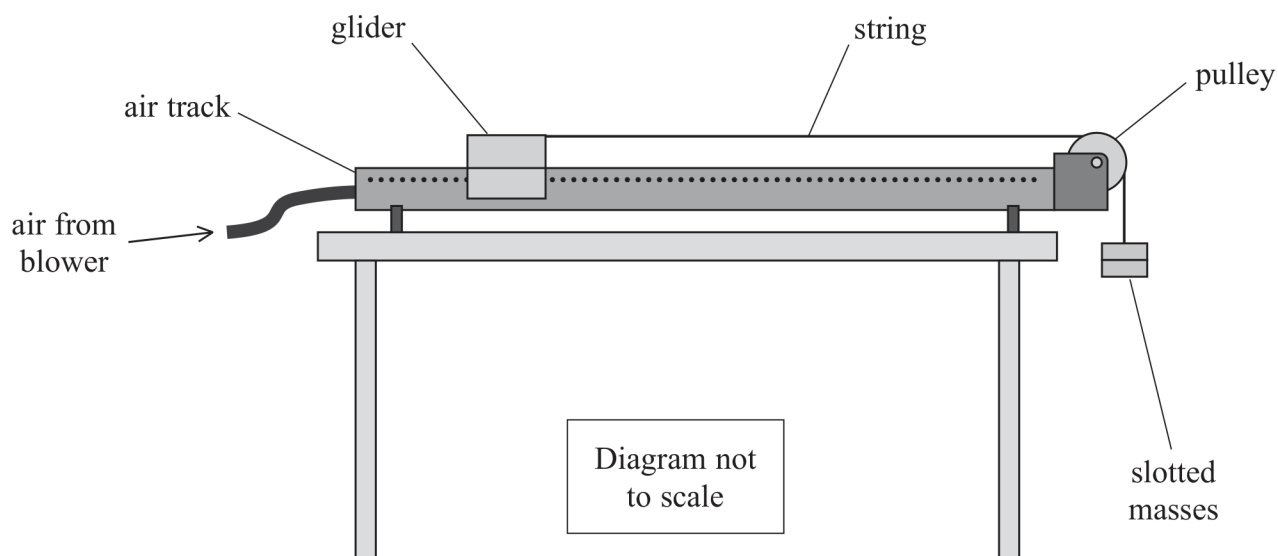


**Answer ALL questions.**

- 1 A student used the apparatus shown below to investigate the relationship between the acceleration of an object and the resultant force on the object.



- (a) The air track is a long metal tube with holes along its length. Air from a blower enters the tube and escapes through the holes, minimising friction between the glider and the track.

The student released the slotted masses and the glider accelerated along the track.

Describe how he could determine the acceleration of the glider. You may add to the diagram.

(5)

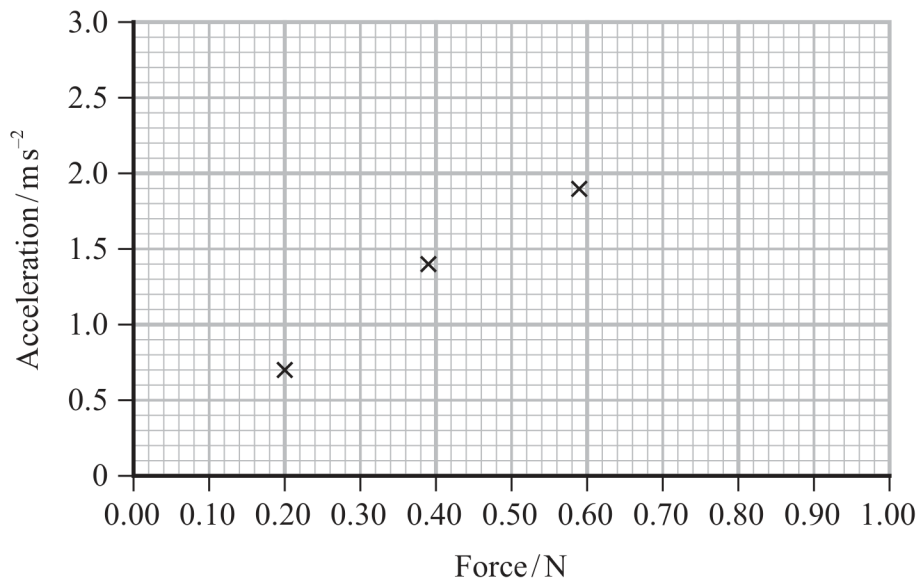


(b) Another student completed the investigation.

He recorded his results in a table.

mass / g	force / N	acceleration / m s <sup>-2</sup>
20	0.20	0.7
40	0.39	1.4
60	0.59	1.9
80	0.78	2.4
100	0.98	2.8

He plotted some of the results on a graph.



(i) Plot the remaining points and add a line of best fit.

(2)

(ii) The student concludes that these results do not show that the acceleration of the glider is directly proportional to the force.

Comment on the student's conclusion.

(1)



P 6 5 7 9 8 A 0 3 2 0

- (c) The teacher explained that for the resultant force to be directly proportional to acceleration, the total mass of the system must be kept constant.

Describe how the student could keep the total mass of the system constant during the investigation.

(1)

(Total for Question 1 = 9 marks)