

Year 4 Physics Knowledge Organiser: Light and Seeing

Prior Knowledge

Year 1: Investigating torches

Year 2: Light blocking

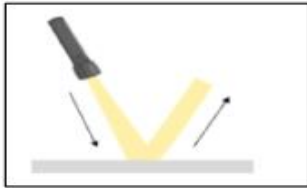
Year 3: Shadows and reflection

Subsequent Knowledge

Year 5: Reflection (greater depth)

Year 6: The human eye

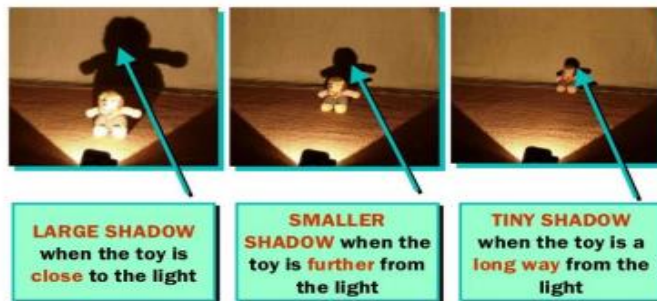
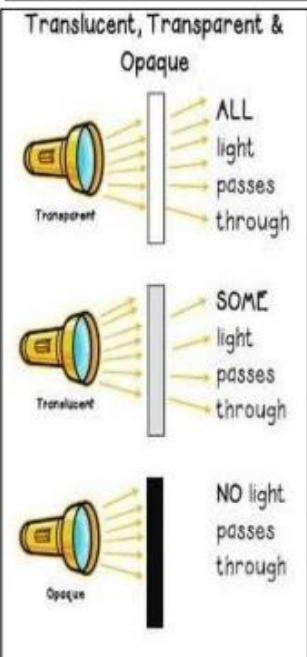
	Term	Definition
1	Light source	An object that produces its own light (e.g. sun, fire).
2	Reflection	When a light hits a surface and 'bounces' off.
3	Refraction	When light passes through a different object and its direction changes.
4	Opaque	An object which does not allow light to pass through it (e.g. wood).
5	Translucent	An object which allows some light to pass through it. It may be possible to see some unclear images through the object (e.g. tissue paper).
6	Transparent	An object which allows light to pass through it so that objects behind it can be easily seen (e.g. glass).
7	Spectrum	A range of colours caused when white light is refracted. A rainbow shows a spectrum of colours.
8	Rainbow	An arch of colour caused by the refraction of light on water droplets in the air, usually rain (Red, Orange, Yellow, Green, Blue, Indigo, Violet).
9	Prism	A solid 3D shape where two end faces are similar and parallel.
10	Shadow	A dark area or shape caused by the blockage of light.



Left: Light travelling and reflecting off a smooth surface



Right: Light travelling and reflecting off a rough surface

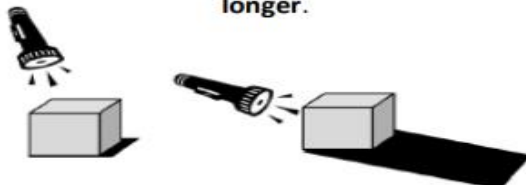


LARGE SHADOW
when the toy is
close to the light

**SMALLER
SHADOW** when the
toy is further from
the light

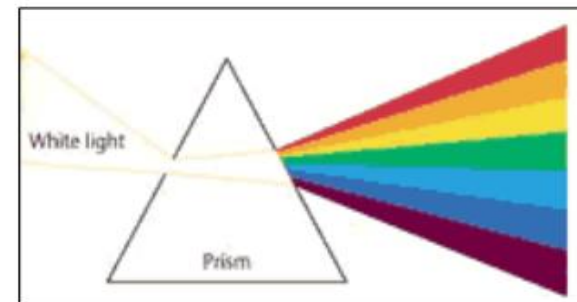
TINY SHADOW
when the toy is a
long way from the
light

As the **light source** moves **higher** in relation to the **object**, the **shadow** gets **shorter**. As the **light source** moves **lower**, the **shadow** gets **longer**.



Key facts

1	Light travels in a straight line
2	Light travels faster than sound.
3	A light year is a unit of measurement for distance. It is the distance light can travel in a year.
4	The size and shape of a shadow changes based on the distance and angle compared to the light source.
5	Darkness is caused by the absence of light.
6	The moon does not emit its own light – it reflects the sun.
7	Ultraviolet (UV) light is a type of radiation which you can't see but can be dangerous. UV rays can come from the sun.



When white light passes through a glass prism, it is refracted. The light changes direction and is then dispersed (spread out) as it exits the prism. Depending on the shape of the prism and the angle of the light, we can often see the spectrum of colours.