KS3 SCIENCE · PHYSICS

Sound: exam questions

Name _____
Total: 22 marks

1 A leaf floats on a pond. A water wave passes under it. Describe what happens to the leaf, and state what the wave carries across the pond. **[2 marks]**

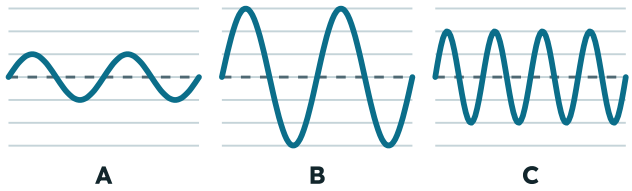
2 State what is needed to make a sound. **[1 mark]**

3 Describe how the particles of the air move when a sound wave passes through it. **[2 marks]**

4 Explain why sound cannot travel through a vacuum. **[2 marks]**

5 Sound travels through air, water and steel. Write them in order, from the one sound travels through most slowly to the one it travels through fastest. Give a reason why sound is fastest in a solid. **[2 marks]**

6 Three sounds, A, B and C, are shown on an oscilloscope with the same settings. **[4 marks]**



Which sound is the loudest, and which has the highest pitch? Give a reason for each.

7 A girl claps her hands in front of a cliff. She hears the echo 2 s later. The speed of sound in air is 330 m/s. Calculate how far away the cliff is. **[3 marks]**

8 A room with bare walls and a hard floor echoes. Explain why a carpet and curtains make it quieter. **[2 marks]**

9 Describe what the ear drum does when a sound wave reaches it, and what happens next so that you hear the sound. **[2 marks]**

10 State what ultrasound is, and give one use of it. **[2 marks]**

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Sound: mark scheme

Total: 22 marks

1 [2 marks]

- The leaf moves up and down (accept: it bobs, or it is not carried along by the wave) **(1)**
- The wave carries energy (accept: energy, not matter) **(1)**

2 [1 mark]

- A vibration (accept: something vibrating) **(1)**

3 [2 marks]

- They vibrate (accept: they move back and forth) **(1)**
- Along the same line as the wave travels (accept: it is a longitudinal wave) **(1)**

4 [2 marks]

- Sound is passed on by particles (accept: sound needs a medium, or a substance, to travel through) **(1)**
- A vacuum has no particles in it **(1)**

5 [2 marks]

- Air, water, steel **(1)**
- The particles in a solid are closest together (accept: most strongly held together), so they pass the vibration on most quickly **(1)**

6 [4 marks]

- B is the loudest **(1)**
- It has the biggest amplitude (accept: its wave is the tallest) **(1)**
- C has the highest pitch **(1)**
- It has the highest frequency (accept: the most waves on the screen, or its peaks are closest together) **(1)**

7 [3 marks]

- Distance the sound travels = 330 × 2 = 660 m **(1)**
- The sound goes to the cliff and back, so divide by 2 **(1)**
- The cliff is 330 m away **(1)**

Give all 3 marks for a correct final answer of 330 m.

8 [2 marks]

- Soft materials absorb sound (accept: the energy of the sound is transferred to them) **(1)**
- So less sound is reflected (accept: hard surfaces reflect more of the sound than soft ones do) **(1)**

9 [2 marks]

- The ear drum vibrates **(1)**
- The vibrations are passed on to the inner ear (accept: to the small bones, or to the cochlea), which sends electrical signals to the brain **(1)**

10 [2 marks]

- Sound with a frequency too high for humans to hear (accept: sound above 20 000 Hz) **(1)**
- Any one use: scanning an unborn baby, finding the depth of the sea (sonar), cleaning jewellery or glasses, or physiotherapy **(1)**