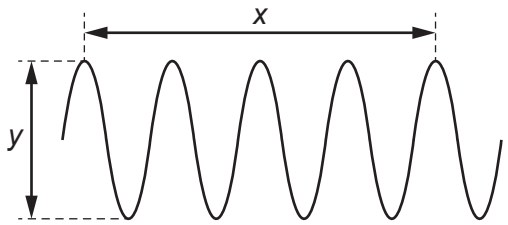
Cambridge Assessment International Education

Cambridge™ IGCSE

Chapter 12: Sound

Created by Hazhi Rozh
25.09.2024

16 The diagram represents a wave.



Which row gives the wavelength and the amplitude of the wave?

	wavelength	amplitude
A	x	y
B	y	x
C	x	$\frac{y}{2}$
D	$\frac{x}{4}$	$\frac{y}{2}$

answer: D

22 The table shows data for the hearing ranges of different animals.

Which animal has the most similar hearing range to a human?

	animal	hearing range / Hz
A	turtle	20–1000
B	mouse	1000–1 000 000
C	moth	20 000–300 000
D	elephant	16–12 000

answer: D

23 Which description of ultrasound is correct?

A longitudinal waves with a frequency greater than 20 000 Hz

B longitudinal waves with a frequency less than 20 Hz

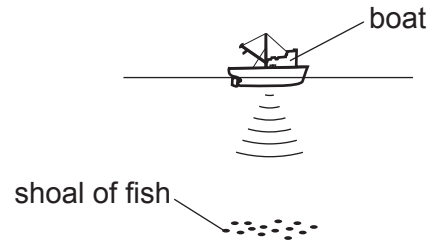
C transverse waves with a frequency greater than 20 000 Hz

D transverse waves with a frequency less than 20 Hz

answer: A

May/June 2024 0625/12

22 A pulse of sound is produced at the bottom of a boat. The sound travels through the water and is reflected from a shoal of fish. The sound reaches the boat again 1.2 s after it is produced. The speed of sound in the water is 1500 m / s.



How far below the bottom of the boat is the shoal of fish?

A 450 m **B** 900 m **C** 1800 m **D** 3600 m

answer: B

23 The frequency of a sound wave increases from 31 000 Hz to 32 000 Hz.

What is the nature of the wave and how does it sound to a human with normal hearing?

A It is a longitudinal wave with a decreasing pitch.

B It is a transverse wave with an increasing pitch.

C It is a longitudinal wave that cannot be heard by a human with normal hearing.

D It is a transverse wave that cannot be heard by a human with normal hearing.

answer: C

May/June 2024 0625/13

16 What is the name of the distance from one crest in a transverse wave to the next crest?

A amplitude

B period

C wavefront

D wavelength

answer: D

22 A healthy human ear is able to hear a range of frequencies.

What is this approximate range?

A 10 Hz to 1000 Hz

B 20 Hz to 2000 Hz

C 20 Hz to 20 000 Hz

D 200 Hz to 200 000 Hz

answer: C

23 A student hits two wooden blocks together in front of a wall and calculates the speed of sound to be 340 m / s.

The time between the student hitting the blocks and hearing the echo is 0.59 s.

NOT TO SCALE

What is the distance between the student and the wall?

A 100 m **B** 200 m **C** 290 m **D** 570 m

answer: A

May/June 2024 0625/21

16 Which statement about waves is correct?

A Waves do not transfer either energy or matter.

B Waves transfer both energy and matter.

C Waves transfer energy without transferring matter.

D Waves transfer matter without transferring energy.

answer: C

22 A sound wave travels at 330 m / s. The distance between the centre of a compression and the centre of the nearest rarefaction in the sound wave is 2.5 cm.

What is the frequency of the sound wave?

A 66 Hz **B** 130 Hz **C** 6600 Hz **D** 13 000 Hz

answer: C

23 Which waves are used in the medical scanning of soft tissue?

A gamma rays

B infrared

C microwaves

D ultrasound

answer: D

May/June 2024 0625/23

24 Which row gives the typical values of the speed of sound at room temperature in the materials stated?

	speed of sound / m/s		
	air	water	iron
A	340	1500	5100
B	340	5100	1500
C	5100	1500	340
D	3.0×10^8	3.0×10^8	3.0×10^8

answer: A

October/November 2023 0625/11

23 Dogs can hear sounds in the range from 100 Hz to 45 kHz.

Which statement is correct?

A Any sound a dog can hear can also be heard by a human.

B Any sound a human can hear can also be heard by a dog.

C Dogs can hear some low frequency sounds that are silent for humans.

D Dogs can hear some high frequency sounds that are silent for humans.

answer: D

October/November 2023 0625/12

23 Which statement about a sound that can be heard by a person with normal hearing is correct?

A The sound is a longitudinal wave with a frequency between 2.0 Hz and 20 Hz.

B The sound is a longitudinal wave with a frequency between 20 Hz and 20 000 Hz.

C The sound is a transverse wave with a frequency between 2.0 Hz and 2000 Hz.

D The sound is a transverse wave with a frequency between 2.0 Hz and 20 MHz.

answer: B

October/November 2023 0625/13

17 Which statement about waves is correct?

A All waves can travel through a vacuum.

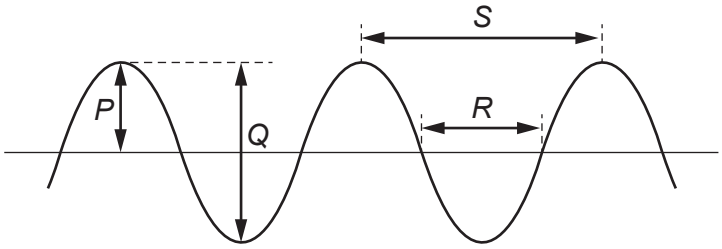
B All waves travel at the same speed.

C Seismic S-waves can be modelled as longitudinal waves.

D Waves transfer energy without transferring matter.

answer: D

18 The diagram shows a transverse wave.



Which row identifies the amplitude and the wavelength of the wave?

	amplitude	wavelength
A	*P*	*R*
B	*P*	*S*
C	*Q*	*R*
D	*Q*	*S*

answer: B

23 A sound is produced and an echo is heard after the sound reflects off a wall.

How do the properties of the echo compare to the original sound wave?

	amplitude	frequency	speed
A	lower	lower	lower
B	lower	same	same
C	same	lower	lower
D	same	same	same

answer: B

October/November 2023 0625/21

23 The element mercury exists as a solid, a liquid or a gas.

Which row gives a possible set of values of the speeds of sound through mercury?

	speed of sound in frozen mercury / m/s	speed of sound in liquid mercury / m/s	speed of sound in mercury vapour / m/s
A	250	1500	2500
B	250	2500	1500
C	1500	250	2500
D	2500	1500	250

answer: D

October/November 2023 0625/22

23 Which row gives typical values for the speed of sound in a solid and in a gas?

	speed of sound in a solid / m/s	speed of sound in a gas / m/s
A	3	30
B	30	3
C	300	3000
D	3000	300

answer: D

October/November 2023 **0625/23**

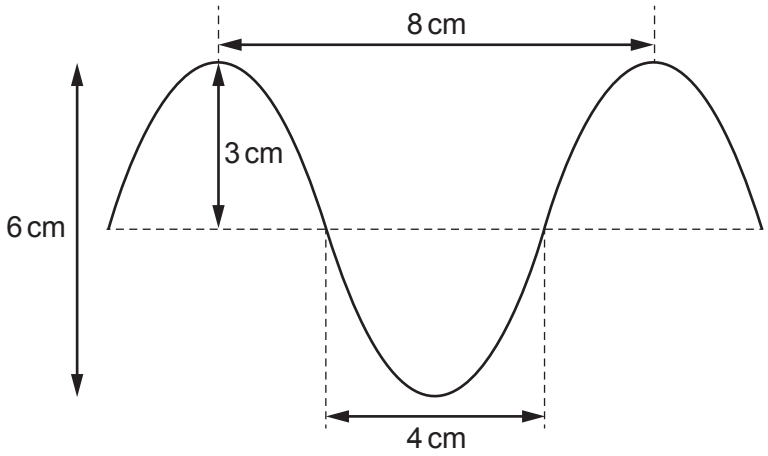
23 Which row gives approximate values for the speed of sound in copper, water and air?

	speed of sound in copper m/s	speed of sound in water m/s	speed of sound in air m/s
A	4500	1500	350
B	350	4500	1500
C	1500	4500	350
D	4500	350	1500

answer: A

May/June 2023 **0625/12**

17 The diagram shows a wave.



What are the amplitude and the wavelength of this wave?

	amplitude / cm	wavelength / cm
A	3	4
B	3	8
C	6	4
D	6	8

answer: B

May/June 2023 0625/13

22 A ship sounds its horn when it is 790 m from a cliff. A passenger on the ship hears the echo 4.8 s later.

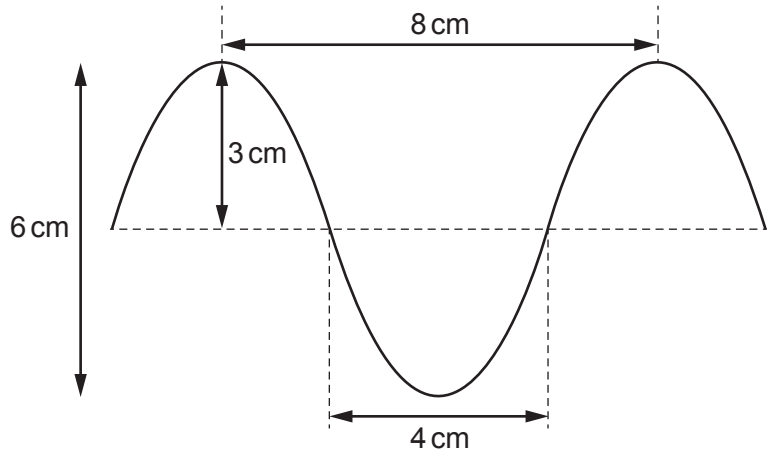
What is the speed of the sound?

A 165 m / s **B** 330 m / s **C** 340 m / s **D** 1896 m / s

answer: B

May/June 2023 0625/22

17 The diagram shows a wave.



What are the amplitude and the wavelength of this wave?

	amplitude / cm	wavelength / cm
A	3	4
B	3	8
C	6	4
D	6	8

answer: B

May/June 2023 0625/23

22 A ship sounds its horn when it is 790 m from a cliff. A passenger on the ship hears the echo 4.8 s later.

What is the speed of the sound?

A 165 m / s **B** 330 m / s **C** 340 m / s **D** 1896 m / s

answer: B

October/November 2022 0625/11

24 An observer stands at the finish line of a 100 m race. He wants to time the winner's run. He starts his stop-watch as soon as he sees the smoke from the starting gun instead of when he hears the bang.

What is the reason for doing this?

A Light travels much faster than sound.

B There is a risk he might respond to an echo from a wall.

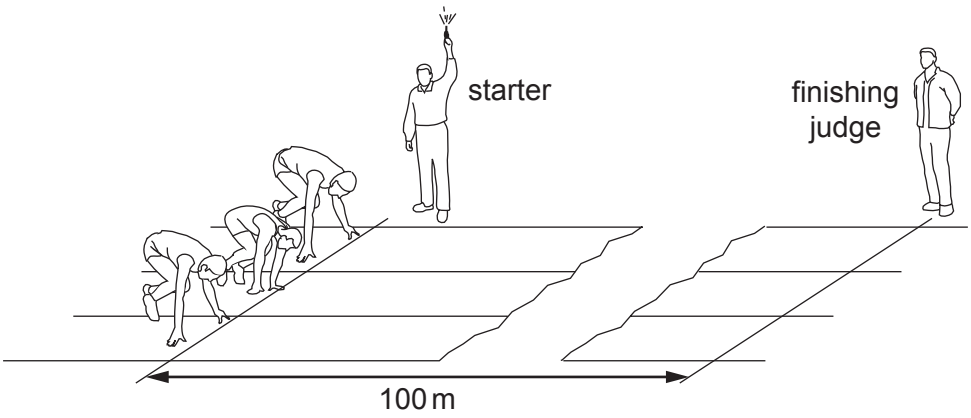
C Humans react slower to sound than to light.

D Humans react more quickly to sound than to light.

answer: A

October/November 2022 0625/12

24 A 100 m race is started by firing a gun. The gun makes a bang and a puff of smoke at the same time.



When does the finishing judge see the smoke and when does he hear the bang?

	sees the smoke	hears the bang
A	almost immediately	almost immediately
B	almost immediately	after about 0.3 s
C	after about 0.3 s	almost immediately
D	after about 0.3 s	after about 0.3 s

answer: B

October/November 2022 0625/21

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

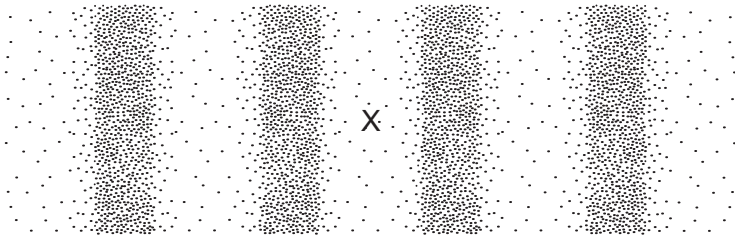
How do the speeds of sound in concrete and water compare with this speed?

	speed in concrete	speed in water
A	greater	greater
B	greater	less
C	less	greater
D	less	less

answer: A

October/November 2022 0625/22

22 The diagram shows the air molecules in part of a sound wave at a particular moment in time.



Which statement is **not** correct?

A Earlier, there was compression at X.

B Later, there will be a rarefaction at X.

C This part of the wave is travelling horizontally across the page.

D This part of the wave is travelling towards the top of the page.

answer: D

May/June 2022 0625/21

22 A sound wave is created by a loudspeaker that vibrates backwards and forwards 96 000 times per minute.

The speed of sound is 320 m / s.

What is the wavelength of the sound wave?

A 0.20 m **B** 5.0 m **C** 300 m **D** 18 000 m

answer: A

October/November 2021 0625/11

24 What is ultrasound?

A sound waves that are so loud that they damage human hearing

B sound waves that are too high-pitched for humans to hear

C sound waves that are too low-pitched for humans to hear

D sound waves that are too quiet for humans to hear

answer: B

October/November 2021 0625/23

23 Which row gives the typical values of the speed of sound at room temperature in the materials stated?

	speed of sound / m/s		
	air	water	iron
A	340	1500	5100
B	340	5100	1500
C	5100	1500	340
D	3.0×10^8	3.0×10^8	3.0×10^8

answer: A

May/June 2021 0625/13

27 Which description of ultrasound is correct?

A longitudinal waves with a frequency greater than 20 000 Hz

B longitudinal waves with a frequency less than 20 Hz

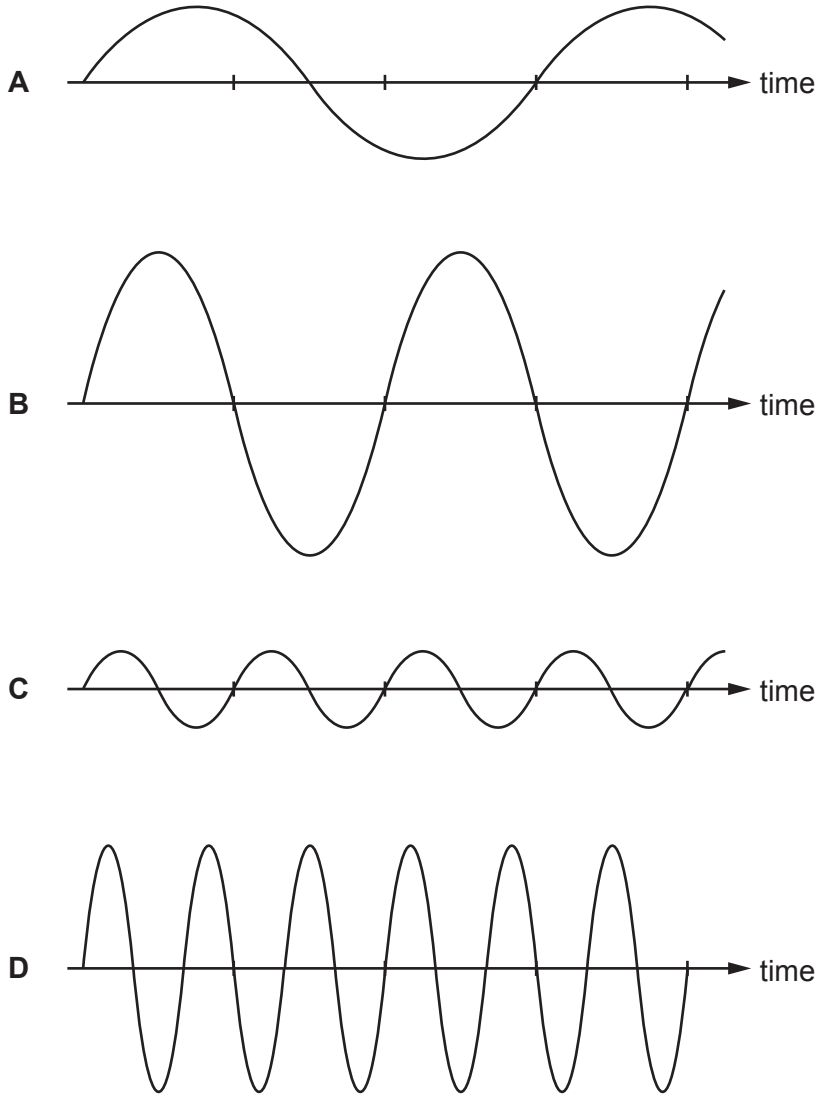
C transverse waves with a frequency greater than 20 000 Hz

D transverse waves with a frequency less than 20 Hz

answer: A

26 The diagrams represent the waves produced by four sources of sound. The scales are the same for all the diagrams.

Which sound has the highest frequency?



answer: D

May/June 2021 0625/21

26 A sound wave is travelling outwards from a loudspeaker into the surrounding air.

Here are three statements.

1 The air pressure is lower at a rarefaction compared with undisturbed air.

2 The density of the air is less at a compression compared with undisturbed air.

3 The distance from a compression to a rarefaction equals half a wavelength.

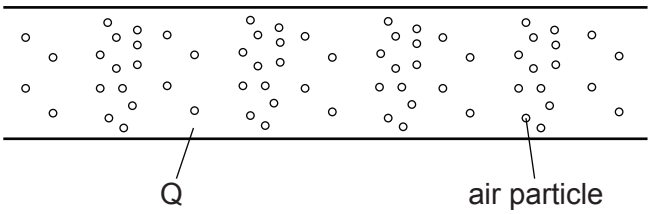
Which statements about the sound wave are correct?

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

answer: B

May/June 2021 0625/23

26 The diagram shows a model of a sound wave passing through air in an open tube.



What is the region Q?

A a compression which is a region of high pressure

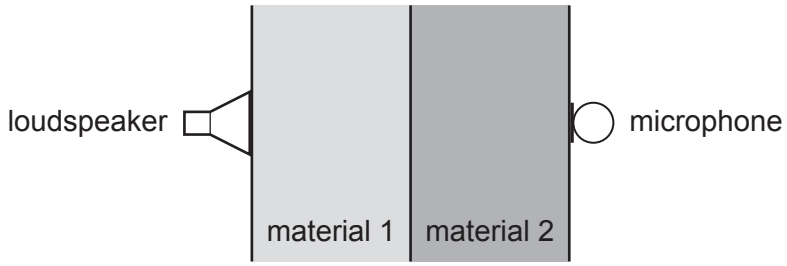
B a compression which is a region of low pressure

C a rarefaction which is a region of high pressure

D a rarefaction which is a region of low pressure

answer: D

27 The sound from a loudspeaker must pass through two materials to reach a microphone.



Which combination of materials gives the shortest time for the sound to reach the microphone?

	material 1	material 2
A	air	hydrogen
B	air	water
C	copper	aluminium
D	water	oil

answer: C

8 Fig. 8.1 shows images produced during two different medical scanning procedures.

ultrasound scan of a fetus

X-ray scan of a hand

Fig. 8.1

(a) (i) Define ultrasound.

.....

..... [1]

(ii) State how the speed of sound in liquid compares to the speed of sound in air.

..... [1]

(iii) X-rays are part of the electromagnetic spectrum.

State the speed of X-rays in a vacuum.

..... [1]

(b) Describe **three** similarities or differences between the use of ultrasound and X-rays in medical scanning procedures.

1 .....

.....

2 .....

.....

Question	Answer	Marks
8(a)(i)	(ultrasound is) sound with a frequency higher than 20 kHz	**B1**
8(a)(ii)	(sound travels) faster (in a liquid than in air) / ORA	**B1**
8(a)(iii)	3.0×10^8 m / s	**B1**
8(b)	any **three** from: • X-rays and ultrasound show internal body parts (without the need to cut open the body) • X-rays and ultrasound both travel through (some parts of) the body • images are formed by ultrasound (partially) reflecting (from boundaries between body matter) • images are formed by X-rays which (travel in straight lines and) pass through soft tissue and are absorbed by bone • X-rays show parts of the skeleton / X-rays show bones **OR** ultrasound shows image of soft tissues • an X-ray detector forms image from X-rays that travel through patient **OR** ultrasound detector forms image from sound waves reflected back (from body parts) • X-rays expose you to radiation (which can be harmful to humans)	**B3**

7 A student can hear trains passing her house.

(a) Describe the motion that a sound wave gives to air particles.

..... [1]

(b) When the student is at her house, she can hear and see the trains, as shown in Fig. 7.1.

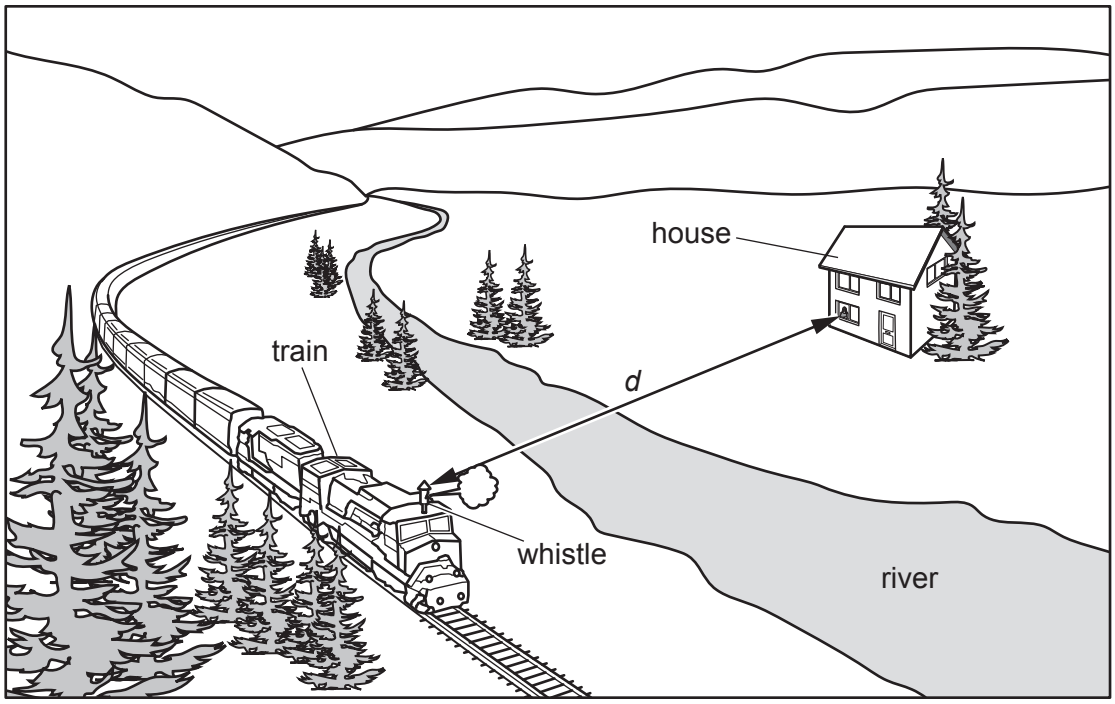


Fig. 7.1 (not to scale)

When a train whistle blows, steam comes out of the whistle.

The student measures the time interval between seeing the steam coming out of the whistle and hearing the whistle.

(i) Suggest a suitable device for measuring this time interval.

..... [1]

(ii) The time interval is 1.6 s between the steam coming out of the whistle and the student hearing the whistle.

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

Calculate the distance *d* from the whistle to the student.

distance *d* = ... m [3]

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

..... [2]

Question	Answer	Marks
7(a)	oscillating / vibrating/backwards and forwards	**B1**
7(b)(i)	stopwatch / (stop)clock	**B1**
7(b)(ii)	540 (m)	**A3**
	340 × 1.6	(C1)
	(distance =) speed × time	(C1)
7(c)	20 – 20 000	**B1**
	Hz / hertz	**B1**

5 An observer stands at P and looks into a rock quarry. A small explosion takes place at X in the quarry.

Fig. 5.1 shows the situation.

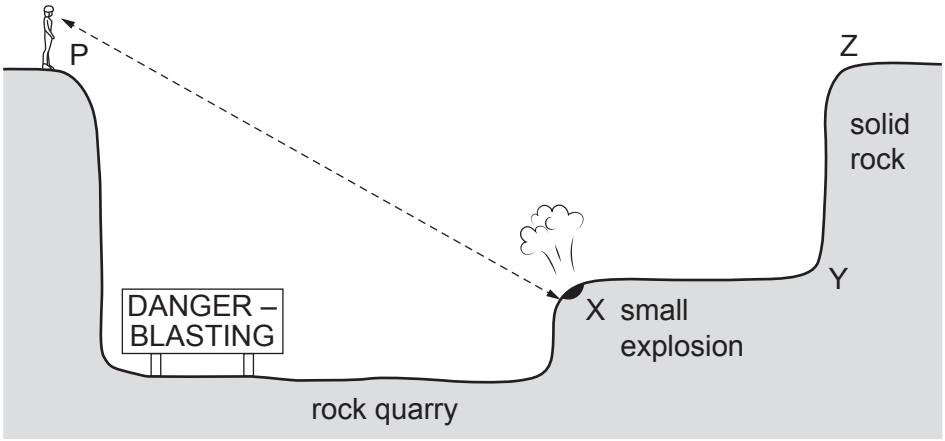


Fig. 5.1 (not to scale)

(a) The observer first hears the sound from the explosion 1.8 s after the explosion occurs. The speed of the sound is 340 m / s.

(i) Calculate the distance XP from the explosion at X to the observer at P.

distance XP = ... m [3]

(ii) The observer then hears a quieter sound from the explosion.

Suggest how the quieter sound waves reach the observer.

.....

..... [2]

(b) Before the explosion, a warning siren produces a sound. The wavelength of the sound is 0.28 m.

The speed of the sound is 340 m / s.

Calculate the frequency of the sound.

frequency = ... Hz [3]

[Total: 8]

Question	Answer	Marks
5(a)(i)	610 (m)	**A3**
	340 = distance ÷ 1.8 **OR** (distance =) 340 × 1.8	(C2)
	speed = distance ÷ time in any form	(C1)
5(a)(ii)	an echo **OR** sound (waves) reflecting	**B1**
	from rocks **OR** YZ **OR** Z **OR** bottom of quarry	**B1**
5(b)	1200 (Hz)	**A3**
	340 = f × 0.28 **OR** (f =) 340 ÷ 0.28	(C2)
	$v = f\lambda$ in any form **OR** (f =) $v \div \lambda$	(C1)

7 Two students, A and B, determine the speed of sound.

They are standing side by side at a distance of 520 m from a wall, as shown in Fig. 7.1.

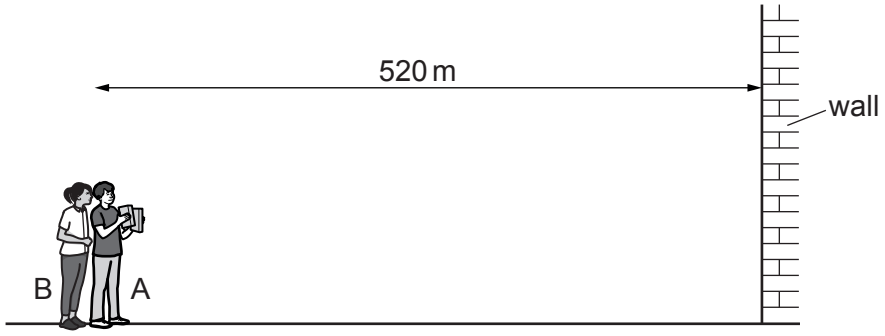


Fig. 7.1

Student A makes a loud sound by banging two blocks of wood together once. A short time later, both students hear the sound reflected from the wall.

(a) (i) State the term for the reflected sound.

..... [1]

(ii) Table 7.1 lists properties of a sound wave.
Compare the properties of the original sound and the reflected sound. For each property, place a tick (✓) in one column.

The first property is done for you.

Table 7.1

property	same	different
speed	✓	
wavelength		
loudness		
frequency		
amplitude		
longitudinal		

[3]

(b) Student B measures the time between the original sound and the reflected sound.

(i) Suggest a suitable device for measuring the time interval between hearing the original sound and hearing the reflected sound.

..... [1]

(ii) The time interval between hearing the original sound and hearing the reflected sound is 3.1 s.
Use information shown in Fig. 7.1 to calculate the speed of sound.

speed of sound = ... m/s [3]

[Total: 8]

Question	Answer	Marks
7(a)(i)	echo	**B1**
7(a)(ii)	property / same / different speed / ✓ / wavelength / ✓ / loudness / / ✓ frequency / ✓ / amplitude / / ✓ longitudinal / ✓ /	**B3**
7(b)(i)	stopwatch	**B1**
7(b)(ii)	340 (m / s)	**A3**
	(2 × 520) ÷ 3.1 OR 1040 ÷ 3.1	(C2)
	(distance =) 2 × 520 OR 1040 OR (speed =) distance ÷ time in any form	(C1)

5 Sound waves are longitudinal and electromagnetic waves are transverse.

(a) A sound wave used for a medical examination has a frequency of 1.5 MHz.

(i) State and explain what type of sound wave this is.

.....

..... [2]

(ii) The wave travels through soft human tissue at a speed of 1.3 km / s.

Calculate the wavelength of the wave in soft human tissue.

wavelength = ... [3]

(b) Describe **one** use of X-rays in medicine.

.....

..... [2]

[Total: 7]

This is not related to chapter 12, but part of the question.

Question	Answer	Marks
5(a)(i)	ultrasound OR sound (frequency) above audible range	**B1**
	frequency > 20 kHz OR 20 000 Hz	**B1**
5(a)(ii)	8.7×10^{-4} m	**A3**
	(λ =) v / f OR $v = f\lambda$ in any form	C1
	(λ =) $1.3 \times 10^{3} / 1.5 \times 10^{6}$ OR 8.7×10^{n}	C1
5(b)	basic description of use e.g. X-rays for detecting broken bones	**B1**
	additional detail e.g. X-rays pass through soft tissue AND not through bone	**B1**

6 (b) Two students, A and B, use echoes to measure the speed of sound.
Student A has two blocks of wood that make a loud sound when banged together. Student B has a stop-watch. They stand 120 m from a school wall as shown in Fig. 6.2.

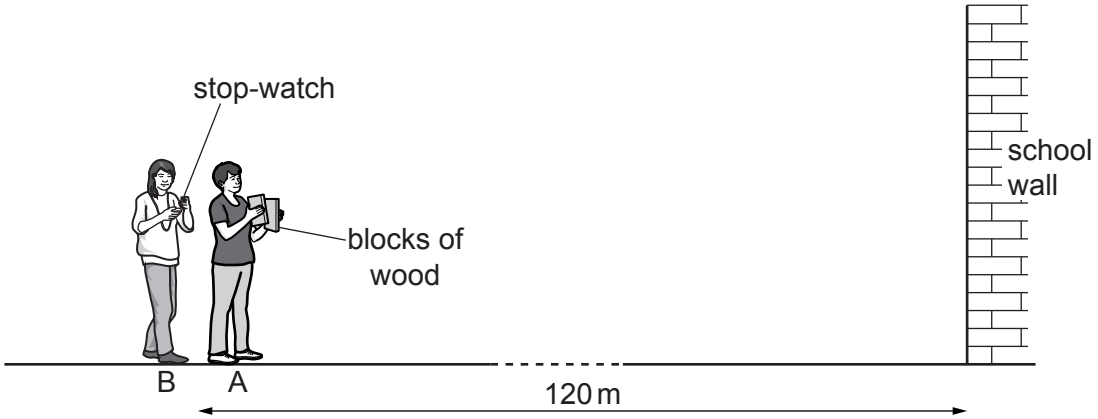


Fig. 6.2 (not to scale)

Describe how the students use the arrangement in Fig. 6.2 to determine the speed of sound in air.

.....

.....

.....

.....

.....

.....

..... [4]

[Total: 7]

6(b)	any **four** from: (student A) bangs two blocks of wood together (student B) starts stopwatch when (sees) blocks or wood collide (student B) stops stopwatch when she hears echo repeat (experiment) AND calculate average (time) uses 240 m as distance travelled by sound owtte use s= d ÷ t	**B4**

7 A group of students are taking measurements so they can calculate the speed of sound.

The students and their teacher are outside.

The teacher holds two blocks of wood and the students have stop-watches.

The teacher stands a long distance from the students, as shown in Fig. 7.1.

All the students can see the teacher clearly.

Fig. 7.1 (not to scale)

The teacher claps the two blocks of wood together to produce a loud sound. The students measure the time interval between seeing the teacher clap and hearing the sound.

(a) Fig. 7.2 shows three of the stop-watches. The stop-watches show three of the values recorded for the time interval.

Fig. 7.2

Calculate the average value for the time intervals shown on the stop-watches in Fig. 7.2.

average time interval = ... s [3]

(b) (i) State the name of the instrument needed to measure the distance between the teacher and the students.

..... [1]

(ii) The distance between the teacher and the students is 415 m.

The average time for the sound to travel between the teacher and the students is 1.29 s.

Calculate the speed of sound.

speed of sound = ... m / s [3]

[Total: 7]

Question	Answer	Marks
7(a)	1.27 1.34 1.44	**C1**
	(1.27 + 1.34 + 1.44) ÷ 3 OR (4.05) ÷ 3	**C1**
	1.4 (s)	**A1**
7(b)(i)	tape (measure)	**B1**
7(b)(ii)	(speed =) d ÷ t in any form	**C1**
	415 ÷ 1.29	**C1**
	320 (m / s)	**A1**

6 Fig. 6.1 shows particles of a material in which a sound wave is travelling.

Fig. 6.1 (not to scale)

(a) On Fig. 6.1, mark:

(i) the centre of a compression with the letter C [1]

(ii) the centre of a rarefaction with the letter R [1]

(iii) one wavelength with a double-ended arrow. [1]

(b) Circle **one** value from the list which is the speed of sound in water.

15 m/s **150 m/s** **1500 m/s** **15 000 m/s** **150 000 m/s** **1 500 000 m/s** [1]

(c) The wavelength of a sound wave in water is 12 cm.

Calculate the frequency of this sound wave using your value from **(b)**.

frequency = ... [3]

(d) State and explain whether the sound in **(c)** is ultrasound.

statement .....

explanation .....

.....

.....

[2]

[Total: 9]

Question	Answer	Marks
6(a)(i)	C in line with smallest gap between dots	**B1**
6(a)(ii)	R in line with largest gap between dots	**B1**
6(a)(iii)	arrow corresponds to wavelength	**B1**
6(b)	1500 m / s	**B1**
6(c)	$v = f\lambda$ in any form OR (f =) v / λ	**C1**
	(f =) 1500 / 0.12	**C1**
	(f =) 13 kHz OR 13 000 Hz	**A1**
6(d)	statement consistent with candidate's answer to 6c	**M1**
	ultrasound is above 20 000 Hz	**A1**

6 **(a)** Describe an experiment to determine the speed of sound in air. State the apparatus you need, details of how to take measurements and how to calculate the speed of sound in air.

You may use the space below to draw a **labelled** diagram as part of your answer.

.....

.....

.....

.....

.....

.....

.....

..... [5]

(b) Sound waves from a television are diffracted through doorways. Light waves from a television are **not** diffracted through doorways.

Suggest why light waves and sound waves behave differently in this situation.

.....

.....

..... [2]

[Total: 7]

Question	Answer	Marks
6(a)		**B5**
	method of producing sound, e.g. clap for echo method or gun for direct measurement, sig gen or loudspeaker, hammer on block	B1
	apparatus used, e.g. stopwatch, long tape, trundle wheel, wall if using echo method, metre rule, microphones and timer or microphones and oscilloscope	B1
	detail of measurement of (long) distance, e.g. measure distance between person and the wall, measure distance between loudspeaker and microphone or measure distance between two microphones	B1
	detail of measurement of time OR appropriate time measured, e.g. at one end start stopwatch when smoke seen from gun and stop it when sound heard, start stopwatch when gun heard / clap heard and stop when echo heard, measure time taken between clap and hearing echo, timer starts when first microphone receives signal and stops when second receives signal OR measurement of wavelength, e.g. move one microphone away until two waves on oscilloscope have moved one wavelength apart	B1
	speed = measured distance / time for direct method OR speed = 2 × distance from student clapping to wall / time for echo method OR distance between microphones = wavelength AND $v = f \times \lambda$	B1
6(b)		**B2**
	wavelength of light is (much) smaller than width of doorway or wavelength of sound	B1
	wavelength of sound is similar to width of doorway OR $\lambda \simeq$ width of gap for diffraction to occur OR larger wavelength results in greater diffraction ORA	B1

8 **(a)** A loudspeaker is producing a sound.

Choose words from the box to complete the sentences about sound.

amplitude	frequency	speed	wavelength

(i) To increase the loudness of the sound, increase the ..... of the sound wave. [1]

(ii) To increase the pitch of the sound, increase the ..... of the sound wave. [1]

(b) Two students determine the speed of sound in air.
The students stand together, 80 m from a large brick wall as shown in Fig. 8.1.

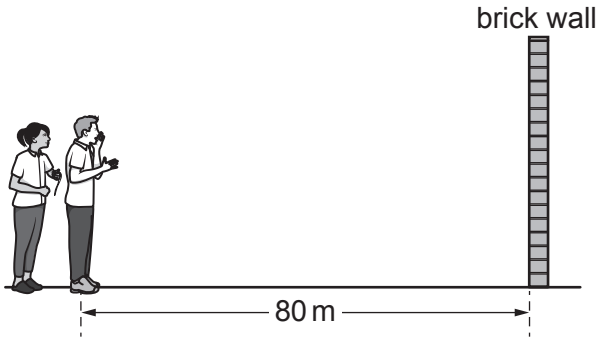


Fig. 8.1 (not to scale)

One student shouts and as he shouts the other student starts a stop-watch. She stops the stop-watch when she hears the echo of the shout.
The reading on the stop-watch is 0.56 s.

(i) State the **total** distance the sound travels during the 0.56 s.

distance = ... m [1]

(ii) Calculate the speed of sound in air using the measurements given in part **(b)**.

speed of sound = ... m/s [3]

(iii) The students' value for the speed of sound is **not** accurate.

Suggest **two** ways of improving the students' experiment.

1. .....

2. .....

Question	Answer	Marks
8(a)(i)	amplitude	B1
8(a)(ii)	frequency	B1
8(b)(i)	160 (m)	B1
8(b)(ii)	(s =) d ÷ t (speed of sound =) distance ÷ time	C1
	160 ÷ 0.56	C1
	290 (m / s)	A1
8(b)(iii)	any **two** from: use something to give sharper sound stand further away from wall no other walls nearby both students stand at 80 (m)/same distance (from wall) repeat (the measurement/experiment) AND average (results)	B2

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6 Fig. 6.1 is a full-scale diagram that represents a sound wave travelling in air.

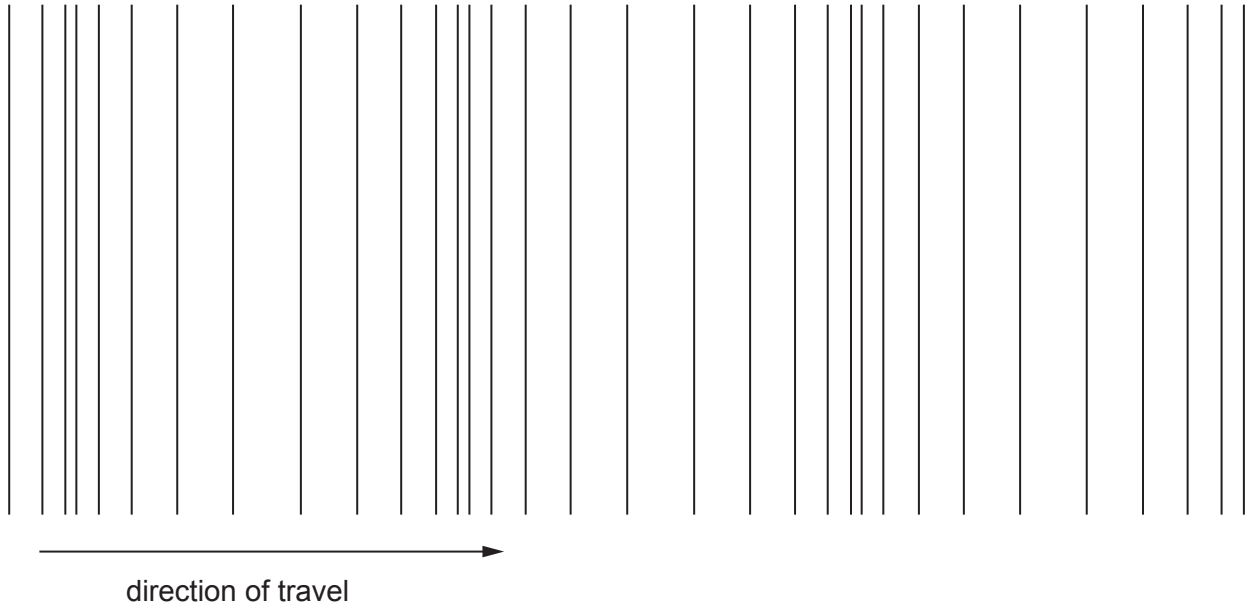

Fig. 6.1

(a) On Fig. 6.1, mark **two** points, each at the centre of a different compression. Label both of the points C. [1]

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

Measure the diagram and determine the frequency of the sound.

frequency = ... [3]

Question	Answer	Marks
6(a)	two points labelled C at the centre of the two compressions	**B1**
6(b)	6200–6500 Hz	**A3**
	(λ =) value from 0.051 to 0.053 (m) seen anywhere	**C1**
	(f =) v / λ in any form **or** 330 / 0.052 **or** 330 / 5.2 **or** 63	**C1**
6(c)	compressions / rarefactions closer **or** more compressions / rarefactions (in same distance)	**B1**
	less diffraction / spreading out	**B1**
	(because of) smaller wavelength **or** ratio wavelength / gap width smaller	**B1**

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5 (b) A sound wave of frequency 850 Hz travels through sea water. The speed of sound in sea water is 1500 m / s.

Calculate the wavelength of this sound wave in sea water.

wavelength = ... [2]

[Total: 6]

5(b)	1.8 m	**A2**
	λ = v/f OR 1500/850 in any form	**C1**