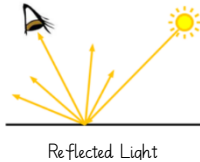
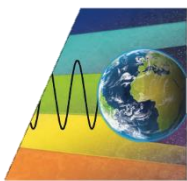
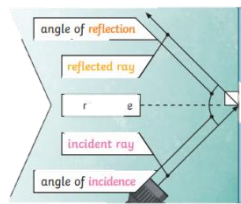


Key Knowledge

- 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 object. The light ray is then **reflected** off the object and travels in a straight line to the person's eye, enabling them to see the object.



- 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 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**.

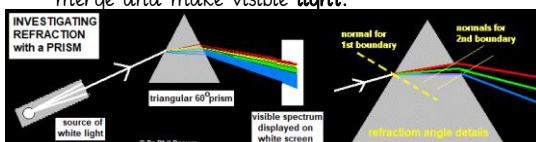


- Seeing an object in water can appear to look bent. This is because **light** bends when it moves from air to water. When **light** bends in this way it is called **refraction**.



Famous Scientist

- **Isaac Newton** shone a **light** through a **transparent prism**, separating out **light** into the colours of the rainbow (red, orange, yellow, green, blue, indigo, violet) the colours of the **spectrum**. All the colours together merge and make visible **light**.



Key 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.

Mirror – a surface which reflects a clear image.