

Light Knowledge Planner

What should I already know?

- The materials everyday objects are made from.
- Some simple physical properties of a variety of everyday materials – being able to group these together on the basis of their characteristics.
- How to identify and classify, and how to use observations to suggest answers to questions.
- How to observe using simple equipment and perform simple tests.
- How to gather and record data to answer simple questions.
- That questions can be answered in a variety of ways.

What is a light source

- A **light source** is something that **emits light** by burning, electricity or **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 street **light**.
- **Lights** that are caused by **chemical reactions** are much less common. This happens when different chemicals reaction and **light** is a **product** of that reaction. Examples can include glow sticks and fire flies.

What are not sources of light?

- The moon is not a source of light even though we can see it in the dark.
- This is because the Sun's light reflects on the surface of the Moon making it appear as though the moon emits light.
- Shiny things are not light sources – they appear to be sources of light as they are bright.

How does light travel?

- Light travels in straight lines.
- When light is blocked by an opaque object, a dark shadow is formed.

Key Vocabulary

Dark	The absence of light
Electricity	A form of energy that can be carried by wires and is used for heating and lighting, and to provide power for machines
Source	Where something comes from
Reflects	Sent back from the surface and does not pass through it
Surface	The flat top part of it or the outside
Shadows	A dark shape on a surface that is made when something stands between a light and a surface.
Light source	An object that makes its own light
Ray	Waves of light are called light rays. They can also be called beams.
Angle	The direction from which you look at something
Translucent	A material that light can pass through
Opaque	An object or substance that you cannot see through.

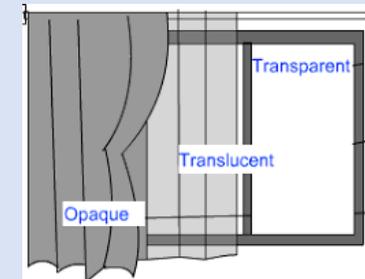
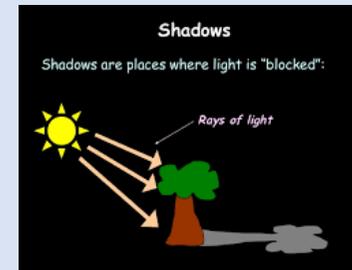
Why do we need light?

- We need light so that we are able to see in the dark.
- This is because the dark is absence of light. The sun and star always give us light but we can only see the stars when it is dark. At night time we cannot see the Sun's light as the Earth turns and our part of the Earth is not lit up by the Sun at night.
- When we are driving, we need car headlights or street **lights** to help us.
- If we are walking or out in the dark, we would need **torches** to help us see. You should not look directly into the **torch** as this is dangerous

Investigate

- The **brightness** of torches- can you put torches in order from **brightest to dimmest**? What would make it a **fair test**?
- Why do lights seem **brighter** in the **dark**? Explore which objects form shadows when light is shone on them.
- How can you change the size and shape of **shadows** by using the same object?
- 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?)

How are shadows 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 and 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 further away the **light source** is, the smaller the **shadow** is. The closer the **source** of the light, the bigger the shadow.

