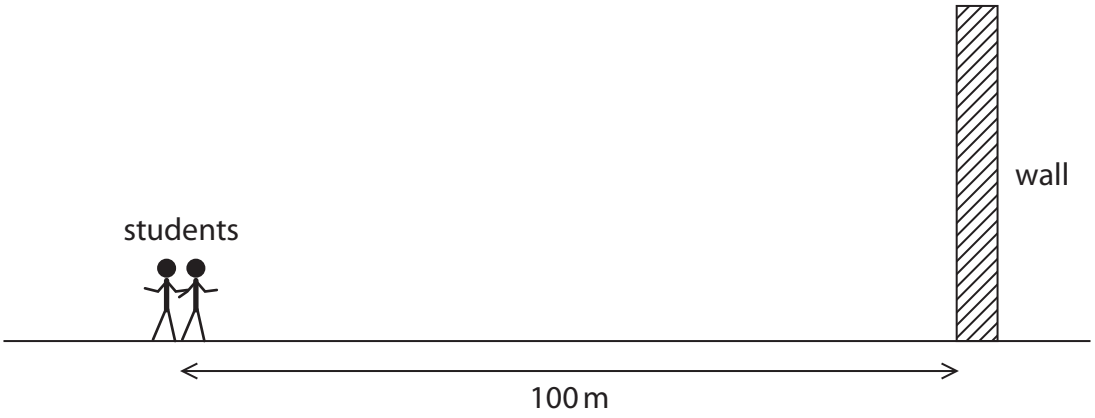
7 The diagram shows two students doing an experiment to measure the speed of sound in air.



This is their method.

- both students stand 100 m away from a large flat wall
- student A makes a sound by hitting two blocks of wood together
- the sound waves travel to the wall and reflect back to the students as an echo
- student A hits the blocks together again when the echo is heard
- student A continues to hit the blocks together every time an echo is heard
- student B starts a timer when the blocks are hit together and stops the timer when the blocks have been hit together 20 more times

(a) Give a reason why the students do not stand nearer to the wall.

(1)

.....

.....

.....

(b) The students repeat their method five times.

The table shows the students' results.

Time between starting and stopping timer in seconds					
test 1	**test 2**	**test 3**	**test 4**	**test 5**	**mean**
11.80	11.18	11.76	11.75	11.72	

(i) The students decide that one of their tests shows an anomalous result.

Circle the anomalous result in the table.

(1)

(ii) Suggest a reason for the anomalous result.

(1)

.....

.....

.....

(iii) Calculate the mean time between starting and stopping the timer.

Give your answer to a suitable number of decimal places.

(3)

mean time = ... s

(iv) The speed of sound in air can be calculated using the formula

$$\text{speed} = \frac{\text{distance travelled}}{\text{time taken}}$$

Use the students' results to calculate a value for the speed of sound in air.

(3)

speed of sound = ... m / s

(Total for Question 7 = 9 marks)