

Light

What is light? Light is a form of energy that you can detect with your eyes.

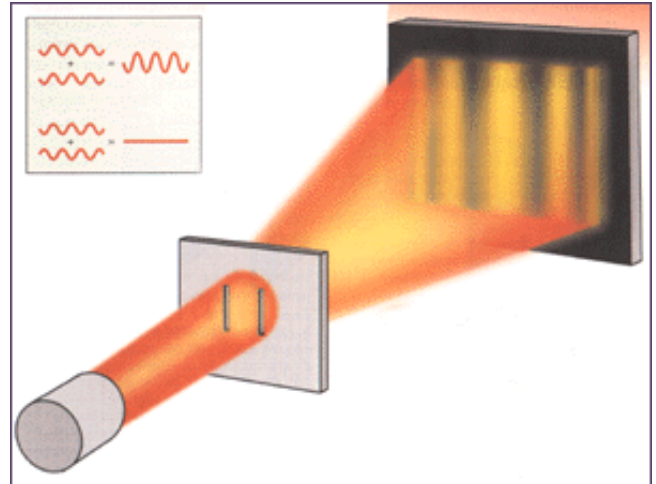
Uses

- a) Allows plants to grow
- b) Fibre optics – communication devices
- c) Entertainment

Speed of light = $3.00 \times 10^8 \text{ m/s}$

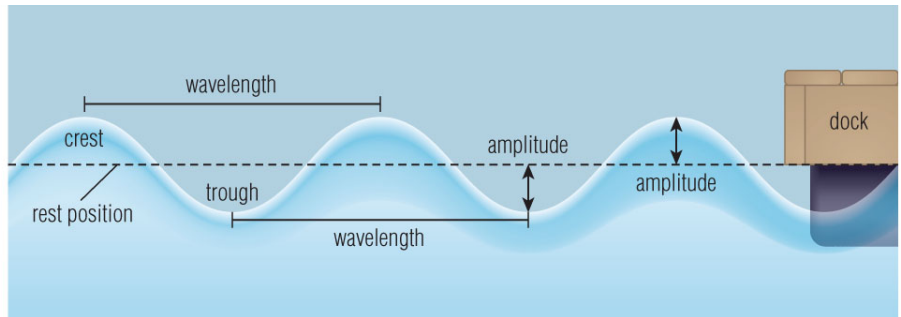
The nature of light – behaves like a particle and a wave

- **Behaving like a Particle**
streams of minute energy particles (photons) that travel in straight lines at a finite speed that exerts a pressure
- **Behaving like a Wave**
light waves could **interfere** with each other



Waves:

A **wave** is a disturbance that transfers energy from one point to another without transferring matter.



Wavelength:

Amplitude:

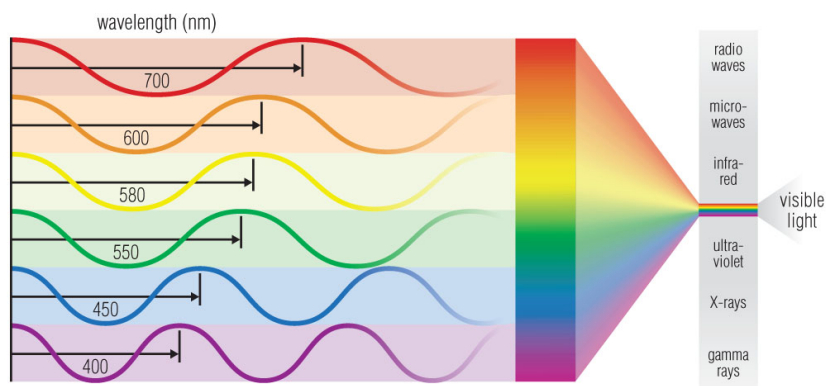
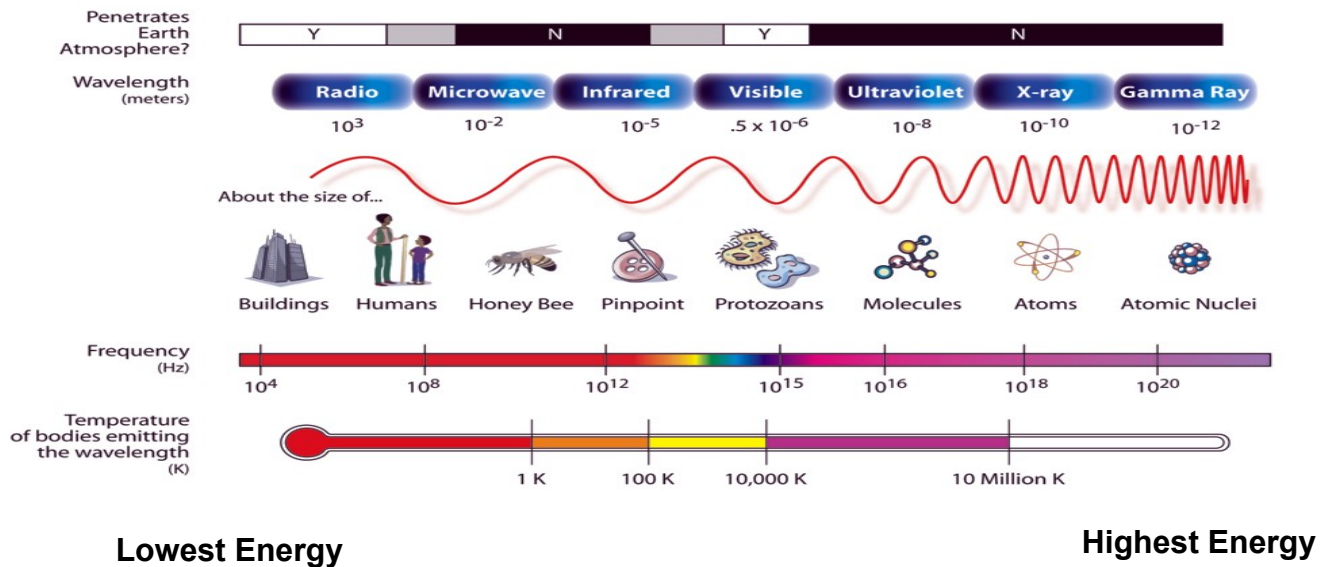
Frequency:

Crest and Trough:

An **electromagnetic wave** is a wave which is capable of transmitting its energy through a vacuum (i.e., empty space).

Light is a form of energy that is part of the **electromagnetic spectrum**.

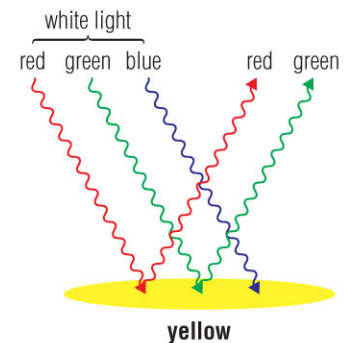
THE ELECTROMAGNETIC SPECTRUM



The range of different colours of light is called the **visible spectrum**. The difference between colours of light is that **each colour** has a **different wavelength and frequency**. White light is not a single colour; it is made up of a mixture of the seven colours of the rainbow.

The **additive theory** of light states that white light is composed of different colours (wavelengths of light). **Example:** combining red, green, and blue can produce white light.

The colour an object appears depends on the colours of light it reflects. For example, a red book only reflects red light. According to the **subtractive theory** of light colour, coloured matter selectively absorbs different colours of light. The **colours** that are **absorbed** are “**subtracted**” from the reflected light that is seen by the eye.



Homework: pg 391 # 1a,b,d,2,3,4,5,6,7,8,11,13 Fill in the blanks