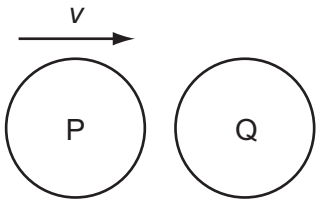
13 The diagram shows a particle P, travelling at speed v, about to collide with a stationary particle Q of the same mass. The collision is perfectly elastic.



Which statement describes the motion of P and of Q immediately after the collision?

A P rebounds with speed $\frac{1}{2}v$ and Q acquires speed $\frac{1}{2}v$.

B P rebounds with speed v and Q remains stationary.

C P and Q both travel in the same direction with speed $\frac{1}{2}v$.

D P comes to a standstill and Q acquires speed v.