Year 6
**Topic:** Light
**Strand:** Physics

## What I should already know.

- Certain things produce **light**, usually by burning (e.g. the Sun) or **electricity** (e.g. street **lights**).
- Shiny materials do not make **light** but do reflect it.
- **Shadows** are caused when certain materials block **light**.
- **Light** travels in straight lines. When **light** is blocked by an **opaque** object, a **dark shadow** is formed.
- The further away the **light source** is, the smaller the **shadow** is. The closer the **source** of the light, the bigger the shadow.

## What will I know by the end of the unit?

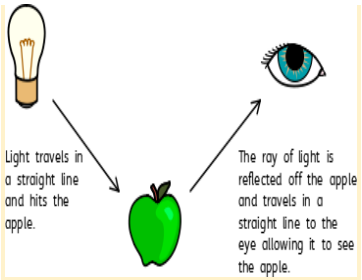
### How does light travel?

•Light travels in a straight line.

•When you place a torch on a table in a dark room, the beam travels in a straight line.

•Reflection is when light bounces off a surface, this changes the direction in which the light travels.

### How do we see?

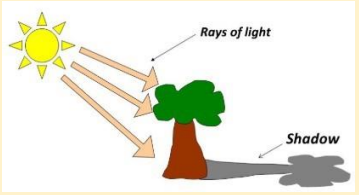


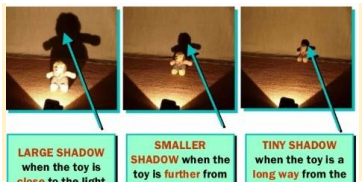

### What is the relationship between light sources and shadows?

Because light travels in straight lines, when there is an opaque object blocking the light, a shadow is formed.

These shadows have the same shape as the object

The size of a shadow changes as the light source moves that cast them.




## Vocabulary

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|---|---|
| **Angle** | **The direction from which you look at something.** |
| **Dark** | The absence of **light.** |
| **Dim** | **Light** that is not **bright.** |
| **Electricity** | A form of energy that can be carried by wires and is used for heating and lighting and to provide power for machines. |
| **Emits** | To **emit** a sound or **light** means to produce it. |
| **Light** | A **brightness** that lets you see things. |
| **Mirror** | A flat piece of glass which **reflects light**, so that when you look at it you can see yourself **reflected** in it. |
| **Opaque** | If an object or substance is **opaque**, you cannot see through it. |
| **Reflects** | Sent back from the **surface** and not pass through it. |
| **Shadows** | A dark shape on a **surface** that is made when something stands between a **light** and the **surface.** |
| **Source** | Where something comes from. |
| **Surface** | The flat top part of something or the outside of it. |
| **Torches** | A small **electric light** which is powered by batteries and which you can carry. |
| **Translucent** | If a material is **translucent**, some **light** can pass through it. |
| **Transparent** | If an object or substance is **transparent**, you can see through it. |
| **Opaque** | If an object or substance is **opaque**, you cannot see through it. |
| **Reflects** | Sent back from the **surface** and not pass through it. |
| **Shadows** | A dark shape on a **surface** that is made when something stands between a **light** and the **surface.** |

## Investigate!

- What happens when light is **reflected** from different **surfaces**? What happens when light is **reflected** from a **mirror**? What happens when the **angle** of the **mirror** (or **light source** changes?)
- Draw diagrams to show how **light** travels and what happens when **light** is **reflected** from a **mirror.**
- Draw diagrams to show how we see.
- Design an experiment to measure **shadow** length by changing a variable. Show your results in a line graph to show the relationship between distance of **light source** and **shadow** length. Explain your findings using scientific vocabulary.
- Make a periscope and explain how it works using diagrams and scientific vocabulary. Use the idea that **light** appears to travel in straight lines to explain how it works.
- Research how **mirrors** are used in different contexts (e.g. rear view mirrors, on a dangerous bend) and explain why and how they work.
- Explain why objects look bent in water.
- Explore different contexts in which **light** travels including rainbows, colours on soap bubbles and coloured filters.