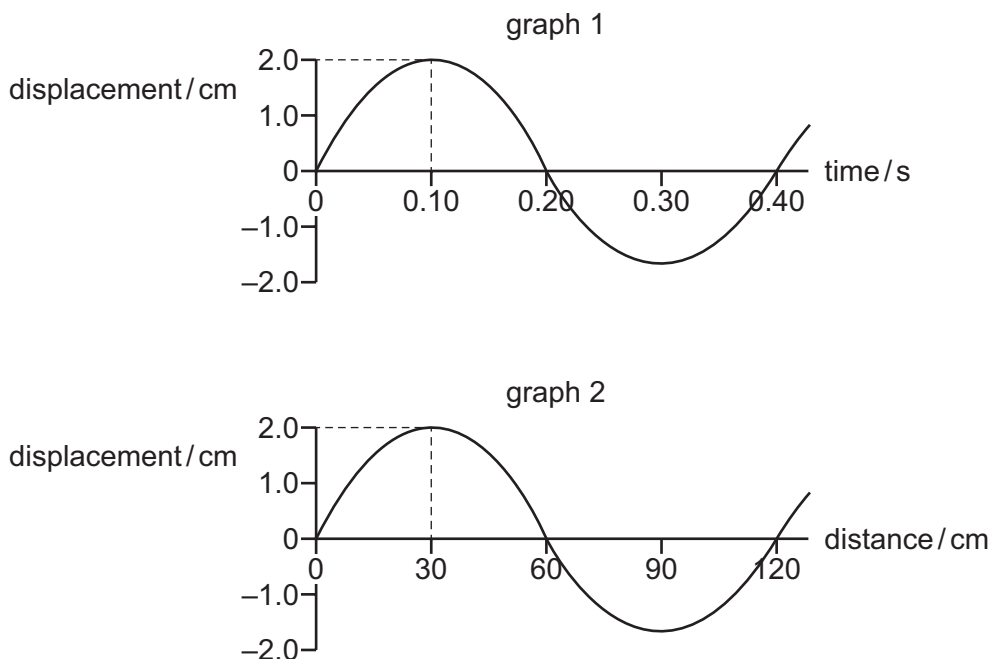


- 21** Graph 1 shows the variation with time of displacement at a fixed distance along a progressive wave.

Graph 2 represents the same wave and shows the variation with distance of displacement at an instant in time.



What is the speed of the wave?

- A**  $5.0 \text{ cm s}^{-1}$       **B**  $48 \text{ cm s}^{-1}$       **C**  $150 \text{ cm s}^{-1}$       **D**  $300 \text{ cm s}^{-1}$
- 22** A vehicle moves with constant velocity along a road directly towards an observer. The observed frequency of the sound from the vehicle changes as the vehicle moves past the observer.

Which phenomenon explains the change in frequency?

- A** diffraction  
**B** interference  
**C** polarisation  
**D** the Doppler effect

- 23** An electromagnetic wave has a wavelength of  $2.1 \text{ cm}$  in a vacuum.

Which region of the electromagnetic spectrum contains this wave?

- A** infrared  
**B** microwave  
**C** radio wave  
**D** visible light