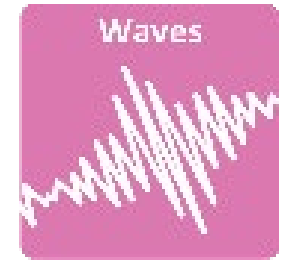


Knowledge organiser



Y7 topic: Light waves

I have already learned:

In KS2: You have already learnt about some of the ways in which light waves interact with various objects – like reflecting.

This topic links to:

KS3: Y7 waves intro, Y7 Light, Y8 Sound

KS4: P6 Waves

It is important to study about waves because...

Light waves are responsible for vision – one of our five main senses. Because we know how light travels and how it interacts with materials, we have created super-fast fibre-optic communication, high-energy lasers for experimentation and industry, as well as vivid and beautiful TV screen pictures.

Possible careers involving light waves are...

- Astronomer
- Laser technician
- Photographer
- Architect
- Optician
- Telescope manufacturing

KNOWLEDGE ORGANISER

BIG IDEA: WAVES

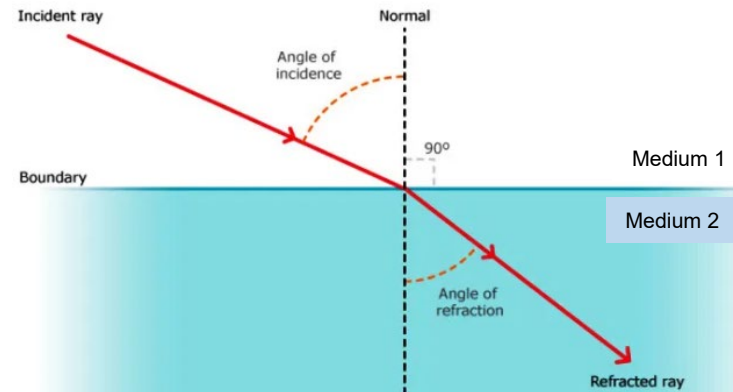
TOPIC: LIGHT WAVES

Key Word	Definition
luminous	An object that emits (gives out) light.
non-luminous	An object that does not emit light but can reflect it.
the law of reflection	When a ray of light bounces off a surface, the angle of reflection is always equal to the angle of incidence.
incident ray	The incoming ray.
reflected ray	The outgoing ray.
normal	The line from which angles are measured, at right angles to the surface.
angle of incidence	The angle between the normal and the incident ray.
angle of reflection	The angle between the normal and the reflected ray.
medium	The material/substance the light travels through
refraction	Change in the direction of light when going from one material into another.
absorption	When energy is transferred from light to a material.
transmission	When light goes through a substance
transparent	A material that allows all light to be transmitted
translucent	A material that allows light to partially be transmitted
opaque	A material that allows no light to be transmitted.

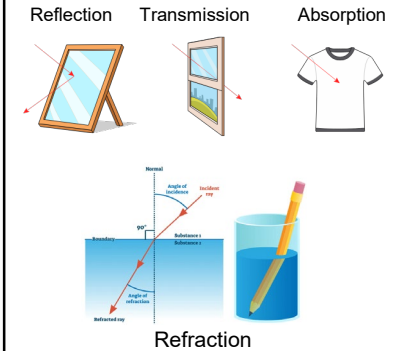
The path that light takes can be represented using a **ray diagram**. This shows where light comes from and in what direction it goes. Light always travels in **straight lines**. It can change direction when it meets a reflective surface. In this case, it changes direction according to the **law of reflection**.



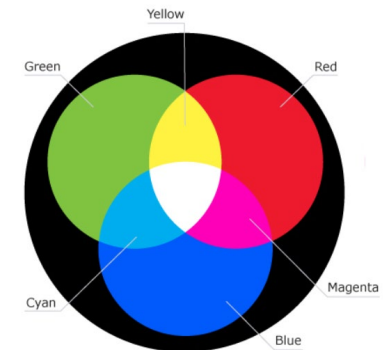
Light can also change direction when it enters a different **medium** (substance) at an angle – e.g. when light travels from air to water. The light changes speed at the **boundary** and this causes the light to change direction. This is called **refraction**.



Light can do several things when incident on a different medium:



Because light is a wave, it can have different **wavelengths**. We perceive different wavelengths of light as different colours. However, light of different wavelengths can be **combined** to make other colours. For example, red and green light combined makes yellow light. **White light** is all the colours combined.



Humans can only see wavelengths of light in the **visible light** range. Infrared and ultraviolet light cannot be seen by humans but can be detected by some other animals.