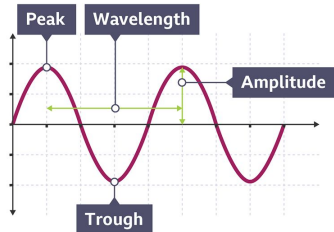
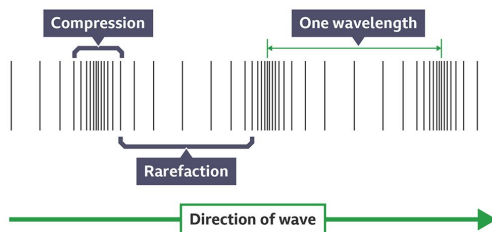


# Yr9 Waves in action knowledge organiser

## Transverse wave



## Longitudinal wave



**Wavelength** - The distance from one point on a wave to the next same point. Measured in meters (m).

**Amplitude** - The height of a peak or trough from the rest point. Measured in meters (m).

**Rest point** - If the wave stopped all particles will return here.

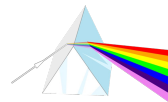
**Frequency** - The number of complete waves per second. Measured in Hertz (Hz)

**Time period** - The time for one complete wave. Measured in seconds (s).

$$f = \frac{1}{T}$$
 FREQUENCY (Hz) ←  $f$  ← TIME PERIOD (s)

$$\text{SPEED (m/s)} = \frac{\text{DISTANCE (m)}}{\text{TIME (s)}}$$

$$v = f\lambda$$
 speed or velocity (ms<sup>-1</sup>) ←  $v$  ← frequency (Hz) ←  $f$  ← wavelength (m) ←  $\lambda$



Light can be dispersed by a prism. This occurs because red light refracts less than blue.

Visible light is a small part of the **electromagnetic spectrum**. You must know the order and uses of the different parts.

| Frequency    |                                                   |                                                      |                                           |                                                                                          |                                                                                          |                                                       |                                                                               |
|--------------|---------------------------------------------------|------------------------------------------------------|-------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------------------------------|
| Type of Wave | radio waves                                       | microwaves                                           | infrared                                  | visible light                                                                            | ultraviolet                                                                              | x-rays                                                | gamma rays                                                                    |
| Name of Wave | radio waves                                       | microwaves                                           | infrared                                  | visible light                                                                            | ultraviolet                                                                              | x-rays                                                | gamma rays                                                                    |
| Uses         | radio<br>TV<br>mobile phones<br>Bluetooth signals | cooking<br>mobile phones<br>satellite communications | fibre optic communications<br>photography | energy-efficient lamps<br>sunbeds<br>sterilising medical equipment<br>disinfecting water | energy-efficient lamps<br>sunbeds<br>sterilising medical equipment<br>disinfecting water | medical imaging<br>security gates<br>cancer treatment | cancer treatment<br>killing bacteria in food<br>sterilising medical equipment |
| Dangers      | none                                              | burns                                                | cell damage<br>burns<br>damage to eyes    | damage to eyes                                                                           | sunburn<br>skin cancer<br>premature skin aging<br>blindness                              | gene mutation<br>cancer<br>cell death at high doses   | gene mutation<br>cancer<br>cell death at high doses                           |

There are sound waves that are beyond our range of hearing. Ultrasound is used for non-invasive scans and sonar.

