

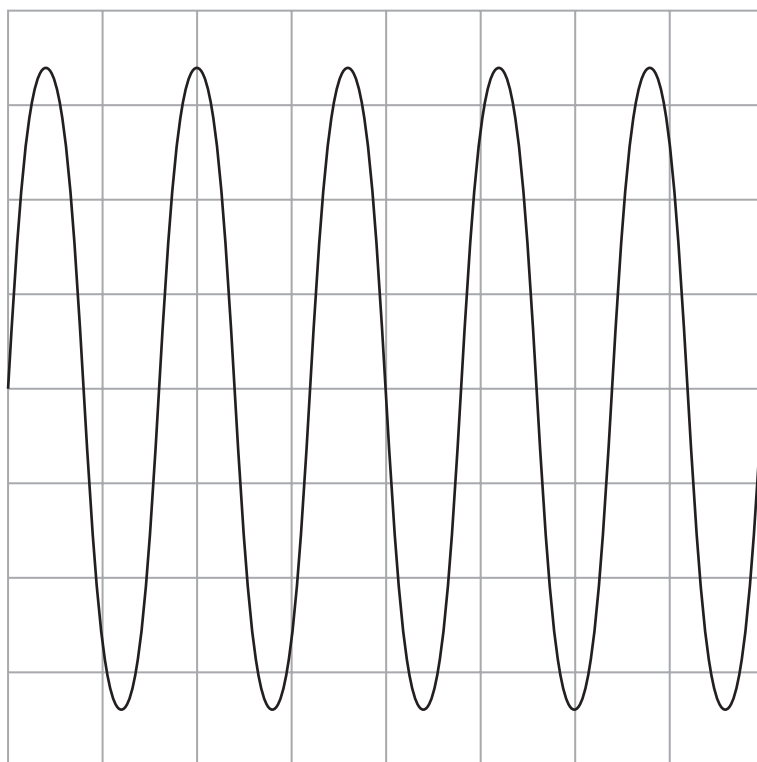
7 A student uses this method to investigate the speed of sound in air.

- set up an oscilloscope to detect and display a sound wave
- use a computer and a speaker to produce a sound of known wavelength
- use the oscilloscope to determine the frequency of the sound wave
- use a formula to calculate the speed of sound

(a) Give the name of the equipment that should be connected to the oscilloscope to detect the sound wave.

(1)

(b) The diagram shows the oscilloscope screen and the oscilloscope settings.



Oscilloscope settings

y direction: 1 square = 5 mV

x direction: 1 square = 0.5 ms

(i) Determine the frequency of the sound wave.

(4)

frequency = Hz

(ii) The wavelength of the sound wave is 27 cm.

Calculate the speed of sound.

(3)

speed of sound = m/s

(iii) Describe how the oscilloscope could be adjusted to show fewer wave cycles on the screen.

(2)

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(Total for Question 7 = 10 marks)

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