

Solutionbank M1

Heinemann Modular Maths for Edexcel AS and A-level

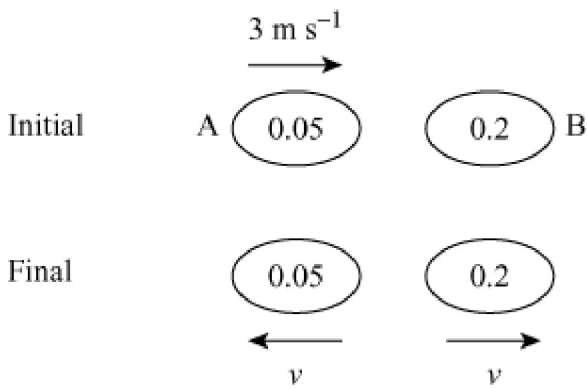
8 Momentum

Exercise A, Question 15

Question:

A stone, A , of mass 0.05 kg , is sliding in a straight line with speed 3 m s^{-1} across a smooth frozen pond when it collides directly with a stationary stone, B , of mass 0.2 kg . After the collision, A and B move directly **away** from each other, each with speed $v \text{ m s}^{-1}$. Find the value of v . [A]

Solution:



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

$$3 \times 0.05 = 0.2v - 0.05v$$

$$0.15 = 0.15v$$

$$v = 1 \text{ m s}^{-1}.$$