

## Light – How we see things

*In this unit pupils will conduct a series of experiments to understand how light behaves. They will research information about Isaac Newton and also begin to understand how the human eye works.*

### Background information

- Light travels in straight lines. When light hits an object, it is reflected (bounces off) and enters our eyes. This is how we see the object.
- Rays of light travel from a light source and hit objects around us. The rays of light reflect, or bounce, off an object, and then travel into our eyes.
- This reflection of light allows us to see the object.

### Knowledge and Understanding

**How light is reflected?** - We see objects because light rays enter our eyes after bouncing off rough surfaces. When light rays hit a smooth surface the light is reflected at equal angles.

**The law of reflection** - The law of reflection is what allows us to see an object reflected in a mirror.

**What are shadows?** - When an object passes in front of a beam of light, the light can be blocked, making a shadow. Opaque objects let no light through. Translucent objects let some light through. Transparent objects let all light through. The closer an object is to the source of light the bigger the shadow.

### Enquiry skills and Key concepts

- Plan an experiment to investigate how changing the distance of a light source affects the size of a shadow.
- Carry out an experiment and make accurate measurements.
- Present results in a graph to help draw a conclusion.
- Measure reflected rays of light accurately in order to test and understand the laws of reflection.
- Draw diagrams to explain how a periscope works.

### Key Vocabulary:

**Light** - Light is a type of energy that makes it possible for us to see the world around us.

**Source of light** - The Sun and other stars, fires, torches and lamps all make their own light and so are examples of sources of light.

**Reflection** - Reflection occurs when a light ray hits a surface and bounces off.

**Refraction** - Refraction is the bending of light as it passes from one substance to another.

**Prism** - A prism is a three-dimensional shape with identical ends, called bases, and flat sides called faces. A prism allows us to see the visible spectrum.

**Shadow** - A dark area or a shape produced by an object coming between rays of light and a surface.

**Opaque** - An opaque material does not let light through. It does not reflect light.

**Translucent** - A translucent material lets light pass through, but objects on the other side can't be seen clearly.

**Transparent** - Transparent materials allow you to see clearly through them.