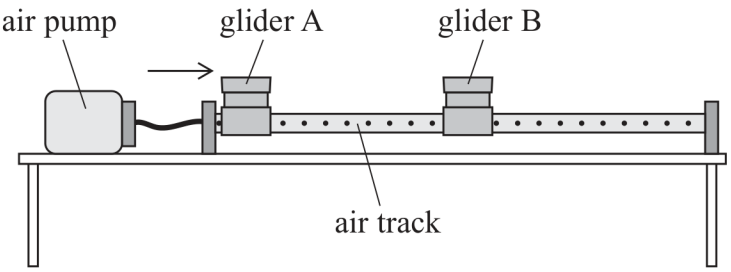
12 A teacher demonstrated the principle of conservation of linear momentum using two gliders, A and B, and an air track. A has the same mass as B.

A and B were initially stationary, then A was pushed gently towards B as shown.



(a) State the principle of conservation of linear momentum.

(2)

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(b) A magnet was attached to each glider. The gliders collided and stuck together.

A data logger and sensor were used to record the velocity of A. The velocity recorded after the collision was half the velocity recorded before the collision.

(i) Deduce whether these results show that the law of conservation of linear momentum is obeyed.

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(ii) Explain why the force of attraction between the two magnets did not affect this demonstration.

(2)

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(Total for Question 12 = 6 marks)