What do I 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.

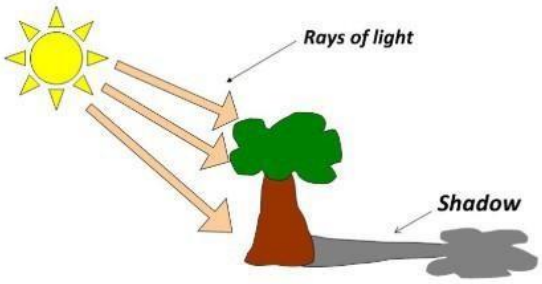
What will I know by the end of the unit?

How does light travel?

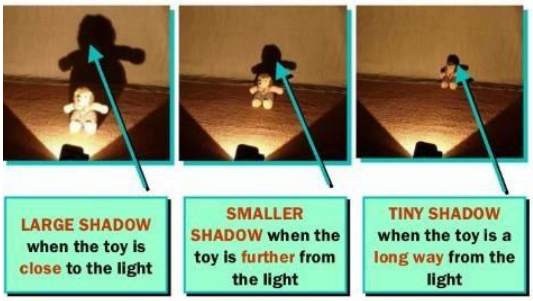
- **Light** travels in a straight line.
- When you place a torch on a table in a **dark** room, the beam travels in a straight line.
- **Reflection** is when **light** bounces off a surface - this changes the direction in which the **light** travels.

What is the relationship between light sources and shadows?

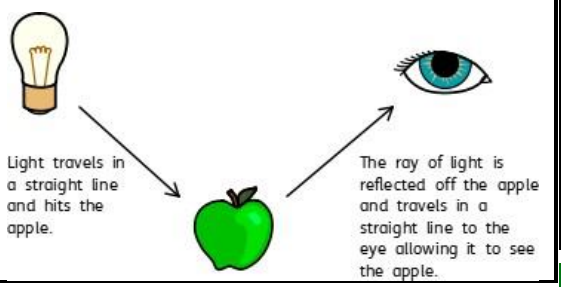
- Because **light** travels in straight lines, when there is an **opaque** object blocking the **light**, a **shadow** is formed.
- These **shadows** have the same shape as the objects that cast them.



- The size of a **shadow** changes as the **light source** moves.



How do we see?



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.
- Create **shadow** puppets to show how **light** travels and to demonstrate that a **shadow** has the same shape as the object that casts them.
- 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.

VOCABULARY

angle	the direction from which you look at something
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 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