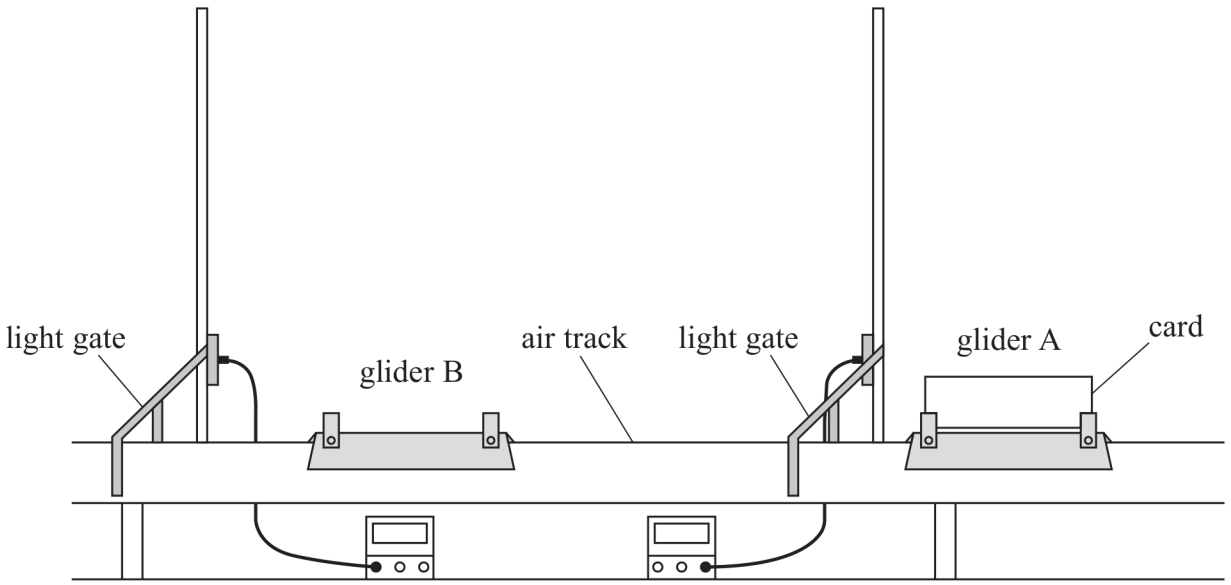
Answer ALL questions.

1 A student investigated the conservation of momentum using the apparatus as shown.



(a) The air track provides a cushion of air which reduces friction between the gliders and the track.

Describe how the student would show that the air track is horizontal before starting the investigation.

(1)

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(b) The student pushed glider A. The first light gate recorded the time t_1 for the card on glider A to pass through it.

The gliders collided and stuck together. The second light gate recorded the time t_2 for the card on glider A to pass through it.

The student recorded t_1 and t_2 for three separate collisions.

t_1 / s	0.34	0.21	0.28
t_2 / s	0.70	0.39	0.55

The masses of the gliders were identical. If momentum is conserved then $t_2 = 2t_1$.

Show that momentum was conserved in this investigation.

(3)

(c) Another student suggested that using a piece of card twice as long would improve the investigation.

Assess this suggestion.

(3)

(Total for Question 1 = 7 marks)