

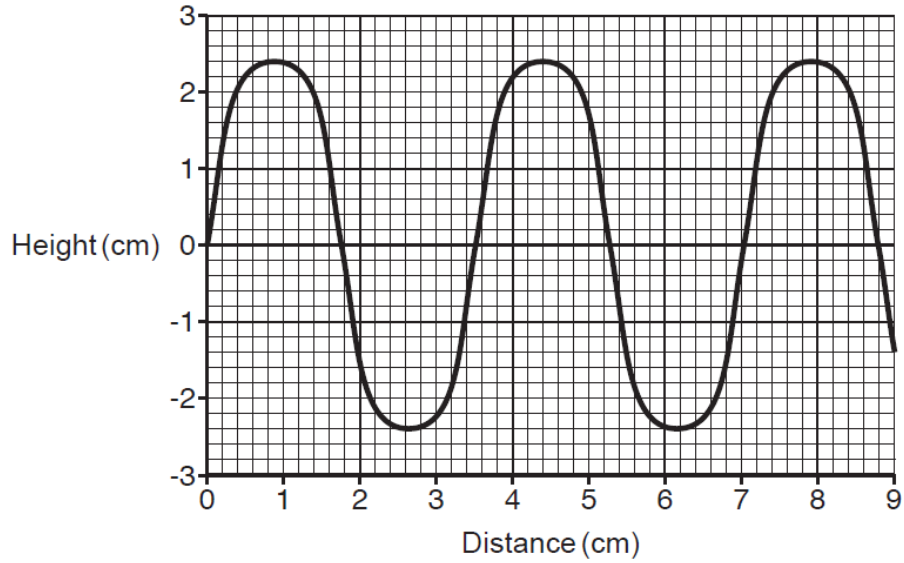
**GCSE Physics A (Gateway)**

**J249/02 Physics A P5-P8 and P9 (Foundation Tier)**

**Question Set 1**

1

Look at the diagram of a water wave.



- (a) (i) What is the **wavelength** of this wave?

$$\text{wavelength} = 3.5 \text{ cm}$$

[1]

- (ii) What is the **amplitude** of this wave?

$$\text{Amplitude} = 2.4 \text{ cm}$$

[1]

- (iii) The wavelength of the wave is changed to 25 cm. Two waves are produced each second.

Use the equation: Wave speed = Frequency  $\times$  Wavelength

Calculate the speed of the wave.

$$\text{Freq} = 2 \text{ Hz}$$

$$\lambda = 0.25 \text{ m}$$

[2]

$$\text{speed} = F \lambda$$

$$\text{speed} = 2 \times 0.25 = 0.5 \text{ m/s}$$

(b) Water waves are transverse and sound waves are longitudinal.

(i) Describe how water particles move in a **transverse** water wave..

The water particles move up and down at right angles to the direction of travel of the wave.

[1]

(ii) Describe how water particles move in a **longitudinal** water wave..

The water particles move back and forth, parallel to the direction of travel of the wave.

[1]

(c) Look at the diagram of the electromagnetic spectrum.

Radio	Microwave	Infra-red	Visible light	Ultra-violet	X-rays	Gamma-rays
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(i) Name a wave that has a longer wavelength than red light.

Radio waves

[1]

(ii) Name a wave that has a higher frequency than violet light.

X-Rays

[1]

(iii) State two **uses** of gamma-rays.

[2]

- Killing tumour/cancerous cells (Radiotherapy).
- Sterilisation and disinfection of equipment.

## Total Marks for Question Set 1: 10

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