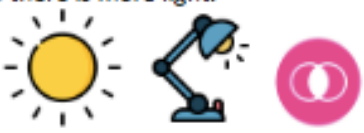
TMS Science Launchpad - Year 2023/2024
Year 3 - Physics : Light

Substantive knowledge:

Light is a form of energy which makes it possible to see and it comes from a source. A light source can be natural (such as the sun) or man-made (such as a torch or light bulb).

There must be light for us to see. Without light it is dark. Dark is the absence of light. Objects are easier to see if there is more light.



Light is reflected from surfaces. We need light to see things even shiny things. Shiny materials reflect light beams better than non-shiny materials.

Some types of light (e.g. light from the sun) can be dangerous for our eyes and skin. This is because they contain UV rays that can cause damage. There are several things that we can do to protect ourselves in the sun

1. Wearing sunglasses – Sunglasses reduce the amount of light (and also the UV rays) that reaches our eyes.

2. Covering up – Clothes can help to block some of the UV rays that can damage our skin.

3. Sun cream – This stops our skin from absorbing as many UV rays, protecting it from harm.

You should NEVER look directly at the sun.

When light hits an object, it can be absorbed by the object, reflect (bounce off) the object, or (transmit) pass through an object. The three key terms below tell us how much light objects let through them.

Transparent – Transparent objects allow all of the light to pass through them. This means that we can clearly see through them. **Translucent** – Translucent objects only allow some light to pass through them. This means that we can partially see through them. **Opaque** – Opaque objects do not allow any light to pass through them. This means cannot see through them at all.

Shadows are formed on a surface when an opaque or translucent object is between a light source and the surface, blocking some of the light.

The size of the shadow depends on the position of the source, the object and the surface. When the light source hits the object at an angle, the shadow will be longer.

Vocabulary:

Light source, dark, reflect, ray, mirror, bounce, visible, beam, sun, glare, travel, straight, shadow, block, transparent, translucent, opaque, transmit, absence of light, shiny, matt, surface, sunlight, dangerous

Disciplinary knowledge

Identify and classify	Identify and classify	Observation over time	Pattern seeking	Comparative tests
How would you organise these light sources? (observe closely)	Can you identify light sources and reflectors? (draw conclusions)	How does my shadow change over the day? (gather and record results)	Can you find patterns in the way that the sizes of shadows change? (make a prediction)	Which material is the most protective from UV rays? (draw conclusions)

Research

How does the Sun make light?
How can you protect your eyes from bright lights?