



Science – Year 6 Spring 1 Light

How light travels and the Human Eye

(Previous knowledge – Year 3 – Light)

Vocabulary

Tier 1	Tier 2	Tier 3
light	light source	law of reflection
darkness	reflection	refraction
shadow	angle	scatter
ray	transparent	reflected ray
beam	translucent	incident ray
smooth	opaque	cornea
rough	object	pupil
block	equal	sclera



don't know



I know this word



I can use it in a sentence

Useful Resources

https://www.youtube.com/watch?v=p0bjt7HzlN8&ab_channel=ExplorePlanetEnglish

What is light?

We need light to be able to see things. Light waves travel out from sources of light, like the sun or a light bulb, in **straight lines called rays**. This means we can often predict where light will go or how it interacts with objects. Darkness is the absence of light, making it difficult to see.



How does light help us to see?

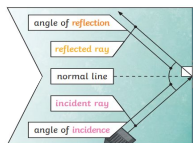
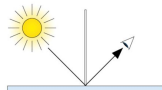
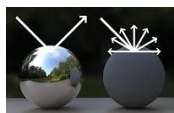
Objects are seen by the human eye because they either produce light (light sources) or because light rays bounce off objects, allowing us to see them. Our eyes detect the light that travels from these sources or reflected surfaces, enabling us to see.

When light hits a surface, we can think of it like a ball bouncing off the ground.

Incidence Ray: This is the light coming in, like a ball being thrown toward a wall. It's the ray of light that hits the surface first.

Reflected Ray: This is the light bouncing off the surface, like the ball bouncing away from the wall. It's the ray of light that leaves the surface.

Objects that are smooth, will reflect the light off at the same angle. Objects that are rough, will scatter the light rays in different directions.



What is the law of reflection?

The law of reflection states that the angle of incidence is equal to the angle of reflection. Whenever light is reflected from a surface, it obeys this law. The angle of reflection is the angle between the normal line and the reflected ray light. The angle of incidence is the angle between the normal line and the incident ray of light.

Key Scientist: Isaac Newton (1642-1727)

A famous scientist involved in studying light and the human eye was Isaac Newton. He made significant discoveries about how light works and even invented a type of telescope! Newton discovered that white light is made up of different colors. He used a glass prism to show how light splits into a rainbow when it passes through. This experiment helped us understand how light behaves.



What is a shadow?

Shadows are created when an object blocks the light from a light source. Because light travels in straight lines, it does not bend around objects. Solid objects do not let light pass through, forming a **shadow** behind them. A shadow is always the same shape as the object because the object is blocking the light rays that hit it. The size of a shadow depends on the position of the light source. Shadows can appear longer or shorter based on how the light hits the object.

What happens to light in the eye?

Your eyes and brain work together to help you see everything around you! Light enters your eye through the **pupil** and passes through the **lens**, which bends the light to focus it. The light lands on the **retina** at the back of your eye, where the image is flipped upside down. Your brain then flips it back so you see things the right way up. The **optic nerve** then acts like a messenger; it carries signals from the **retina** to your **brain**, which turns the signals into the picture you see.!

