0 1

In physics, we can describe a wave as being either *transverse* or *longitudinal*.

0 1 . 1

Explain what is meant by a *wave*.

A wave is something which transfers energy (from one place to another) without a (permanent) motion of the material which the wave is travelling through [1].

0 1 . 2

Explain the meaning of the term *transverse wave*, then write down one example of a transverse wave.

In a transverse wave, the vibrations are at *right angles* / at 90° / *perpendicular* [1] to the direction of energy transfer / direction in which the wave is travelling [1].

Example: electromagnetic waves (including light), water waves, *Slinky* spring being vibrated from side-to-side (perpendicular to the line between its two ends), secondary seismic waves (S-waves) (any ONE) [1].

0 1 . 3

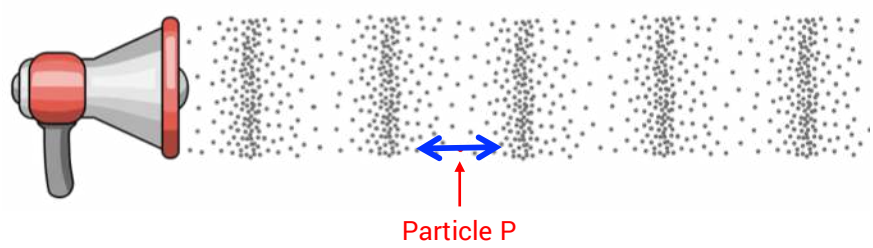
Explain the meaning of the term *longitudinal wave*, then write down one example of a longitudinal wave.

In a longitudinal wave, the vibrations are *parallel* [1] to the direction of energy transfer / direction in which the wave is travelling [1].

Example: sound waves, *Slinky* spring being vibrated along its length (parallel to the line running between its two ends), primary seismic waves (P-waves) (any ONE) [1].

0 2

The below diagram shows the arrangement of particles in the air in front of a loudspeaker as a sound wave is being produced by it.



0 2 . 1

Draw arrows onto the diagram to show how Particle P will move while the sound wave is being produced by the loudspeaker.

Horizontal [1], left *and* right [1].

0 2 . 2

Describe the motion of P as the sound wave is being produced by the loudspeaker.

Particle P vibrates/oscillates from side-to-side/horizontally [1]
about a fixed position / its equilibrium position [1].

0 2 . 3

The loudspeaker is then turned off. How will this affect the motion of Particle P?

Particle P will no longer vibrate/oscillate [1] about a fixed position.
It will then move randomly (due to its thermal energy) [1].