

# 14.1 Properties of Wave Pulses and Waves

Name: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

Total: 10 marks

KEY WORDS wave 波 • transverse 横波 • longitudinal 纵波 • amplitude 振幅 • wavelength 波长

## Objective

Build the skills to answer exam questions on **properties of wave pulses and waves**.

You must be able to:

- describe a **wave** 波 as a disturbance that transfers energy without transferring matter
- distinguish **transverse** 横波 from **longitudinal** 纵波 waves
- define amplitude and wavelength

## 1 Worked examples

Study these first. Each one shows the method for a question type used later.

### ■ What a wave carries

A wave transfers **energy** through a medium **without** transferring matter — the particles just vibrate about fixed positions.

### ■ Transverse vs longitudinal

- **Transverse** — vibration is perpendicular to the direction of travel (waves on a string, light).
- **Longitudinal** — vibration is along the direction of travel (sound).

### ■ Amplitude and wavelength

**Amplitude** is the maximum displacement from rest; **wavelength** is the distance between two matching points on the wave.

## 2 Practice

2.1 State what a wave transfers and what it does **not** transfer.

[2]

**2.2** Give one example each of a transverse and a longitudinal wave. [2]

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**2.3** Define the amplitude of a wave. [1]

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### 3 Exam-style questions

**3.1** A wave transfers [1]

|   |   |
|---|---|
| A | B |
| C | D |

- A matter only
- B energy without matter
- C both matter and energy equally
- D neither

**3.2** Sound is an example of a [1]

|   |   |
|---|---|
| A | B |
| C | D |

- A transverse wave
- B longitudinal wave
- C electromagnetic wave
- D standing wave

**3.3** A wave travels along a rope, with the rope moving up and down as the wave moves sideways.

(a) Name this type of wave. [1]

(b) State the direction of vibration relative to the direction of travel. [1]

(c) Name the quantity equal to the maximum displacement. [1]