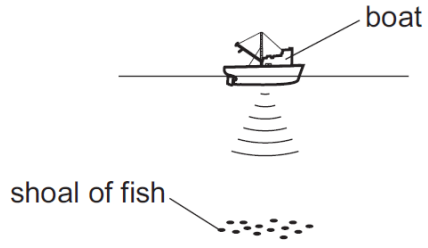
Sound – 2019 June

1. 0625/11$12$13,21,22,23/M/J/19/No.26,24

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 after 1.2 s. 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

2. 0625/11/M/J/19/No.27

Which range is approximately correct for the audio frequencies that can be detected by a healthy human ear?

A 2 Hz to 2000 Hz

B 2 Hz to 20 000 Hz

C 20 Hz to 2000 Hz

D 20 Hz to 20 000 Hz

3. 0625/12,22/M/J/19/No.27,25

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.

4. 0625/13,23/M/J/19/No.27,25

Which statement about ultrasound is correct?

A It has a higher frequency than audible sound, and it is a longitudinal wave.

B It has a higher frequency than audible sound, and it is a transverse wave.

C It has a lower frequency than audible sound, and it is a longitudinal wave.

D It has a lower frequency than audible sound, and it is a transverse wave.

5. 0625/21/M/J/19/No.25

What is the approximate value of the speed of sound in air at normal temperature?

A 340 m/s **B** 34 000 m/s **C** 340 km/s **D** 3.0×10^8 m/s

6. 0625/23/M/J/19/No.20

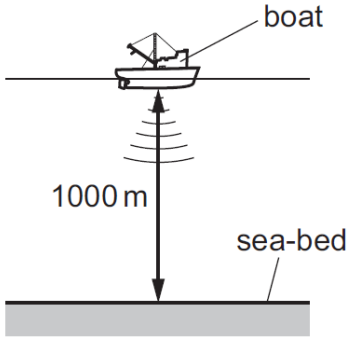
Sound travels through air at a speed of 340 m/s. A source generates sound waves at a frequency of 1.2 kHz.

What is the wavelength of the sound waves?

A 0.28 m **B** 3.5 m **C** 280 m **D** 410 m

7. 0625/12/F/M/19/No.25

A pulse of sound is produced at the bottom of a boat. The sound travels through the water and is reflected from the sea-bed. The sound reaches the boat again after 1.3 s. The sea-bed is 1000 m below the boat.



Using this information, what is the speed of sound in the water?

A 770 m/s **B** 1300 m/s **C** 1500 m/s **D** 2600 m/s

8. 0625/22/F/M/19/No.26

A sound wave passes a point. The air pressure at that point increases and then decreases 300 times every second.

Which descriptions apply to this sound wave?

	the type of wave motion	the frequency of the sound
A	longitudinal	outside human hearing range
B	longitudinal	within human hearing range
C	transverse	outside human hearing range
D	transverse	within human hearing range

9. 0625/22/F/M/19/No.27

A boy stands 150 m from a wall. He claps and when he hears the echo, he immediately claps again. He continues this for some time.

Another student has a stop-watch. She starts the watch on the first clap and stops it on the eleventh clap. The watch reads 10.0 s.

Which value do her measurements give for the speed of sound in air?

A 150 m/s **B** 170 m/s **C** 300 m/s **D** 330 m/s