Knowledge Organiser: Year 5/6 Light

Careers connected to Light: Photonics, Lighting technician, Optometrist, Photographic Processor

Lesson Sequence

1. Explore how light travels

2. Explore reflection

3. Explore reflection and explain how it can be used to help see things

4. Investigate how shadows can change

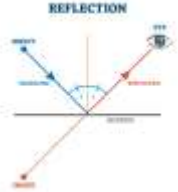
5. Investigate how we can show why shadows have the same shape as the object that cast them

6. Explore light phenomena

How We See

Light travels in **straight lines**.
The light **rays** from a light source **reflect** off the object we are looking at. The light travels in a **straight line** and enters the eye through our **pupil**.

Bending Light



Reflection

Light reflects off shiny, bright or light surfaces. That is why you can see your reflection when you look in a mirror.

Refraction

Water and bent shiny surfaces cause light rays to be reflected at different angles, meaning the reflection of the image is distorted.

Shadows

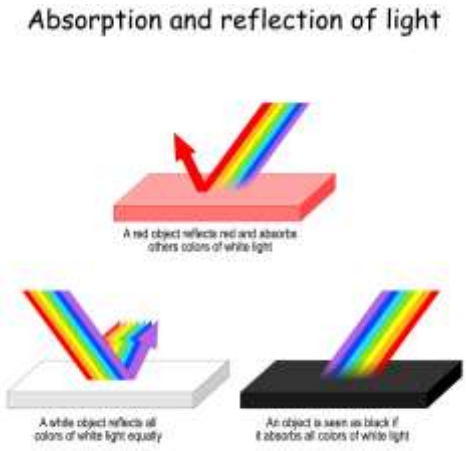
Opaque objects block the light rays so they can only travel around the edges of the object in straight lines. That is why a shadow is the same shape as the object.

The **closer** an object is to the light source, the **bigger** the shadow.

The **further away** the object is from the shadow, the **smaller** the shadow.

Colours

White light is made up of the colours of the rainbow. When light is refracted through a transparent object, a rainbow is formed.



Rocket Words

	light	a form of energy
	light source	an object that provides its own light
	reflected	when light shines on a surface and bounces back
	variable	any one of the elements of an experiment which could be changed
	angle	the space between 2 intersecting lines
	mirror	a surface that reflects a clear image
	opaque	it describes materials which do not allow light to travel through
	transparent	it describes materials which allow all light to travel through
	sunshade	a device giving protection from the sun
	rotate	to turn an object around a centre point
	optical	relating to the science of optics
	spectrum	a band of several colours

What I already know:

Year 3

- ❑ I can recognise that I need light in order to see things and that dark is the absence of light
- ❑ I notice that light is reflected from surfaces
- ❑ I can recognise that light from the sun can be dangerous and that there are ways to protect my eyes
- ❑ I can recognise that shadows are formed when the light from a light source is blocked by an opaque object
- ❑ I can find patterns in the way that the size of shadows change

What I will learn now:

Year 6

- ❑ **I can recognise that light appears to travel in straight lines**
- ❑ **I can 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**
- ❑ **I can 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**
- ❑ **I can use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them**

What I will learn next:

KS3

- ❑ I know the similarities and differences between light waves and waves in matter
- ❑ I know that light waves travel through a vacuum; speed of light and the transmission of light through materials

Knowledge Organiser: Year 6 Light

Before and After Test

Add arrows to the diagram below to show how we see things.

Use these words to help you write an explanation of how we see:

Light rays **straight lines** **pupil** **reflect**

Describe how a puppet's shadow changes if it is moved closer to a light source.

Label the statements below 'reflection' or 'refraction'.

Light reflects off shiny, bright or light surfaces. That is why you can see your reflection when you look in a mirror.

Water and bent shiny surfaces cause light rays to be reflected at different angles, meaning the reflection of the image is distorted.

True (T) or False (F) ?

- Light rays reflect off shiny surfaces. ☐
- Light travels in wavy lines. ☐
- An iPhone is a light source. ☐
- The moon is a light source. ☐
- White light is made up of 5 different colours. ☐
- Green objects look green because the green is reflected into our eyes, but the other colours are absorbed by the object. ☐

Why doesn't glass create a shadow when a light source is shining on it?