Name: Date:

25 total marks

Science Assessment Year 4: Sound

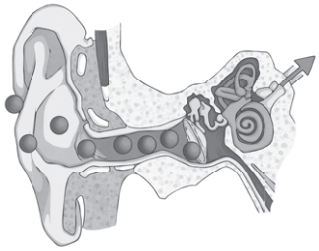
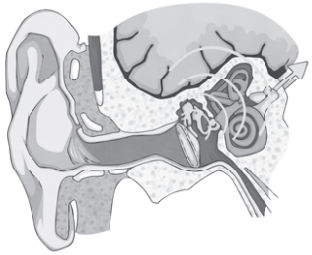
How Sound is Made

1 mark

1. How is sound made by a guitar string?

.....

2. Write an explanation for each picture showing how a sound gets to your ear.

	Write on this side what is happening in each picture:
	
	
	
	
	

4 marks

Total for this page

Travelling Sound

3. Which travels faster? Sound or light?

.....

1 mark

4. Which one of these statements is true most of the time? Tick the correct answer.

- ☐ **a)** You hear thunder before you see lightning.
- ☐ **b)** You see lightning before you hear thunder.
- ☐ **c)** You hear thunder and lightning at exactly the same time.

1 mark

5. Which one of these statements is true? Tick the correct answer.

- ☐ **a)** Sound travels faster in water than in air.
- ☐ **b)** Sound travels faster in air than in water.
- ☐ **c)** Sound travels at the same speed in water and in air.

1 mark

Explain your reasoning for ticking your answer.

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.....

.....

1 mark

6. Why can't sound travel in space?

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.....

.....

1 mark

Total for this page

Changing Sounds

7. Draw lines to put these instruments in order of highest pitch to lowest pitch:

Trumpet 	•	• Highest
Cello 	•	• Next Highest
Bass Drum 	•	• Middle
Trombone 	•	• Lower
Recorder 	•	• Lowest

4 marks

8. Name two ways in which a string can make a higher sound.

a) .....

b) .....

1 mark

1 mark

9. How can I make a fainter sound when I pluck a string by moving where I am?

.....

.....

1 mark

Total for this page

Sound Investigation

10. I want to investigate if how I pluck a guitar string changes the volume it makes. What question should I investigate?

.....

.....

1 mark

11. What is the one variable I should change in this investigation?

.....

1 mark

12. Name two other variables that must stay the same.

a) .....

b) .....

1 mark

1 mark

13. Here are the results from my investigation. Write down a conclusion from looking at the results.

Force Used to Pluck String	Volume of Sound
5N	30 dB
10N	40 dB
15N	50 dB
20N	60 dB

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2 marks

Total for this page

14. Why would it be a good idea to do each of the tests 3 times?

.....

.....

1 mark

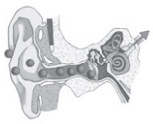
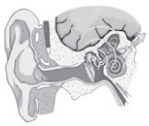
15. Fill in the missing result using prediction.

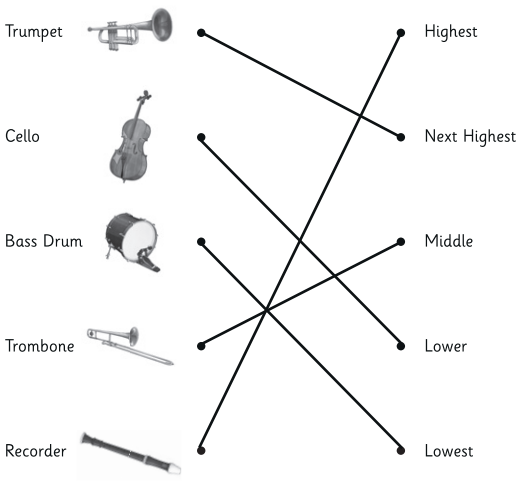
Force Used to Pluck String	Volume of Sound
5N	30 dB
10N	40 dB
15N	50 dB
20N	60 dB
25N	.....

1 mark

Total for this page

Answer Sheet: Science Assessment Year 4:
Sound

question	answer	marks	notes
1. How is a sound made by a guitar string?			
	Vibration/s	1	1 mark for an answer that includes the word 'vibration'.
2. Explain each part of this set of pictures showing how a sound gets to your ear.			
	 Answers must mention that the hitting of the drum makes **vibrations**.  Answers must mention that the **vibrations travel through the air/vibrate the air**.  Answers must mention that the **vibrations arrive at the ear**.  Answers must mention that the **sound vibrates the little hairs/bones in the ear**.  Answers must mention that the **vibrations are carried by the nerves to the brain**.	4	4 marks total: 1 mark for 2 correct 2 marks for 3 correct 3 marks for 4 correct 4 marks for 5 correct The set of answers must show awareness of the vibrations that are key to the whole process. Even if they are not mentioned by name at every step of the process, they must be implied for any mark to be given.
3. Which travels faster? Sound or Light?			
	Light	1	
4. Which one of these statements is true most of the time? Tick the correct answer.			
	b) You see lightning before you hear thunder	1	1 mark for the correct answer identified (even if it is not a tick)
5. Which one of these statements is true? Tick the correct answer.			
	a) Sound travels faster in water than in air	1	1 mark for the correct answer identified (even if it is not a tick)
Why can't sound travel in space?			
	Particles in water are closer together	1	1 mark for explanation
6. Why can't sound travel in space?			
	• There is no air • No air to vibrate • Nothing/no particles to vibrate • It is a vacuum	1	1 mark for any of these answers

question	answer	marks	notes
7. Draw lines to put these instruments in order of highest pitch to lowest pitch.			
		4	4 marks total: 1 mark for 2 correct 2 marks for 3 correct 3 marks for 4 correct 4 marks for 5 correct
8. Name two ways in which a string can make a higher sound.			
	• Make it tighter • Make it shorter • Make it thinner	2	2 marks total: 1 mark for 1 correct 2 marks for 2 correct
9. How can I make a fainter sound when I pluck a string by moving where I am?			
	Move further away	1	1 mark
10. I want to investigate if how I pluck a guitar string changes the volume it makes. What question should I investigate?			
	Example answers: • Does the force used to pluck a string affect the volume of the sound? • Does plucking a string harder make the sound louder?	1	1 mark for mentioning how the force of the pluck affects how loud it is.
11. What is the one variable I should change in this investigation			
	• The force of the pluck • How hard you pluck	1	1 mark for either option
12. Name two other variables that must stay the same			
	• Same string used • Same instrument used • Same volume recorder used • Volume recorder at same distance	2	2 marks total: 1 mark for 1 correct 2 marks for 2 correct

question	answer	marks	notes
13. Here are the results from my investigation. Write down a conclusions from looking at the results.			
	Example answers: • The more force used on the string, the louder the volume • The less force used, the quieter the volume • The harder the pluck, the louder the sound	2	2 marks for answers that refer to **both** the volume increasing and the force on the string. No marks for answers that only mention one of the items. For example: It gets louder.
14. Why would it be a good idea to do each of the tests 3 times?			
	• To make it more accurate • To work out an average • To check for errors • To check it is right • To check for anomalies	1	1 mark for any option
15. Fill in the missing result using prediction.			
	• 70 dB • Anything in the range 65-75 dB	1	1 mark for any option