Physics revision
Waves

What are waves

- Wave is a movement that carries energy from one place to another
- It does not carry matter (stuff) with it
- Through a stone in water Ripples move but the water stays in the same place
- Sound travel in air but air itself does not move to your ear
- Light from a bulb or Sun is a wave It care is light energy to help us see
- If you shake one and of the rope a wave moves along the rope
- The Rope itself does not travel only the wave shape does

Wave speed

Wave speed simply means how fast a wave is moving

Wave speed = frequency x wavelength

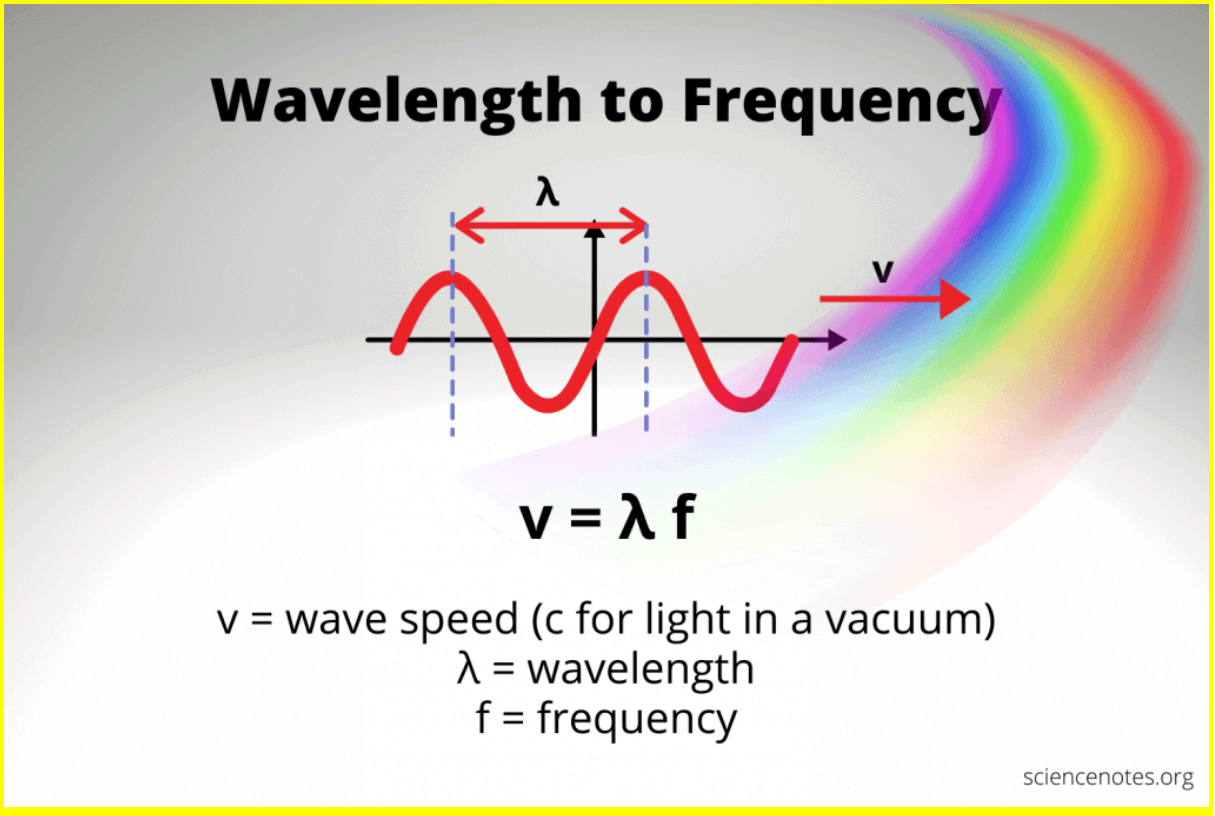
What is frequency

How many waves pass per second f

F = 1/T

Wavelength

Distance between two crests



Core practical investigating waves

Measuring speed of sound (air)

- Used 2 microphones and an oscilloscope
- Move one mic until the Waves matches distance is one wavelength
- Then use the formula to calculate the speed

Refraction

- Wave bending when it enters a new material

Why does it bend

- Because the wave speed changes

Example is light from air to glass

- It slows down

- It bends towards the normal

When a wave slows down it bends towards the normal
example light moving from air to glass
glass is denser so light slows down

Slow = towards the normal

- When a wave speeds it bends away from the normal
- example light moving from glass to air

Waves Crossing boundaries

When a wave meet another material three things can happen

Absorbed

Wave energy goes into the material and it heats it

Transmitted

Wave passes through maybe bends

Reflected

Wave bounces back like an eco

What happens depends on the Waves wavelength and the material

Ears and hearing

- Sound wave enters the ear canal
- They make the ear drum vibrate
- These vibrations move tiny bones and that will send signals to the brain
- Your brain understands this as sound

Ultrasound

- Sound waves with frequency higher than 20000 hertz
- humans cannot hear it

Uses of Ultrasounds are

- Baby scan
- checking organs
- cleaning equipment
- finding cracks in metal

Why useful

it can reflect or bounce back from different tissues

Infrasound

- Sound waves with frequency lower than 20 Hertz
- Humans cannot hear this sound

Uses

- Animals communicate like elephant and whales

- detect volcanoes
- detect earthquakes
- military detection

Because it can travel very long distances