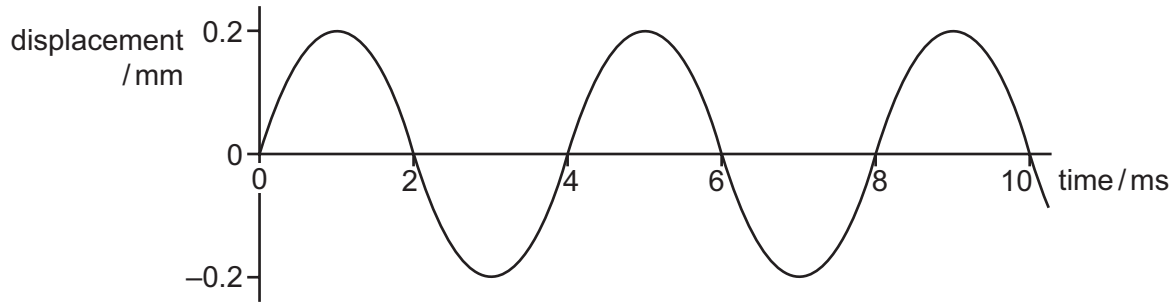
24 A sound wave moves with a speed of $320\,m\,s^{-1}$ through air. The variation with time of the displacement of an air particle due to this wave is shown in the graph.



Which statement about the sound wave is correct?

A The frequency of the wave is 500 Hz.

B The graph shows that sound is a transverse wave.

C The intensity of the wave will be doubled if its amplitude is increased to 0.4 mm.

D The wavelength of the sound wave is 1.28 m.

25 A wave of frequency 15 Hz travels at $24\,m\,s^{-1}$ through a medium.

What is the phase difference between two points 2 m apart?

A There is no phase difference.

B They are out of phase by a quarter of a cycle.

C They are out of phase by half a cycle.

D They are out of phase by 0.8 of a cycle.

26 A wave of amplitude *a* has an intensity of $3.0\,W\,m^{-2}$.

What is the intensity of a wave of the same frequency that has an amplitude 2*a*?

A $4.2\,W\,m^{-2}$ **B** $6.0\,W\,m^{-2}$ **C** $9.0\,W\,m^{-2}$ **D** $12\,W\,m^{-2}$

27 An electromagnetic wave has a wavelength that is numerically of the same order of magnitude as the diameter of a nucleus.

In which region of the electromagnetic spectrum does the wave occur?

A gamma ray

B X-ray

C visible light

D infra-red