

Solutionbank M1

Heinemann Modular Maths for Edexcel AS and A-level

8 Momentum

Exercise B, Question 10

Question:

Two particles, A of mass 7 kg and B of mass 9 kg, collide and coalesce. Before the collision the velocity of A was v and the velocity of B was $2v$. After the collision their velocity is $\left[\begin{array}{c} \frac{3}{2} \\ \end{array} \right] \text{ m s}^{-1}$.

Find v .

Solution:

After particles coalesce, combined mass is 16 kg.
Using conservation of momentum

$$7v + 9 \times 2v = 16 \left[\frac{3}{2} \right]$$

$$25v = \left[\frac{48}{2} \right]$$

$$v = \left[\frac{1.92}{1.28} \right] \text{ m s}^{-1}.$$

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