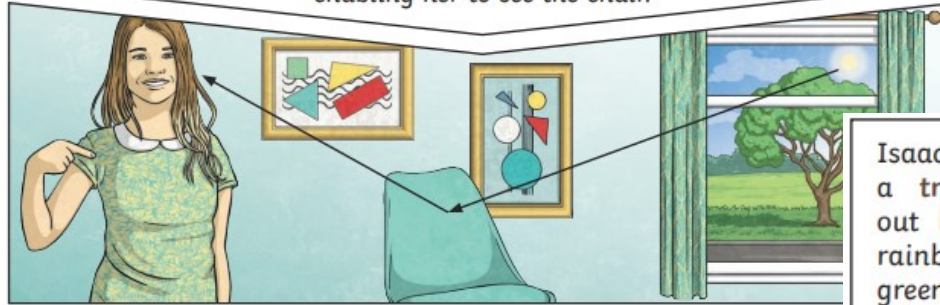
Translucent—Describes objects that things let some light through, but scatters the light so we can't see through them properly.

Opaque—Describes objects that do not let any light pass through them.

Key Knowledge

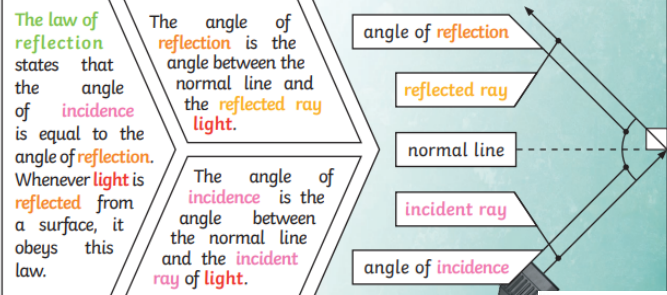
We need **light** to be able to see things. **Light** waves travel out from sources of **light** in straight lines. These lines are often called rays or beams of **light**.

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.



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**.

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**.

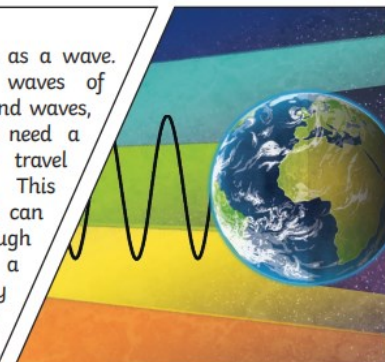


The law of reflection states that the angle of **incidence** is equal to the angle of **reflection**. Whenever **light** is **reflected** from a surface, it obeys this law.

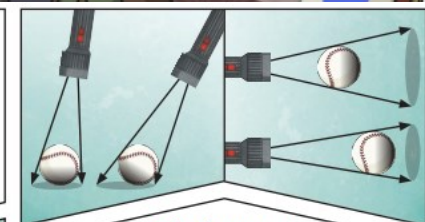
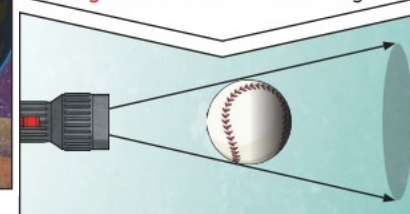
The angle of **reflection** is the angle between the normal line and the **reflected ray** of **light**.

The angle of **incidence** is the angle between the normal line and the **incident ray** of **light**.

Light travels as a wave. But unlike waves of water or sound waves, it does not need a medium to travel through. This means **light** can travel through a vacuum - a completely airless space.



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**.