

Key Knowledge

What is a light source?

- A **light source** is an object that **emits light**.
- Light can be created when something burns or gets really hot, by electricity or by **chemical reactions**.
- Burning **light sources** include the Sun, flames from a fire and stars.
- We must *never* look directly at the Sun as the **light** produced is very **bright** and can be harmful to our eyes. This is why we wear **sunglasses**.
- **Electric lights** include lamps, car headlights and streetlights.
- **Light** created by a **chemical reaction** is less common. Examples include glow sticks and fireflies.



Why do we need light?

- We need **light** so that we are able to see.
- **Dark** is the absence of **light**. The Sun and stars always give us **light** but we can only see the stars when it is **dark**. At night, we cannot see the Sun's **light** as the Earth turns and our part of the Earth is not lit up by the Sun.
- When we are driving, we need car headlights or streetlights to help us.
- If we are out in the dark, we need **torches** to help us see. Avoid looking directly into a **torch** – it is dangerous.

What are not light sources?

- The Moon is not a **source** of **light** even though we can see it in the **dark**.
- The Moon's surface is made of rocks which reflect the light of the Sun, making it appear as though the Moon **emits light**.
- Shiny things are not **light sources** – they appear **bright** because they reflect a lot of light.

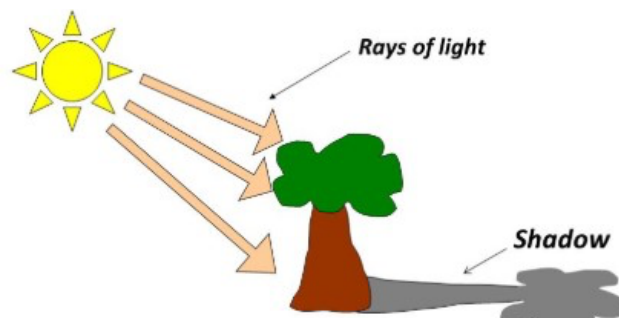
How does light travel?

- **Light** travels in straight lines.
- When **light** is blocked by an **opaque** object, a **dark shadow** is formed.
- Some of the light is **reflected** by the object's surface.

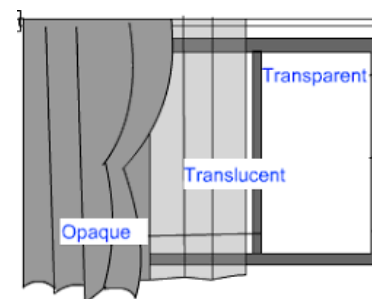
Investigate

Can you identify light sources?
 Which is brightest?
 How could you make it a fair test?
 Which objects form the best shadows when light is shone on them?
 How can you change the size and shape of shadows using the same object?
 What happens when light is reflected from different surfaces?
 What type of surface reflects light the best?

Diagram – How Shadows are Formed



- When **light** is blocked by an **opaque** object, a **dark shadow** is formed. An **opaque** material blocks **light** so we can't see through it or shine a **light** through it.
- When **light** is shone onto a **transparent** object, the **light** travels through it, we can see through it and it makes a very faint **shadow**.
- When **light** is shone onto a **translucent** object, some of the **light** travels through it, we can see **bright light sources** through it and it makes a fairly **dark shadow**.
- The size of a **shadow** changes as the **light source** moves. The closer the **light source**, the bigger the shadow. The farther the **light source**, the smaller the shadow.



Key Vocabulary

bright	A light or colour that is strong and noticeable.
dark	The absence of light .
dim	Light that is not bright .
emits	To emit light or sound means to produce it.
light	A type of energy that lets us see things.
mirror	A flat piece of glass which reflects light , so that when you look at it you can see yourself.
opaque	If a substance is opaque , no light can pass through it and you cannot see through it.
reflects	Light that is reflected is sent back from a surface and does not pass through the object.
shadow	A dark shape on a surface that is made when something stands between a light and a surface.
source	Where something comes from.
torch	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 is transparent , all the light can pass through it and you can see through it.