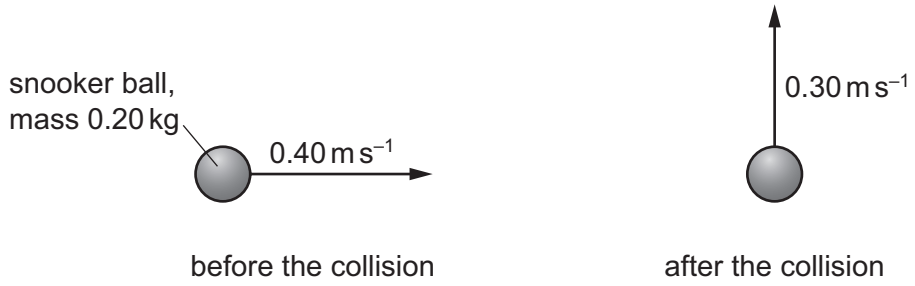
4 A snooker ball of mass 0.20 kg has a collision so that its direction of movement changes by an angle of 90°, as shown.



The ball has a speed of 0.40 m s^{-1} before the collision and a speed of 0.30 m s^{-1} after the collision.

What is the **magnitude** of the change in momentum of the snooker ball?

A 0.020 kg m s^{-1}

B 0.10 kg m s^{-1}

C 0.14 kg m s^{-1}

D 0.50 kg m s^{-1}

5 A ball is kicked upwards at an angle of 45° to horizontal ground. After a short flight, the ball returns to the ground.

It may be assumed that air resistance is negligible.

What is **never** zero during the flight of the ball?

A the horizontal component of the ball's acceleration

B the horizontal component of the ball's velocity

C the vertical component of the ball's momentum

D the vertical component of the ball's velocity