Transverse and Longitudinal Waves

Transverse and longitudinal waves

Transverse

Draw and label a diagram

Definition

Longitudinal

Draw and label a diagram

Definition

KEY WORDS TO USE

- ☐ Oscillation
- ☐ Perpendicular
- ☐ Parallel
- ☐ Direction
- ☐ Energy transfer

TRANSVERSE OR LONGITUDINAL? TICK ONE

Wave	T	L
Sound	☐	☐
Water ripples	☐	☐
Light (EM wave)	☐	☐
Ultrasound	☐	☐
Slinky pushed and pulled	☐	☐
Slinky shaken side to side	☐	☐

Example — label the waves

SOUND WAVE · LONGITUDINAL

Label the compressions (C) and rarefactions (R)

WAVE ON A ROPE · TRANSVERSE

Draw arrows on the dot

The wave travels from left to right. Draw and label an arrow for the **oscillation** of the dot and an arrow for the **direction of energy transfer**.

Exam-style question

Sound waves and light waves both transfer energy.

(a) Use diagrams to describe the difference between a transverse wave and a longitudinal wave. [4]

(b) Give **one** example of a transverse wave and **one** example of a longitudinal wave. [2]

(Total for question = 6 marks)

DIAGRAMS

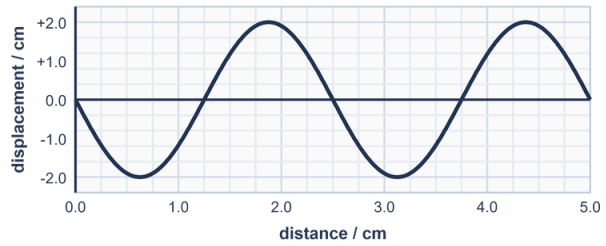
ANSWER

Amplitude, Wavelength, Period and Frequency

Amplitude

1 **Definition**

2 Label the **amplitude** on the graph below with an arrow.



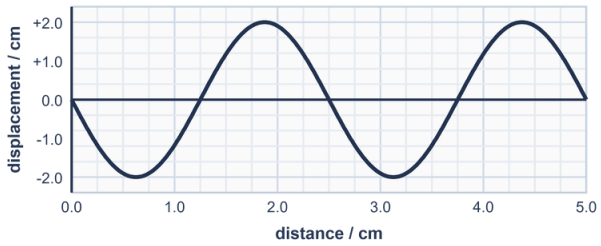
3 What is the value of the amplitude?

Value: _____ **Units:** _____

Wavelength

4 **Definition**

5 Label the **wavelength** on the graph below with an arrow.



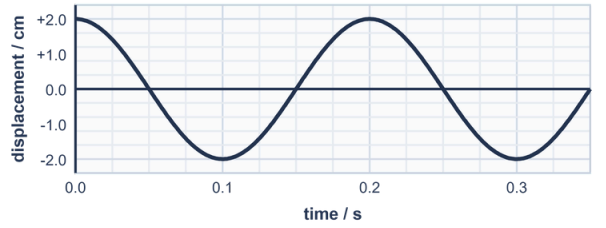
6 What is the value of the wavelength?

Value: _____ **Units:** _____

Period

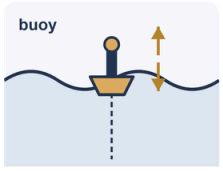
7 **Definition**

8 Label the **period** on the graph below with an arrow.



9 What is the (time) period?

Value: _____ **Units:** _____

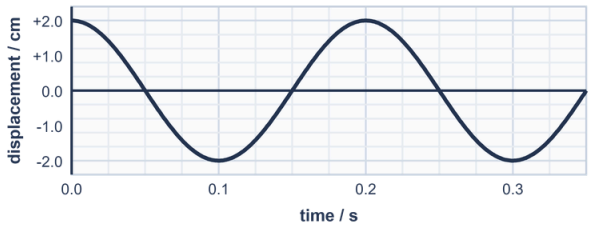


10 A buoy bobs up and down **10 times** in **2 minutes**. What is the period of the buoy?

Exam tip: time must be in **seconds**. Change minutes to seconds (× 60) before you work out the period or the frequency.

Frequency

11 **Definition**

12 What is the formula that links frequency, ***f***, and time period, ***T***? Fill in the triangle too.

13 Calculate the frequency of the wave from the graph below. Give the unit.