

- 2 When sound waves reach a material, some of the energy of the sound is reflected and some is transmitted through the material.

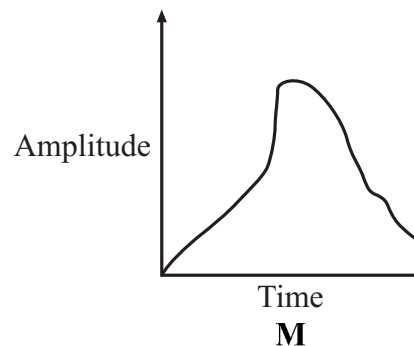
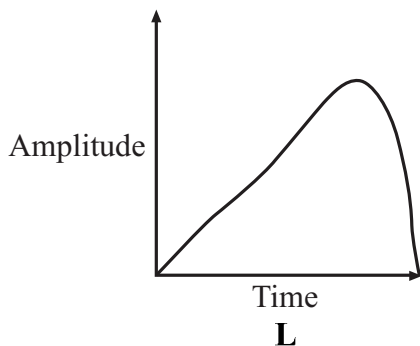
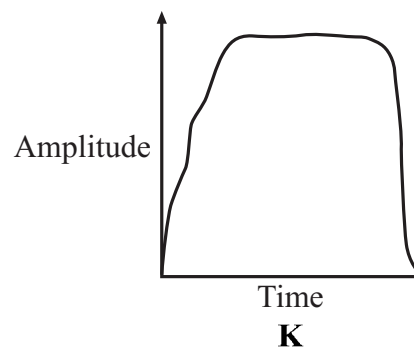
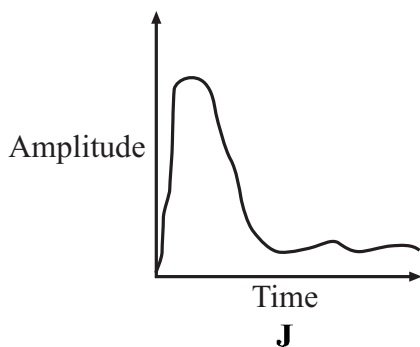
(a) Complete the sentence.

Sound waves are caused by
(1 mark)

(b) The graphs **J**, **K**, **L** and **M** represent the sound energy reflected from a surface.

The graphs are all drawn to the same scale.

Which graph shows the greatest total sound energy output from the surface?



Graph
(1 mark)

Question 2 continues on the next page

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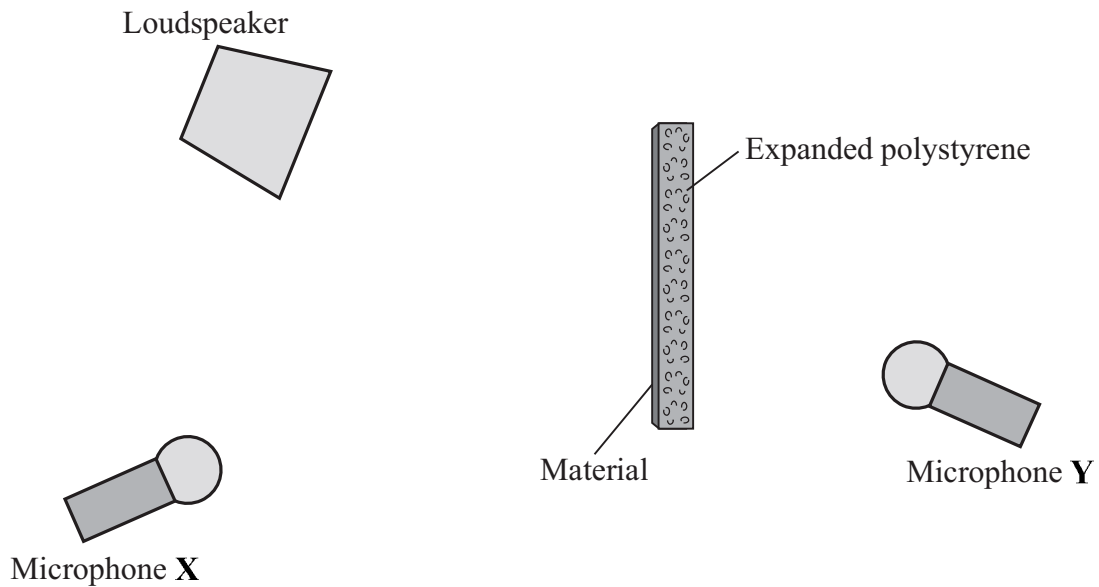


- (c) The proportion of the sound energy which is reflected or transmitted or absorbed depends on the material which receives the sound.

A student investigates different materials.

The diagram shows how a student sets up her equipment.

- (i) Using a pencil and ruler to draw on the diagram, show how microphone X receives reflected sound.



(2 marks)

- (ii) The student tests four materials. Each sheet of material is 1 mm thick. This has been glued onto a block of expanded polystyrene.

Why does the student use the same size of expanded polystyrene block and the same sound level for each test?

.....

.....

(1 mark)



(iii) The table shows the readings for the sound level transmitted to microphone Y.

Sound level from loudspeaker in arbitrary units	Surface material	Sound level transmitted to microphone Y in arbitrary units
60	paper	39
60	plaster	18
60	cloth	31
60	wood	15

[A] Which surface material transmits the smallest proportion of the sound?

.....
(1 mark)

[B] What proportion is this?

.....
(1 mark)

(d) People living in a flat have very noisy neighbours who are always playing loud music.

Suggest **one** practical idea to reduce the amount of noise transmitted into the flat through the walls and explain how your idea will work.

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(2 marks)

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