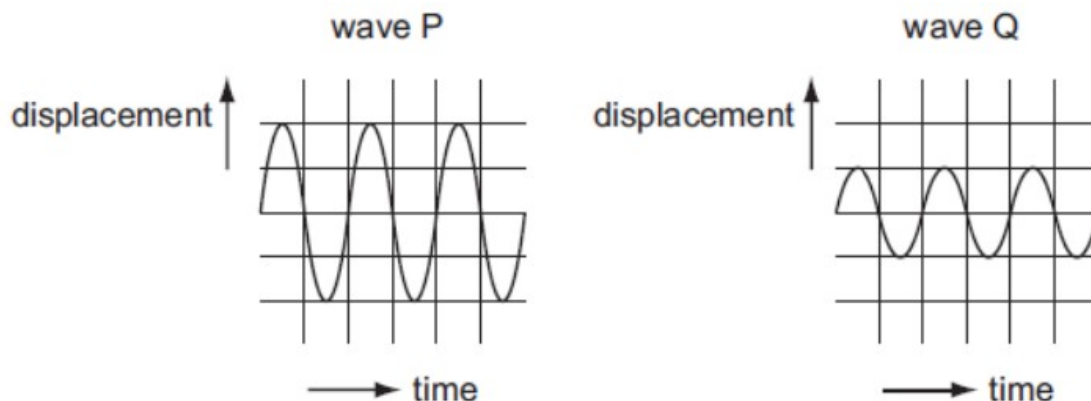


**SOUND**

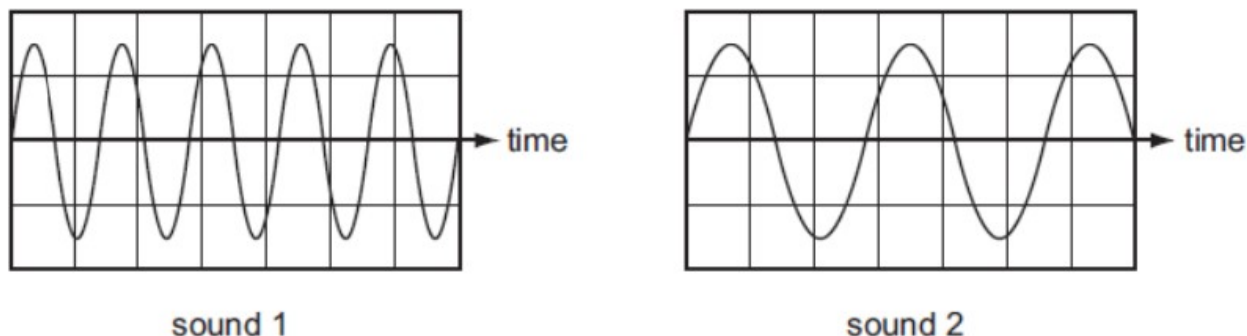
1. The diagrams represent two different sound waves.



How do the frequency and pitch of P compare with the frequency and pitch of Q?

	frequency of P	pitch of P
<b>A</b>	greater than Q	higher than Q
<b>B</b>	greater than Q	same as Q
<b>C</b>	same as Q	higher than Q
<b>D</b>	same as Q	same as Q

2. The diagrams show the wave shapes of two different sounds. The scales are the same in each diagram.



How does sound 2 compare with sound 1?

- A. Sound 2 is louder than sound 1.
- B. Sound 2 is quieter than sound 1.
- C. Sound 2 has a higher pitch than sound 1.
- D. Sound 2 has a lower pitch than sound 1.

3. A student wishes to measure the speed of sound in air. She plans to measure the time between making a sound and hearing the echo from a cliff.

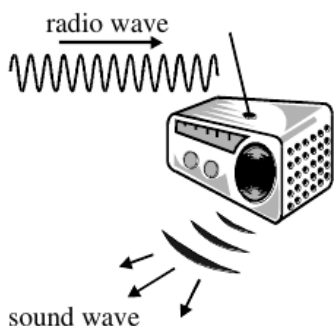


She will use the equation: speed = Distance/time

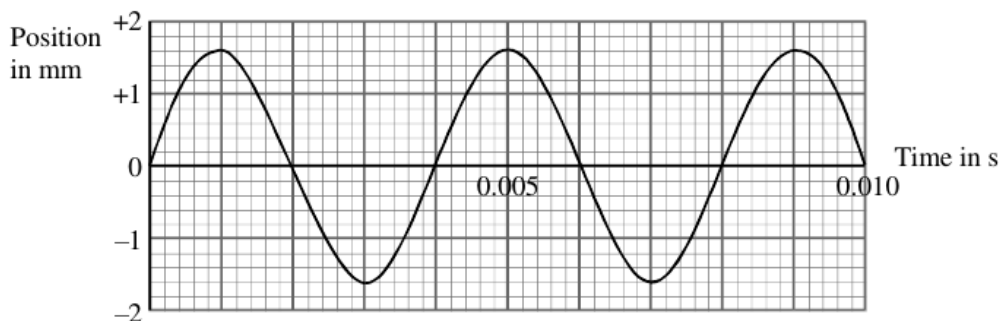
Which type of sound should she make and which distance should she use in her calculation?

	type of sound	distance to use
<b>A</b>	continuous sound	$\frac{\text{distance to cliff}}{2}$
<b>B</b>	continuous sound	distance to cliff $\times$ 2
<b>C</b>	short, sharp sound	$\frac{\text{distance to cliff}}{2}$
<b>D</b>	short, sharp sound	distance to cliff $\times$ 2

4. The diagram shows how two different waves are involved when listening to a radio.



- (a) Complete the sentences that compare the radio wave and the sound wave.
- (i) The frequency of the radio wave is .....  
than the frequency of the sound wave. (1)
- (ii) The radio wave is transverse; the sound wave is .....  
..... (1)
- (b) The graph shows how the position of the loudspeaker cone changes when it is reproducing a sound of frequency 250 Hz.



- (i) Which word **best** describes the movement of the loudspeaker cone?  
Circle the word of your choice.
- amplification                      gyration                      rotation  
vibration
- (1)
- (ii) Use the graph to write down the **amplitude** of the wave motion.
- .....  
.. mm

(2)

(iii) Use the graph to write down the time taken to complete one cycle of the wave motion.

..... s

(1)

(c) The amplitude and frequency of the movement of the loudspeaker cone are both **reduced**.

(i) Sketch on the grid in part (b) a graph that shows the loudspeaker cone moving with reduced amplitude and frequency.

(2)

(ii) Give **two** ways in which the sound changes when the loudspeaker cone moves with reduced amplitude and frequency.

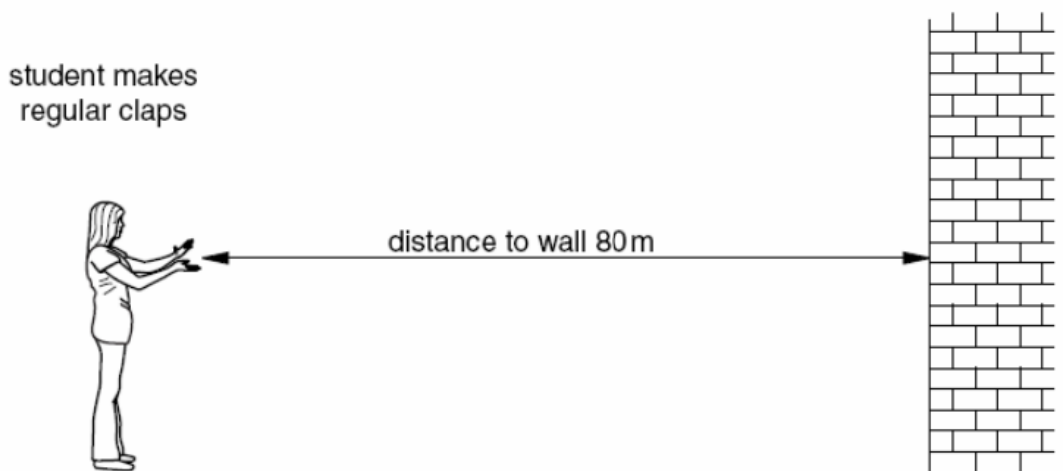
1 .....

2 .....

(2)

(Total 10 marks)

5. Fig. 4.1 shows a student clapping in front of a vertical wall. The wall reflects the sound.



The student changes the number of claps made in 1 minute until the reflection of each clap returns to her at exactly the same time as she makes the next clap.

The speed of sound in air is 330 m/s.

(a) Explain what is meant by *speed*.

.....  
.....  
.....[1]

(a) Calculate the time between claps.

Time = ..... [3]

(b) Calculate the number of claps in 1 minute.

Number of claps = ..... [2]

6. The figure below shows a bat.



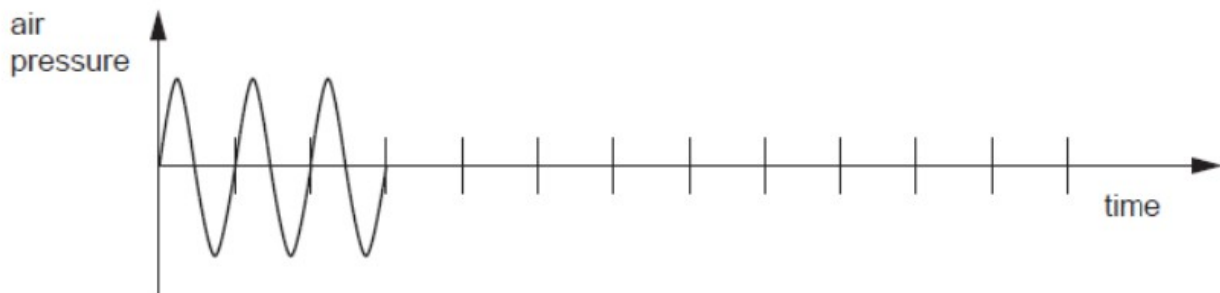
Bats emit short bursts of ultrasound. The echoes of the ultrasound help the bat find insects and prevent the bat flying into objects.

(a) State what is meant by an echo.

.....  
.....

[1]

(b) Fig. 6.2 shows the variation with time of air pressure caused by a burst of ultrasound.



On Fig. 6.2, draw a possible echo formed by this burst of ultrasound. [2]

(c) State

(i) the approximate range of frequencies of sound audible to humans,

..... [1]

(ii) how the frequency of ultrasound differs from frequencies in this audible range.

.....  
.....

[1]

[Total 5m]