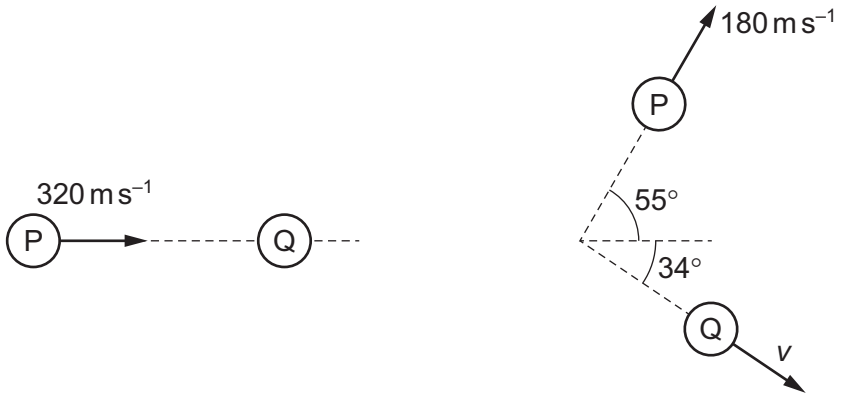
10 A nitrogen molecule P travelling at a speed of $320\,m\,s^{-1}$ in a vacuum collides with a stationary nitrogen molecule Q.

After the collision, P travels at a velocity of $180\,m\,s^{-1}$ at an angle of 55° to its original path.

Q travels in a direction at an angle of 34° to the initial path of P.



before collision after collision

Assume that there are no external forces acting on the molecules.

What is the magnitude v of the velocity of Q after the collision?

A $120\,m\,s^{-1}$ **B** $140\,m\,s^{-1}$ **C** $180\,m\,s^{-1}$ **D** $260\,m\,s^{-1}$

11 A charged particle is placed in a uniform field of force. The direction of the force on the particle is opposite to the direction of the field.

What is the field and what is the charge on the particle?

	field	charge on particle
A	electric	negative
B	electric	positive
C	gravitational	negative
D	gravitational	positive