2.

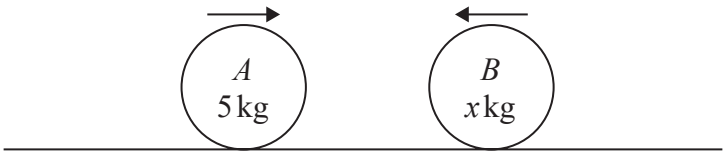


Figure 2

Figure 2 shows two particles, A and B, moving in opposite directions on a smooth horizontal surface. Particle A has mass 5 kg and particle B has mass x kg.

The particles collide directly.

Immediately before the collision, the speed of A is $3\,\text{m s}^{-1}$ and the speed of B is $x\,\text{m s}^{-1}$

Immediately after the collision, the speed of A is $1\,\text{m s}^{-1}$ and its direction of motion is unchanged.

Immediately after the collision, the speed of B is $1.5\,\text{m s}^{-1}$

(a) Find the value of x.

(3)

(b) Find the magnitude of the impulse exerted on A by B in the collision.

(3)

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Question 2 continued

(Total for Question 2 is 6 marks)