

How sound travels and how we hear it

Grade 6 science (Year 7 · Class 6) · Test

Name: _____ Date: _____ Class: _____ Mark: ____ / 20

This test lasts 45 minutes and is worth 20 points. Use the term vibration in your explanations, show your working for every calculation and write units. A calculator is allowed.

Level: Grade 6 science (Year 7 · Class 6) · **Curriculum:** MS-PS4-1

Time: 45 minutes · 8 questions · Total: 20 marks · Calculator allowed

Question 1 How sound is made (3 marks)

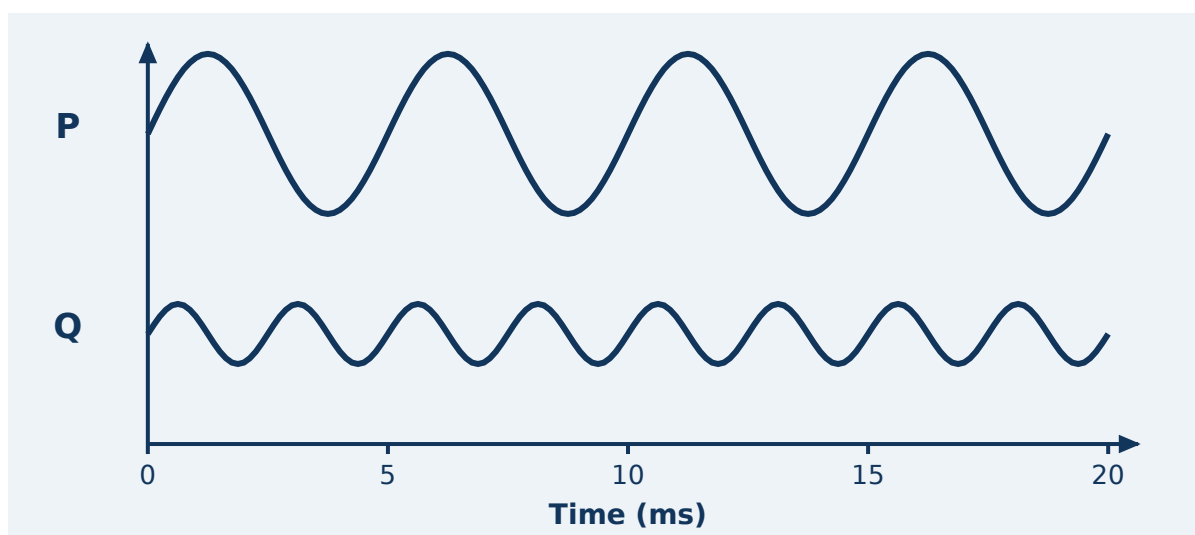
State what produces all sounds, and name the part that vibrates in a drum and in a guitar.

Question 2 No sound in space (3 marks)

Explain, using particles, why sound cannot travel through a vacuum.

Question 3 Two traces (4 marks)

The diagram shows two sounds P and Q on the same time scale.



Two sounds shown on the same time scale.

- State which sound is louder. (1 mark)
- State which sound has the higher pitch. (1 mark)
- Calculate the frequency of P. (1 mark)
- Calculate the frequency of Q. (1 mark)

Question 4 Canyon echo (2 marks)

A hiker shouts in a canyon and hears the echo from the far wall 2.4 s later. Calculate the distance to the wall. Use 340 m/s.

Question 5 Hearing care (2 marks)

Give two ways a student can protect their hearing when using headphones.

Question 6 Loudness and pitch (3 marks)

Explain the difference between loudness and pitch, and state what property of the vibration controls each.

Question 7 Speed of sound (2 marks)

Explain why sound travels faster in steel than in air.

Question 8 Unit (1 mark)

State the unit of frequency.