

Science Knowledge Organiser

Light

Yr 3

Main Foci: Physics

What will I know by the end of the unit?

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 react and **light** is a **product** of that reaction. Examples can include glow sticks and fire flies.



Why do we need light?

- We need **light** so that we are able to see in the **dark**.
- This is because the **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 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.

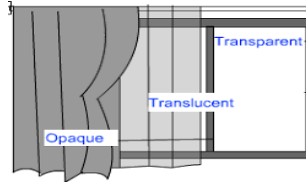


What are not sources of light?

- 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**.

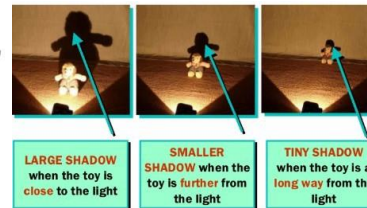
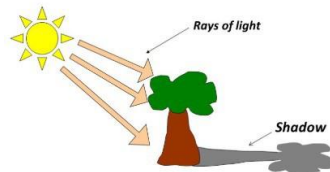
How does light travel?

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



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 larger the shadow.



LARGE SHADOW when the toy is close to the light

SMALLER SHADOW when the toy is further from the light

TINY SHADOW when the toy is a long way from the light

What should 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**.

Vocabulary

bright	a colour that is strong and noticeable, and not dark
cast	cause light or shadow to appear on a surface.
dark	the absence of light
dim	light that is not bright
light	a brightness that lets you see things.
luminous	giving off light; bright or shining
mirror	a flat piece of glass which reflects light , so that when you look at it you can see yourself reflected in it
matt	dull and flat; without a shine.
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
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