Green Lane Primary School - Science

Topic: Light	Year: 3	Strand: Physics

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.

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 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

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?)

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.

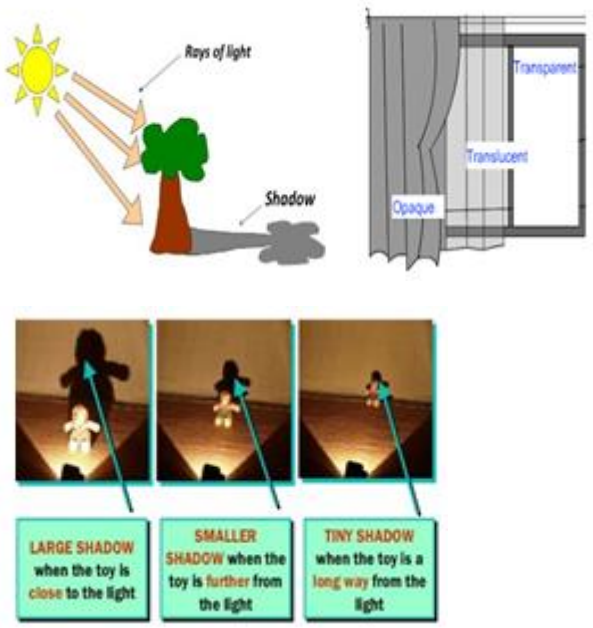
What are NOT sources of light?

- 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.

Diagram



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 light, the bigger the **shadow**.

Question 1 – Match the words to their description.	**Start of unit**	**End of unit**

translucent	you cannot see through it and a dark shadow is formed
transparent	you can see a little through it and a fairly dark shadow is formed
opaque	you can see through it completely and a faint shadow is formed

Question 2 – How does light travel?	**Start of unit**	**End of unit**
in a straight line		
in a curvy line		
light is everywhere		
light does not travel		

Question 3 – Dark means…	**Start of unit**	**End of unit**
when there is a little bit of light so you can see		
the absence of light		
you have to eat carrots so you can see		

Question 4 – When light bounces off a surface, it is…	Start of unit	End of unit
absorbed		
reflected		
bounced		
dissolved		

Question 5 – Sources of light include (tick three)…	Start of unit	End of unit
the sun		
the moon		
street lights		
a torch		

Question 6 – Shadows are formed when…	Start of unit	End of unit
light is let through an object		
light reflects off an object		
it is dark		
light cannot travel through an object		

Question 7 – The size of a shadow becomes smaller…	Start of unit	End of unit
when the object is close to the light source		
when the object is far from the light source		
The distance between the light source and the object stays the same		

Question 8 – How do we see an object?	Start of unit	End of unit
light reflects off the object and enters our eyes		
light travels from our eyes and reflects off the object		
Light reflects off our eyes and enters the object		

Question 9 – Mirrors work by…	Start of unit	End of unit
letting light through that hits them		
absorbing light that hits them		