2 (a) A student is standing 600 m from a firework display.

A firework explodes with a loud bang, and a flash of light is seen.

Describe how a student can measure the time it takes for the sound wave from the loud bang to travel 600 m.

(2)

(b) Figure 2 shows a water wave.

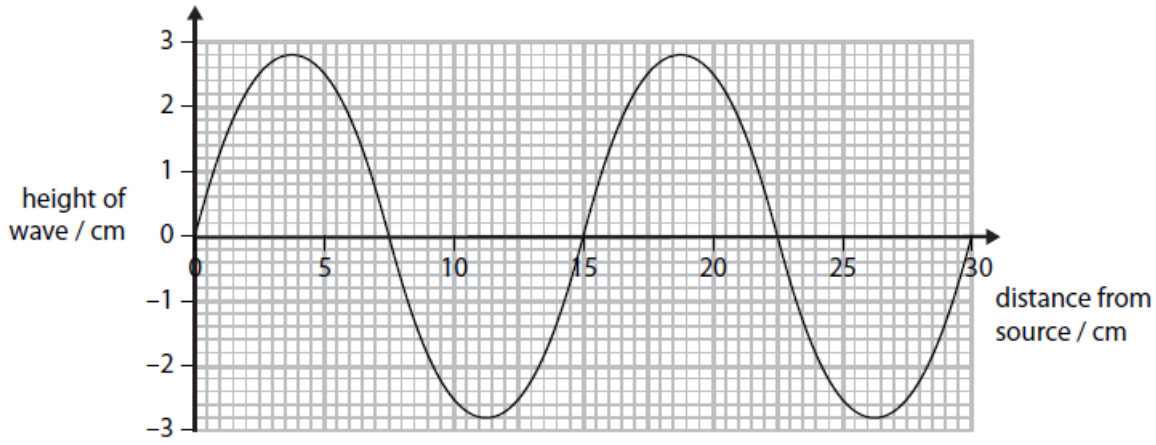

Figure 2

(i) What is the amplitude of this wave?

(1)

- ☐ **A** 2.8 cm
- ☐ **B** 5.6 cm
- ☐ **C** 7.5 cm
- ☐ **D** 15 cm

(ii) What is the wavelength of this wave?

(1)

- ☒ **A** 2.8 cm
- ☒ **B** 7.5 cm
- ☒ **C** 15 cm
- ☒ **D** 30 cm

(c) Water waves are transverse waves.

(i) Give **one** other example of a transverse wave.

(1)

.....

(ii) Give **one** example of a longitudinal wave.

(1)

.....

(d) An earthquake causes a sea wave.

This sea wave travels 26 400 m in two minutes.

Calculate the speed of the wave.

Use the equation

$$\text{wave speed} = \frac{\text{distance}}{\text{time}}$$

(3)

speed = ... m/s

(Total for Question 2 = 9 marks)

Question number	Answer	Mark
2(a)	An answer that combines the following points of understanding to provide a logical description: • use a stopwatch (1) • start timing when flash is seen and stop when bang is heard (1)	(2)

Question number	Answer	Mark
2(b)(i)	A	(1)

Question number	Answer	Mark
2(b)(ii)	C	(1)

Question number	Answer	Additional guidance	Mark
2(c)(i)	electromagnetic wave	allow any named e.m. wave/seismic S wave	(1)

Question number	Answer	Additional guidance	Mark
2(c)(ii)	sound wave	allow ultrasound/infrasound/ seismic P wave	(1)

Question number	Answer	Additional guidance	Mark
2(d)	two minutes = 120 s (1) substitution (1) 26 400 ÷ 120 answer (1) 220 (m/s)	ecf unit change award full marks for correct numerical answer without working	(3)