8 The photograph shows an oscilloscope.

An oscilloscope can be used to determine the frequency of a sound wave.

(a) (i) Name the piece of equipment that should be used with an oscilloscope to detect a sound wave.

(1)

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(ii) Describe how an oscilloscope can be used to measure the time period of a sound wave.

(2)

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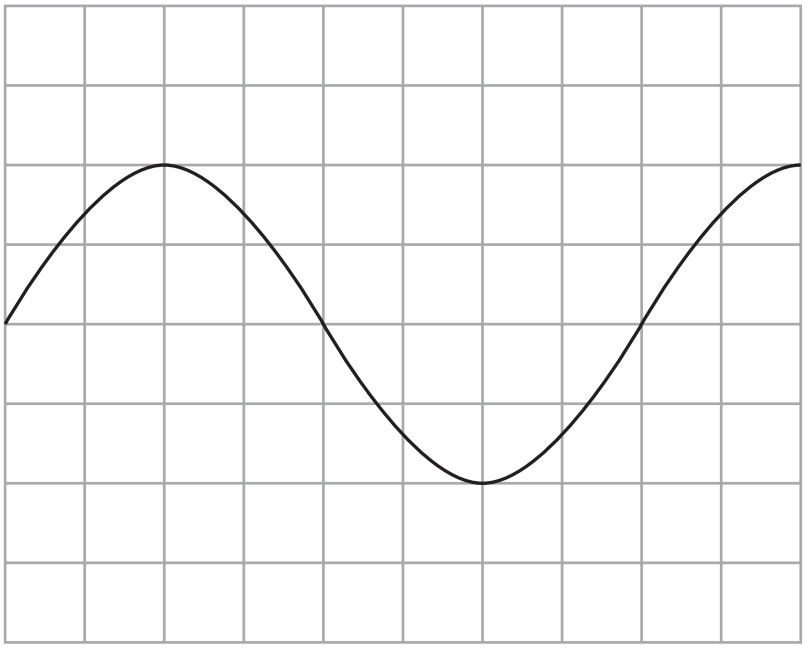
(b) Diagram 1 shows an oscilloscope screen when a sound wave is detected.

It also shows the settings of the oscilloscope.



Oscilloscope settings

y direction: 1 square = 2 V
x direction: 1 square = 5×10^{-6} s

Diagram 1

(i) Determine whether the sound can be heard by humans.

Include a calculation of frequency in your answer.

(4)

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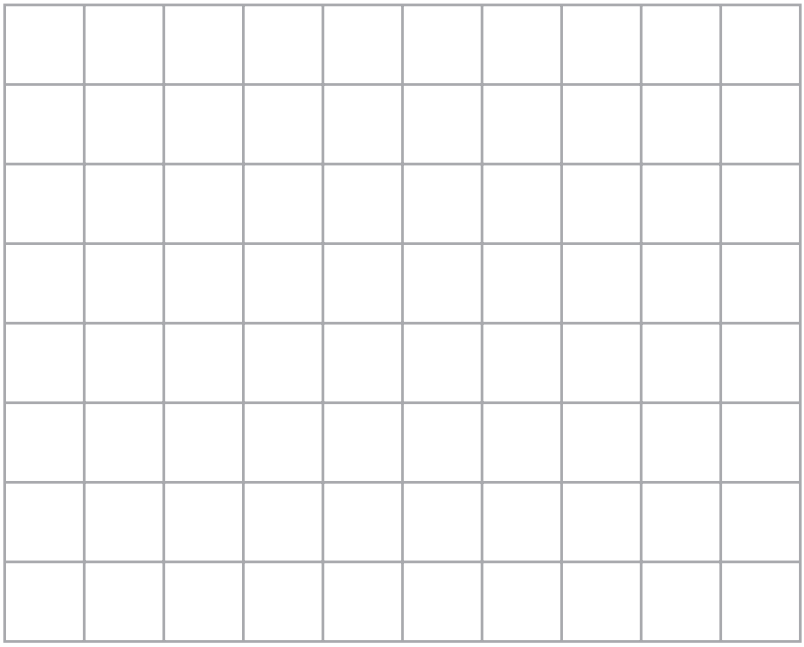
(ii) The oscilloscope settings are changed, as shown in Diagram 2.



Oscilloscope settings

y direction: 1 square = 1 V
x direction: 1 square = 1×10^{-5} s

Diagram 2

On Diagram 2, draw the wave that would be displayed on the oscilloscope screen if the same sound wave is detected using these new settings.

(2)

(Total for Question 8 = 9 marks)

TOTAL FOR PAPER = 70 MARKS