Hopton Primary School

Knowledge Organiser for KS2 Year 6
Topic: Science How Do We See?

Key facts:

Light travels in straight lines called rays.
Light sources include natural and artificial sources: the sun, candles, electric light, torch etc.
We see because light bounces off an object and is reflected into a person's eye.
The ray of incidence and the ray of reflection create angles of incidence and reflection that are equal (see diagram)
The visible spectrum consists of the colours red, orange, yellow, green, blue, indigo, violet
Sir Isaac Newton's crucial experiment used a prism to isolate all the colours of the visible spectrum. We see these as each colour travels at a different wavelength.

Important questions:

How can we see an object?
What is reflection and refraction?
How does a periscope use mirrors to help us see around corners?
How can we see different colours?
Why are shadows the same shape as the objects that cast them?
How can we make shadows larger?

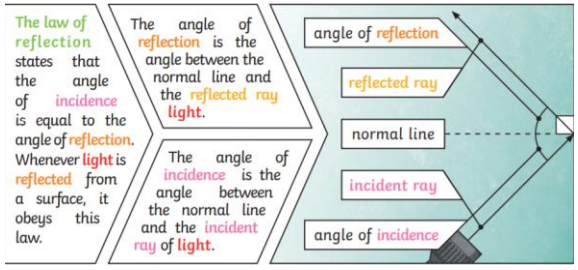
Key skills for you to practice:

How can we isolate an incident ray and a reflection ray?
How can we use a prism to see the visible spectrum?
Investigative skills – what can we investigate in relation to how light travels and shadows?
How can we make a shadow larger or smaller?

What do we need to learn?

We need light to be able to see things. Light waves travel out from sources of light in straight rays or beams of light.
Light travels as a wave but does not need a medium to travel through. This means light can travel through a vacuum.
Isaac Newton shone a light through a transparent prism, separating out light into the colours of spectrum. All the colours together merge and make visible light.
A shadow is always the same shape as the object that casts it. An opaque object in the path of light travelling from a light source will block the light rays that hit it, while the rest of the light can continue travelling.
Shadows can also be elongated or shortened depending on the angle of the light source. A shadow is also larger when the object is closer to the light source. This is because it blocks more of the light.

Key Images to discuss



What I should already know:

KS1	Day and Night
Year 3	Shadows and Light

Links to Future Learning:

Year 7	Science – Physics - Light

Key Vocabulary:

Word	What does it mean?
Light	A form of energy that travels in a wave from a source
Light source	An object that makes its own light
Reflection	Reflection is when light bounces off a surface, changing the direction of a ray of light.
Incident ray	A ray of light that hits a surface
Reflected ray	A ray of light that has bounced back after hitting a surface.
Law of reflection	The law states that the angle of the incident ray is equal to the angle of the reflected ray
Refraction	This is when light bends as it passes from one medium to another. E.g. Light bends when it moves from air into water.
Visible spectrum	Light that is visible to the human eye. It is made up of a colour spectrum.
Transparent	Describes objects that let light travel through them easily, meaning you can see through the object.
Opaque	Describes objects that do not let any light pass through them.
Translucent	Describes objects that things let some light through, but scatters the light so we can't see through them properly.