

Calcot Schools Knowledge organiser—Science

Topic: Science - Light and Shadow	Phase	Strand: Physics
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Prior knowledge from previous year groups:

-Light is produced by lamps or candles
 -Year 1—seasonal changes—shadows are formed at particular times during the day

What will the children know by the end of the

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.

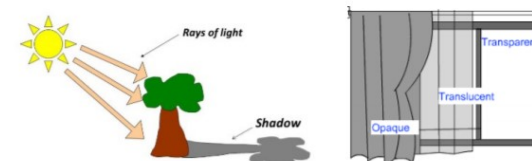
Electric lights include lamps, car headlights and street light.

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.

Vocabulary:

angle	the direction from which you look at something
bright	a colour that is strong and noticeable, and not dark
chemical reactions	a process that involves changes in the structure of 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
product	something that is produced
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
sunglasses	glasses with dark lenses which you wear to protect your eyes from bright sunlight
surface	the flat top part of it 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

Diagrams:
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.



Investigate!

- The **brightness** of torches - can you put torches in order from **brightest** to **dimpest**? 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?)