

Solutionbank M1

Heinemann Modular Maths for Edexcel AS and A-level

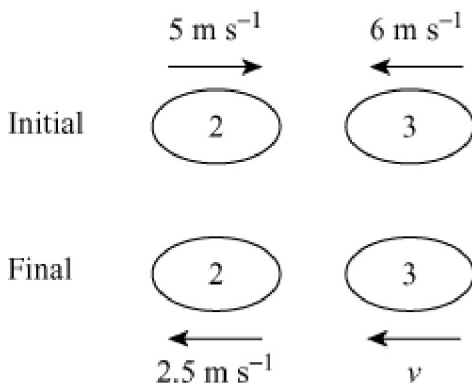
8 Momentum

Exercise Test yourself, Question 3

Question:

Two particles are travelling towards each other when they collide. One has mass 2 kg and was travelling at 5 m s^{-1} before the collision and the other has mass 3 kg and a velocity of 6 m s^{-1} before the collision. The 2 kg mass reverses direction and moves at 2.5 m s^{-1} after the collision. Describe how the 3 kg mass moves after the collision.

Solution:



Using conservation of momentum (with speeds to the left as positive)

$$\begin{aligned}
 3 \times 6 - 2 \times 5 &= 2 \times 2.5 + 3v \\
 8 &= 5 + 3v \\
 v &= 1
 \end{aligned}$$

\therefore The 3 kg mass moves with speed 1 m s^{-1} in the same direction as before the collision.