1. Two particles, P and Q, have masses $2m$ and $3m$ respectively. They are moving towards each other, in opposite directions, along the same straight line, on a smooth horizontal plane. The particles collide.

Immediately before they collide the speed of P is $2u$ and the speed of Q is u.

In the collision the magnitude of the impulse exerted on P by Q is $5mu$.

(a) Find the speed of P immediately after the collision.

(3)

(b) State whether the direction of motion of P has been reversed by the collision.

(1)

(c) Find the speed of Q immediately after the collision.

(3)

(Total for Question 1 is 7 marks)