26 The wavelength of sound in air may be determined by using stationary waves.

In one experiment, a loudspeaker produces a sound wave of constant frequency which is reflected directly back along its original path by a metal plate approximately 1 m away. A microphone connected to a cathode-ray oscilloscope (CRO) is moved between the loudspeaker and plate to identify regions of high sound intensity ('loud' spots) and low sound intensity ('quiet' spots).

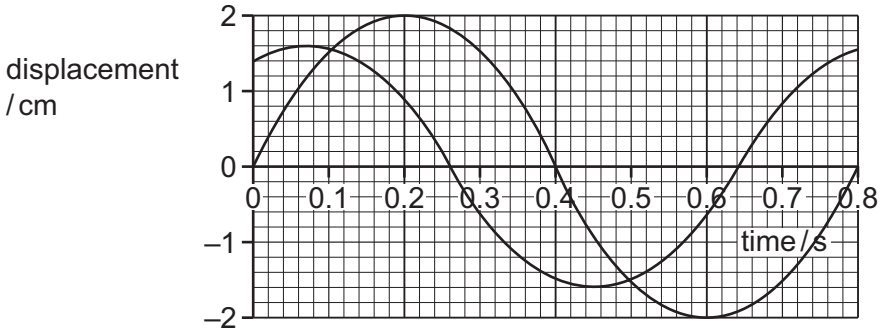
The wavelength of the sound is determined using the **least** possible number of measured quantities.

Which row shows the quantities that are needed?

	frequency of sound	mean separation of 'quiet' spots	speed of sound in air
A	✓	✓	✗
B	✓	✗	✓
C	✓	✗	✗
D	✗	✓	✗

key
✓ = needed
✗ = not needed

27 Two progressive waves meet at a fixed point P. The variation with time of the displacement of each wave at point P is shown.



The two waves superpose at point P.

What is the resultant displacement at time 0.38 s?

A +1.0 cm **B** –1.0 cm **C** +1.8 cm **D** –1.8 cm

28 In which situation does diffraction occur?

A A wave bounces back from a surface.

B A wave passes from one medium into another.

C A wave passes through a gap in a barrier.

D Waves from two identical sources are superposed.