Light

Y3/4 objectives

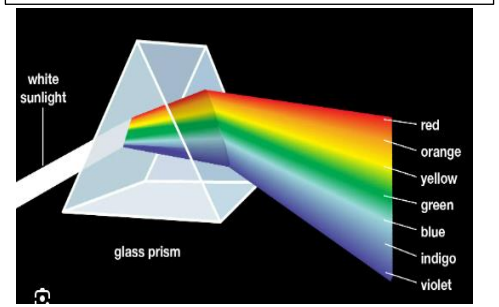
Recognise that they need light in order to see things and that dark is the absence of light.
Notice that light is reflected from surfaces.
Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.
Recognise that shadows are formed when the light from a light source is blocked by an opaque object.
Find patterns in the way that the **size of shadows change.**

Y5/6 objectives

Recognise that light appears to travel in straight lines.
Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye (working scientifically).
Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes.
Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.

Isaac Newton (1643-1727)

Isaac Newton's experiments with light and refraction demonstrated that white light can be separated into a spectrum of colours, including red, orange, yellow, green, blue, indigo, and violet.



Scientific Terminology

Light source - is something that produces light and can be natural (lightening or the sun) or artificial (light bulb or a glow stick).

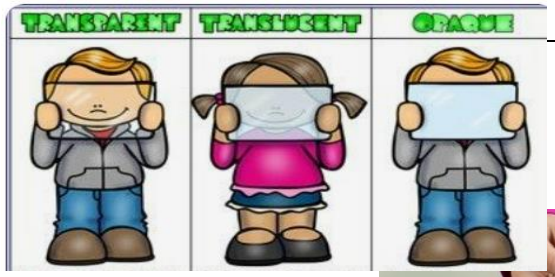
opaque - an object does not allow light to pass through it

refraction- is the bending of light when it moves from one material to another.

spectrum- is the range of different colours which is produced when light passes through a glass prism or through a drop of water.

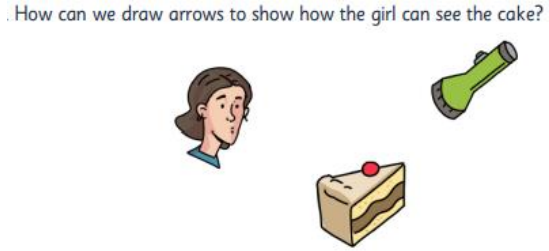
transparent- an object allows light to pass through it clearly, so you can see through it.

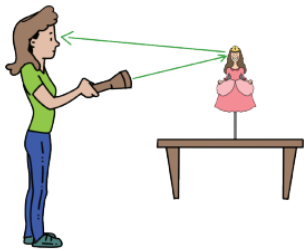
translucent - something allows some light to pass through it, but **not** all, and objects on the other side are not clearly visible.



Questions

1) Which of the following are sources of light and which are not? the Sun, the Moon, mirror and torch.
2) True or false? Light travels in wavy lines.
3) What does refraction mean?
4) Is a mirror opaque, translucent or transparent?
5) Which materials make the best reflectors?
6) Explain what is happening in this picture that allows Emma to see her puppet
7) How does light travel?
8) How do shadows change outside through the day?
9) How is a shadow formed?
10) True or false? Rainbows are caused by refraction.
11) Reflective surfaces can be very useful. Explain why.





Refraction happens when light changes direction, or bends, when it moves from one material to another. For example, light traveling through the air refracts when it hits water. This can make a straw in a glass of water look bent at the surface of the water.