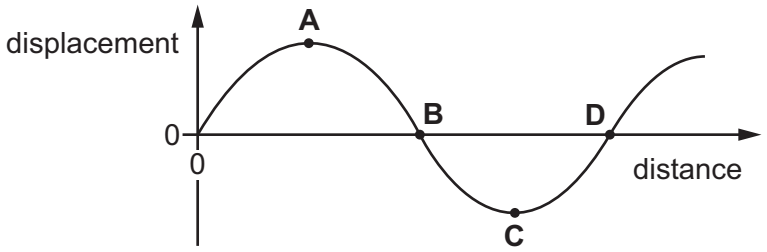
21 A longitudinal wave is travelling from left to right. The graph shows the variation of the displacement of the particles with distance along the wave at one instant in time.

Displacements to the right are positive; displacements to the left are negative.

Which labelled point represents a compression?



22 A source X emits a sound wave of constant frequency *f*.

The wave is subsequently received at a stationary detector Y.

The frequency of the wave that is detected by Y is less than *f*.

What could be the reason for this?

A Between X and Y, the wave undergoes diffraction.

B Between X and Y, the wave undergoes reflection.

C X is moving away from Y.

D X is moving towards Y.

23 A beam of visible light is in a vacuum.

What could be the frequency of the light?

A 5.0×10^{5} Hz **B** 5.0×10^{8} Hz **C** 5.0×10^{11} Hz **D** 5.0×10^{14} Hz