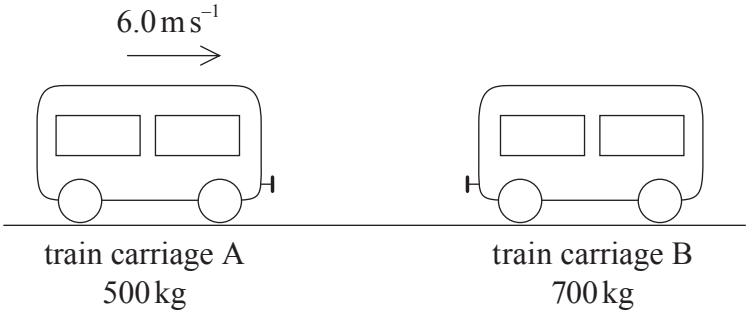
A2. This question is about energy and momentum.

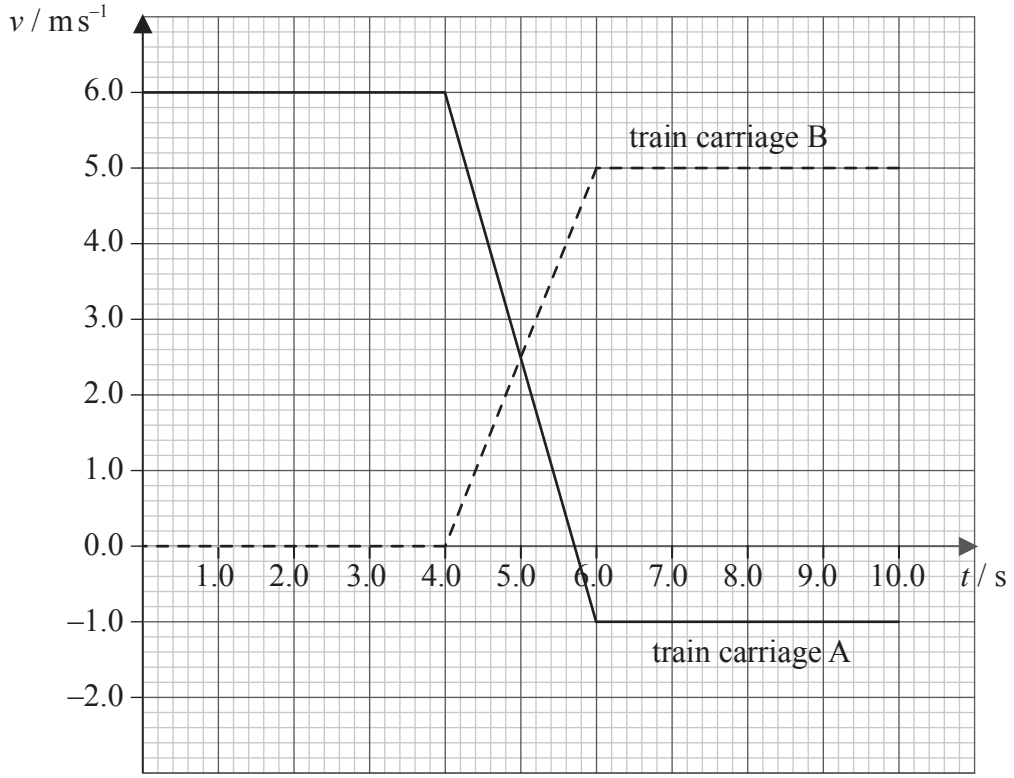
A train carriage A of mass 500 kg is moving horizontally at $6.0\,m\,s^{-1}$. It collides with another train carriage B of mass 700 kg that is initially at rest, as shown in the diagram below.



(This question continues on the following page)

(Question A2 continued)

The graph below shows the variation with time t of the velocities of the two train carriages before, during and after the collision.



(a) Use the graph to deduce that

(i) the total momentum of the system is conserved in the collision. *[2]*

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(ii) the collision is elastic. *[2]*

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(b) Calculate the magnitude of the average force experienced by train carriage B. *[3]*

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