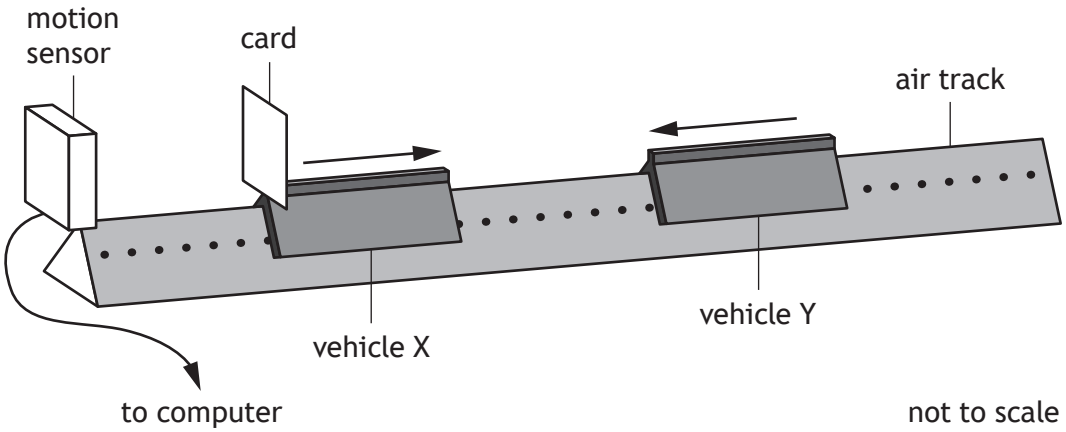
DO NOT WRITE IN THIS MARGIN

3. A student sets up an experiment to investigate a collision between two vehicles on a frictionless air track.



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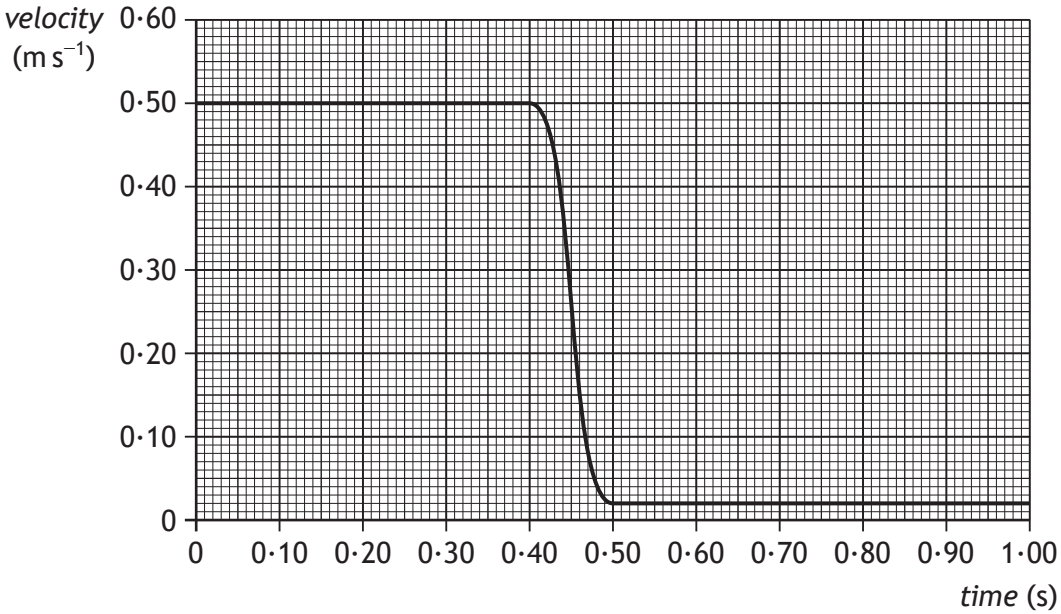
Vehicle X of mass 0·75 kg is travelling to the right along the track.

Vehicle Y of mass 0·50 kg is travelling to the left along the track with a speed of 0·30 m s^{-1}.

The vehicles collide and move off separately.

A computer displays a graph showing the velocity of vehicle X from just before the collision to just after the collision.



3. (continued)

(a) Show that the velocity of vehicle Y after the collision is $0{\cdot}42\ m\ s^{-1}$. **2**

Space for working and answer

(b) Determine the impulse on vehicle Y during the collision. **3**

Space for working and answer

[Turn over

3. (continued)

(c) Explain how the student would determine whether the collision was elastic or inelastic. **2**