

SUBJECT:

UNIT: Year 8: Light waves



While you were away.

Lesson one: Light waves

1. Describe how light waves travel
2. What type of wave is a light wave?

Lesson Two: The speed of light

1. How do you find the speed of light?
2. How do you draw a light wave?

Lesson three: Reflection

1. What is diffuse reflection?
2. What is specular reflection?

Lesson Four: Skills

1. What should you use to draw a light wave?
2. How do you measure the angle of reflection?

Lesson Five: Refraction

1. What is refraction?
2. How does a light ray change as it enters a more dense material?

Lesson Six: The eye

1. What is visible light made from?
2. Define transparent

Lesson seven: Colour

1. What happens to light as it hits an object?
2. What colour light does a red object absorb?

SUBJECT: Science

UNIT: Y8 Light Waves



Key Vocabulary

Light

A form of energy that travels in a wave from a source.

Luminous

An object that produces its own light.

Reflection

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 off a surface.

Law of Reflection

The law states that the angle of incidence is equal to the angle of reflection.

Visible Spectrum

Light that is visible to the human eye.

Refraction

When light changes direction when entering an object with a different density.

Transparent

Objects that transmit light.

Translucent

Objects that transmit light but the light is scattered.

Opaque

Objects that do not transmit light.

Light waves

Light waves travel in straight lines and transfer energy. They are transverse waves

Travelling Light

Light travels from luminous objects in a straight line to an object, this then reflects off the object and enters our eye making the object visible.

Reflection

Diffuse reflection reflects light in random directions and a clear image cannot be formed. Specular reflection reflects light in one direction and a clear image is formed. In specular reflection the angle of incidence and the angle of reflection are the same.

Refraction

When light enters a medium of a different density it changes direction. If the object has a higher density the light wave slows down and changes direction towards the normal line. If the object has a lower density the light wave speeds up and changes direction away from the normal line.

When an object is more dense the angle of incidence will be larger than the angle of refraction.

When an object is less dense the angle of incidence will be smaller than the angle of refraction.

Visible Light

Visible light is made up of a spectrum of colours. Different colours have different wavelengths and frequencies. The colours of the visible light spectrum are: red, orange, yellow, green, blue, indigo, violet.

When these different colours are combined it produces white light. White light can be split up by using a prism, this is a glass pyramid and as light passes through the different colours refract slightly differently creating a spectrum.

Ambitious Vocabulary

Luminous Transmit
Refraction Reflection

Rules for drawing light

Must be drawn with a pencil and ruler

Light waves are represented by straight lines.

The lines must have an arrow to show the direction of the light ray.

Translucent, Transparent, Opaque

Transparent

Transparent objects allow all light to pass through them. We call this 'transmitting' light.

This means that we can see directly through transparent objects. Examples of transparent objects are: glass, windows etc.

Translucent

Translucent objects allow light to pass through them however the light transmitted becomes scattered so a clear image cannot be made. Examples of translucent materials are: tracing paper,

Opaque

Opaque objects do not allow light to pass through and therefore a shadow is created behind the object. Shadows are the same shape as the object. Examples of opaque objects are: walls, bricks etc.

Colour

When white light hits an object, all light is absorbed into the object except the colour of light that matches the object, which is reflected. For example, a red object absorbs all colours of light except red light. Translucent colours filters also absorb light and transmit only the wavelength of light that matches the colour of the object,