1. Two particles P and Q are moving in opposite directions along the same horizontal straight line.
Particle P is moving due east and particle Q is moving due west.
Particle P has mass $2m$ and particle Q has mass $3m$.
The particles collide directly.
Immediately before the collision, the speed of P is $4u$ and the speed of Q is u.
The magnitude of the impulse in the collision is $\frac{33}{5}mu$.

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

(3)

(b) Find the speed and direction of motion of Q immediately after the collision.

(3)

(Total for Question 1 is 6 marks)