OCR A Physics GCSE

5.1 - Wave Behaviour

Flashcards

What is a wave?

What is a wave?

A regular disturbance that transfers energy in the direction the wave is travelling without transferring matter.

What are the two types of waves?

What are the two types of waves?

1. Transverse
2. Longitudinal

What is a transverse wave?

What is a transverse wave?

A wave for which the oscillations are perpendicular to the direction of energy transfer.

What is a longitudinal wave?

What is a longitudinal wave?

A wave for which the oscillations are parallel to the direction of energy transfer.

Give two examples of transverse waves.

Give two examples of transverse waves.

1. Electromagnetic waves
2. Seismic s-waves

Give two examples of longitudinal waves.

Give two examples of longitudinal waves.

1. Sound waves
2. Seismic p-waves

What are the two parts of a longitudinal wave called?

What are the two parts of a longitudinal wave called?

Compressions and rarefactions.

What is a wave's amplitude?

What is a wave's amplitude?

The maximum displacement of a point on a wave from its undisturbed position.

What is wavelength?

What is wavelength?

- The distance from a point on a wave to the same position on the adjacent wave.
- Most commonly peak to peak or trough to trough.

What is the frequency of a wave?

What is the frequency of a wave?

The number of waves that pass a given point each second.

What is the unit used for frequency?

What is the unit used for frequency?

Hertz, Hz

What is meant by a frequency of 200Hz?

What is meant by a frequency of 200Hz?

200 waves pass a given point each second.

What is wave speed?

What is wave speed?

The speed at which energy is transferred through a medium.

What does a wave transfer?

What does a wave transfer?

Energy.

State the equation used to calculate wave speed. Give appropriate units.

State the equation used to calculate wave speed. Give appropriate units.

Wave Speed = Frequency x Wavelength

Speed (m/s), Frequency (Hz), Wavelength (m)

What word is used to describe when a wave bounces off a surface?

What word is used to describe when a wave bounces off a surface?

Reflection.

What is refraction?

What is refraction?

Refraction is the change in **speed** of a wave as it reaches a boundary between two media, resulting in a change in direction.

What property of a wave is **not** changed by refraction?

Which property of a wave is **not** changed by refraction?

The frequency.

When entering a denser material, light waves…

When entering a denser material, light waves...

...slow down and bend towards the **normal.**

What is a ripple tank?

What is a ripple tank?

A shallow glass tank with an oscillating paddle/needle to create waves. It is illuminated from above so the waves can be seen on the surface below the tank.

Describe how to demonstrate reflection using a ripple tank.

Describe how to demonstrate reflection using a ripple tank.

Waves will reflect off the glass sides of the tank.

How do sound waves travel through a solid? (Higher)

How do sound waves travel through a solid? (Higher)

The particles in the solid vibrate and transfer kinetic energy through the material.

How does the human ear work? (Higher)

How does the human ear work? (Higher)

1. The outer ear collects the sound which travels into the ear.
2. The sound waves cause the eardrum to vibrate at the same frequency.
3. This is amplified by three ossicles (small bones).
4. This causes the hair in the cochlea to vibrate.
5. The cochlea converts the vibrations into electrical signals.
6. The signals are passed to brain through the auditory nerve.
7. The brain converts the electrical signals into sound.

What is the frequency range of human hearing? (Higher)

What is the frequency range of human hearing? (Higher)

20 Hz - 20kHz

(1kHz = 1000 Hz)

What are ultrasound waves? (Higher)

What are ultrasound waves? (Higher)

Waves which have a frequency higher than the upper limit of human hearing (20kHz).

Give an example use for ultrasound waves (Higher)

Give an example use for ultrasound waves (Higher)

Medical or industrial imaging.