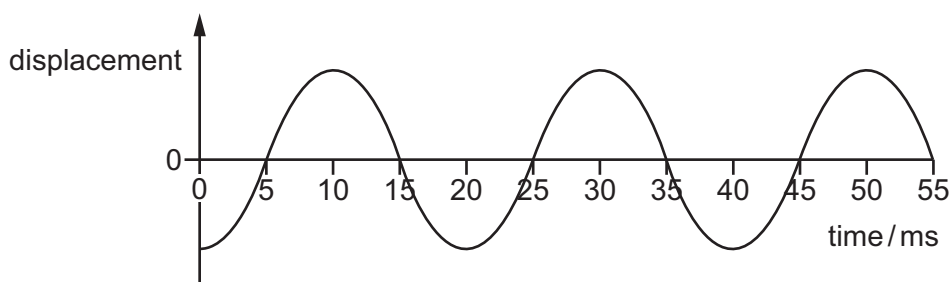
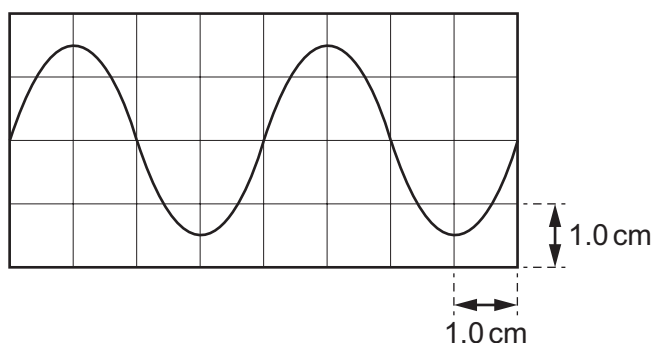


- 23** The graph shows the variation with time of the displacement of an air particle as a progressive sound wave passes through the air. The speed of sound in air is 330 m s^{-1} .



What is the wavelength of the wave?

- A** 6.6 m **B** 8.3 m **C** 20 m **D** 25 m
- 24** A microphone is connected to a cathode-ray oscilloscope (CRO). A sound wave of constant frequency is detected by the microphone. The screen of the CRO is shown.



The time-base is set at 1.0 ms cm^{-1} .

What is the frequency of the sound wave?

- A** 250 Hz **B** 500 Hz **C** 670 Hz **D** 4000 Hz
- 25** A train's whistle is emitting sound of frequency 500 Hz as the train moves with a speed of 20 m s^{-1} along a straight track. The train moves directly towards a stationary observer standing next to the track and then passes the observer.

The speed of sound in air is 330 m s^{-1} .

What is the difference between the frequencies of the sound heard by the observer before and after the train has passed the observer?

- A** 29 Hz **B** 32 Hz **C** 40 Hz **D** 61 Hz