

# What do I already know about light?

January 2021

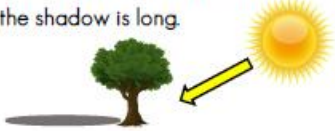
# Complete the K and W section of the KWL

You can write this straight into your book as headings.


Light		
K	W	L
What I know	What I want to know	What I have learnt

# Knowledge Organiser

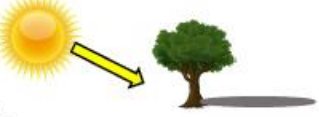
As the earth spins, it makes the sun appear to rise in the east in the morning. Because the sun hits an object at an angle, the shadow is long.



As the earth continues to spin the sun is overhead by midday. Because the sun hits the object from above, the shadow is short.



As the earth spins and the sun sets in the west in the evening, the shadow is long.



- 1.) We can see objects because light reflects off them and into our eyes.
- 2.) Light reflects off most objects, especially colours like white and yellow.
- 3.) If there is no light at all (pitch-black), then there is no light to reflect and we can't see anything at all.
- 4.) At night you can still see a bit in the dark because the moon is reflecting light.

## LIGHT



Because light travels in straight lines, when it hits an object, it is blocked. It can't bend around the object so it casts a shadow.

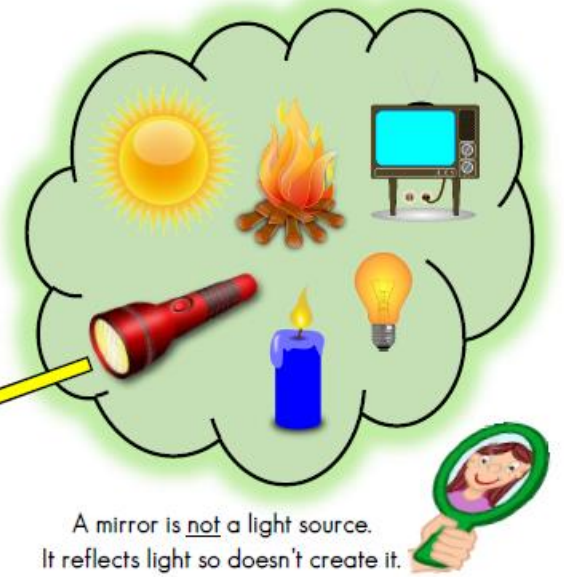
Light travels in straight lines. It travels from the light source either directly into our eyes, or reflecting off objects at 670 million mph.



When light hits a smooth object, it bounces off (reflects) making it appear shiny.



### LIGHT SOURCES



A mirror is not a light source. It reflects light so doesn't create it.

- Opaque:** This is the name given to objects which light *cannot* travel through. They block light and create shadows
- Translucent:** This is the name given to objects which *some* light can travel through.
- Transparent:** This is the name given to objects which light *can* travel through.

Rainbows are formed when the sun shines through water particles (transparent) and when white light passes through, it 'bends' and splits into the range of colours which make white light



# Points to Consider

What does a mirror reflect in a very dark room?

Why do people associate the dark with bad or scary things?

What can cartoonists use to show a good idea above someone's head now that so many light bulbs are low energy?

POINTS TO PONDER

Do mirrors make people vain?

Can we count all the colours that exist?

If we see because of light reflecting from objects, would something completely non-reflective be invisible?

**Look at each point.**

**Can you add 2 of your own thoughts in green pen or other colour?**

# How can we see light sources?

January 2021

# Success Criteria:

	Guided		Independent		Group/Paired		TA Guided		
<u>Success Criteria</u>							<u>Self</u>	<u>Peer</u>	<u>CT</u>
I know that light travels in straight lines.									
I can distinguish between a light source and reflected light.									
I can use the correct scientific terminology to describe the properties of light.									

# Key Vocabulary - are there any words we don't understand?

<b>light</b>	<b>ray</b>	<b>beam</b>	<b>light source</b>	<b>eye</b>
<b>light sensor</b>	<b>refraction</b>	<b>opaque</b>	<b>transparent</b>	<b>translucent</b>
<b>object</b>	<b>shadow</b>	<b>reflection</b>	<b>mirror</b>	<b>senses</b>

If there are words you don't understand, get a dictionary (or online dictionary) and write a clear definition.

# How does light travel?

## Watch the clip

[https://www.youtube.com/watch?app=desktop&v=fm\\_\\_GAlrBuQ](https://www.youtube.com/watch?app=desktop&v=fm__GAlrBuQ)

TASK

### Recap

Light originates from light sources.

Can you sort these objects into light sources and non-light sources?

Mirror

Pencil

Candle (lit)

Television screen (turned on)

Stars

Moon

Earth

Sun

Light source	Non-light source



The moon is not a light source because it does not make its own light. Instead it reflects light from the sun, which is a light source.



Objects that reflect light from light sources are sometimes called secondary light sources.

## TASK

Light sources can be natural or man-made.  
Make a list of natural light sources.  
Why do they produce light?



Light travels in a straight line from a light source. We can see this if we shine a torch across a dark room.



The Peace Tower in Iceland sends a high powered beam of light into the night sky.

Please note this down in your book.

When an object passes in front of a beam of light, the light can be blocked, making a shadow.



- Opaque objects let no light through.
- Translucent objects let some light through.
- Transparent objects let all light through.

# Plenary

We are going to find out more about light and shadow by using several different investigations.

## **We will investigate:**

1. How does an object's distance from the light source affect its shadow?
2. How does the angle at which the light source shines on an object affect its shadow?
3. How does an object's distance from the wall affect its shadow?
4. How does the translucency of an object affect its shadow?