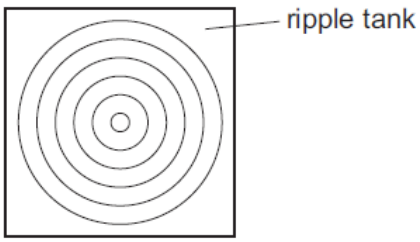
Sound – 2020 IGCSE 0625

1. March/2020/Paper_12/No.21

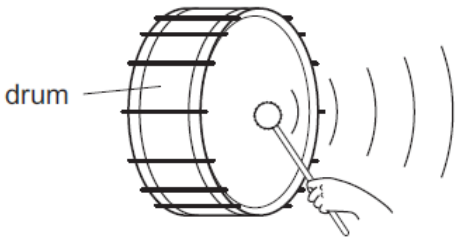
The diagrams show examples of wave motion.

1



waves on water

2



waves in air

3

waves on a rope

4

waves in a spring

Which waves are longitudinal?

A 1 only **B** 2 and 3 only **C** 2, 3 and 4 **D** 2 and 4 only

2. March/2020/Paper_12/No.25

The horn on a ship makes a sound. The captain on the ship hears an echo from a cliff 4.0 s later.

The speed of sound is 340 m / s.

How far away is the cliff from the ship?

A 170 m **B** 340 m **C** 680 m **D** 1360 m

3. March/2020/Paper_12/No.26

Bats produce ultrasound waves to navigate.

What is a possible frequency range for these waves?

A 0–20 Hz

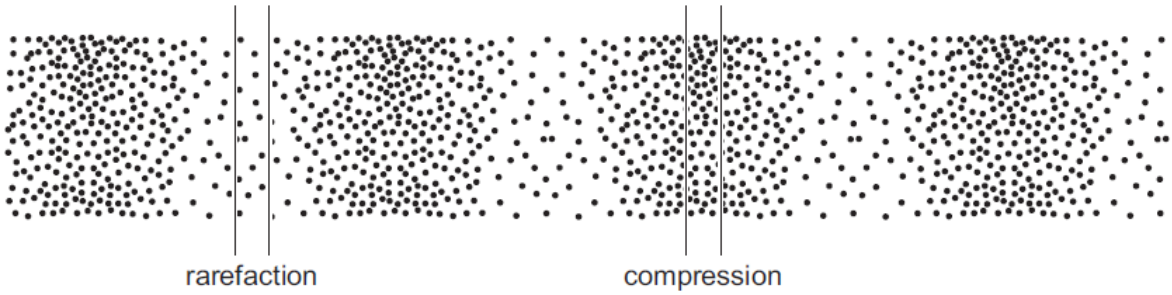
B 20 Hz–2000 Hz

C 2 kHz–20 kHz

D 20 kHz–120 kHz

4. March/2020/Paper_22/No.28

The diagram shows compressions and rarefactions in air as a sound wave moves from left to right.



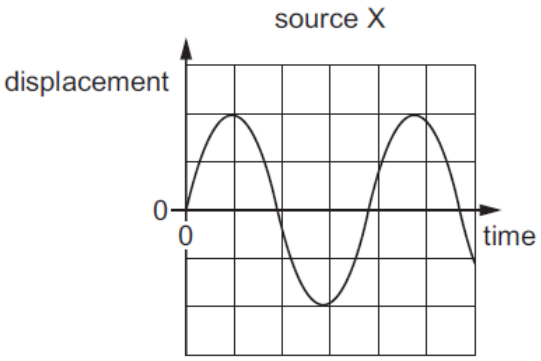
A quieter sound of the same frequency is made.

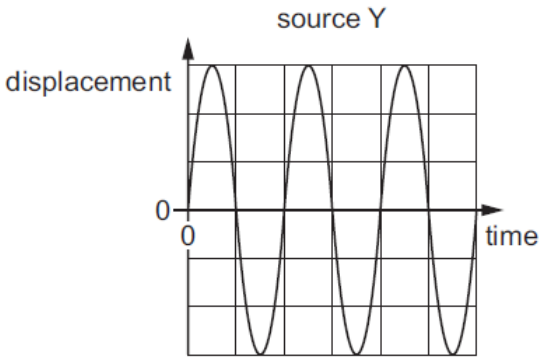
What will happen to the number of particles in a region of rarefaction and in a region of compression?

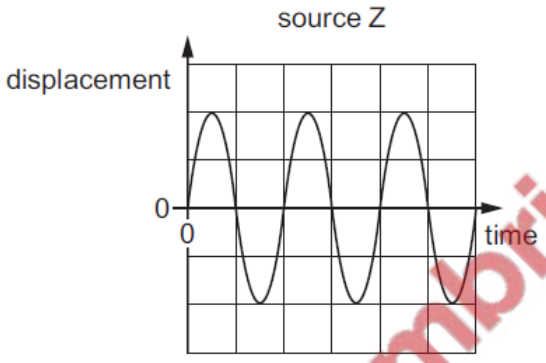
	number of particles in region of rarefaction	number of particles in region of compression
A	decrease	decrease
B	decrease	increase
C	increase	decrease
D	increase	increase

5. June/2020/Paper_11/No.26

The graphs show the displacement of particles in sound waves from three sources X, Y and Z. The scales on the graphs are all identical.







Which sources are producing sound waves with the same pitch?

A X and Y only **B** Y and Z only **C** X and Z only **D** X, Y and Z

6. June/2020/Paper_12/No.26

A dolphin sends out a sound wave. An echo returns 0.010 s later from a fish which is 7.5 m from the dolphin.

What is the speed of the sound wave in water?

A 0.075 m/s **B** 0.15 m/s **C** 750 m/s **D** 1500 m/s

7. June/2020/Paper_13/No.26

A tuning fork produces a sound when it vibrates.

What is the effect on the sound produced when the tuning fork vibrates more times every second and with a larger amplitude?

A higher pitch and less loud

B higher pitch and louder

C lower pitch and less loud

D lower pitch and louder

8. June/2020/Paper_21/No.25

Sound travels through air as a series of compressions and rarefactions.

Which statement correctly compares a compression with a rarefaction?

A In a compression the wavelength is longer than in a rarefaction.

B In a compression the wavelength is shorter than in a rarefaction.

C In a compression the density of the air is greater than in a rarefaction.

D In a compression the density of the air is lower than in a rarefaction.

9. June/2020/Paper_22/No.25

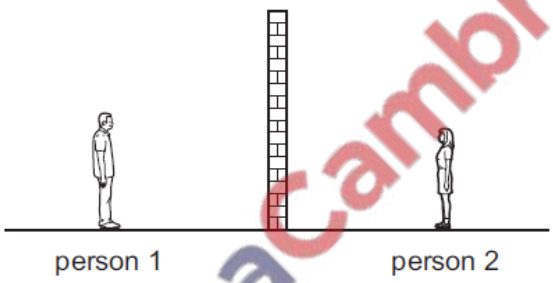
A dolphin sends out a sound wave. An echo returns 0.010 s later from a fish which is 7.5 m from the dolphin.

What is the speed of the sound wave in water?

A 0.075 m/s **B** 0.15 m/s **C** 750 m/s **D** 1500 m/s

10. June/2020/Paper_23/No.25

Two people are standing outdoors on either side of a high wall.



Person 1 can hear person 2 talking although he cannot see her.

Which statement explains this?

A The sound waves have diffracted around the wall.

B The sound waves have passed unaffected through the wall.

C The sound waves have reflected around the wall.

D The sound waves have refracted around the wall.

11. June/2020/Paper_31/No.8

Fig. 8.1 represents the pressure at one instant along part of a sound wave.

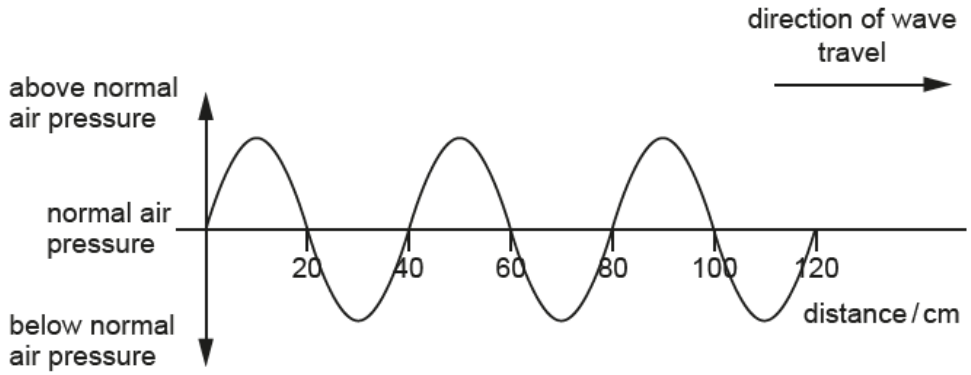


Fig. 8.1

(a) **(i)** Determine the wavelength of the sound wave.

wavelength of the sound wave = ... cm [1]

(ii) On Fig. 8.1, draw a wave representing a louder sound of the same wavelength. [1]

(b) State the range of audible frequencies for a healthy human ear. Include the unit.

..... [2]

[Total: 4]

12. June/2020/Paper_32/No.8

Sound travels as a wave.

(a) Complete each sentence.

Sound is produced when an object ..... .

An echo is produced when sound is ..... from a hard surface.

Compared with a quiet sound, a loud sound always has a greater ..... .

Compared with a high pitched sound, a low pitched sound always has a smaller ..... .

Waves transfer energy without transferring ..... .

[5]

(b) State the meaning of the term ultrasound.

..... [1]

[Total: 6]

13. June/2020/Paper_41/No.6

The speed of sound in air is 340 m/s.

(a) Calculate the range of wavelengths for sounds that are audible by a healthy human ear.

wavelengths range from ..... to ..... [2]

(b) Sound waves are longitudinal waves.

Describe how a longitudinal wave differs from a transverse wave.

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..... [3]

(c) Fig. 6.1 shows a band in front of a building.

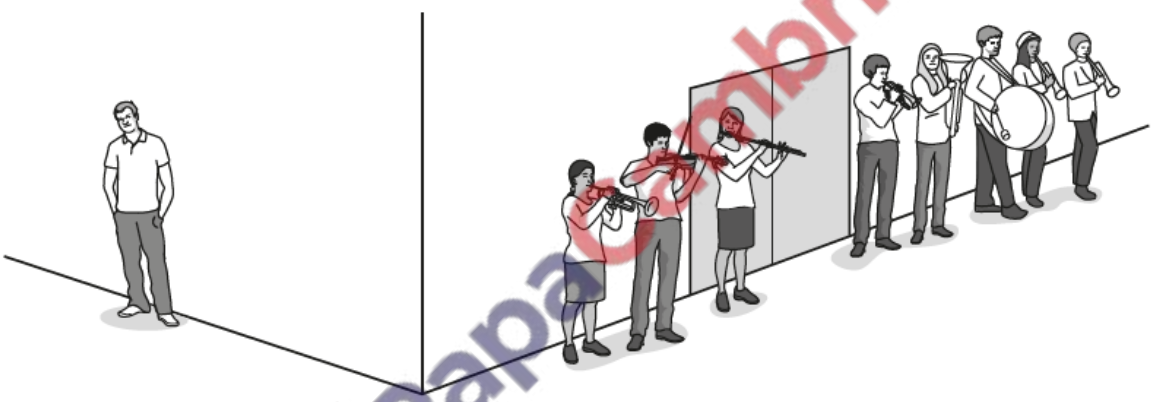

Fig. 6.1

The drum produces a low frequency sound. Other musical instruments produce a high frequency sound. These sounds are equally loud.

A young man at the side of the building hears the drum but not the high frequency sounds from the other musical instruments.

Explain why this happens.

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..... [3]

[Total: 8]