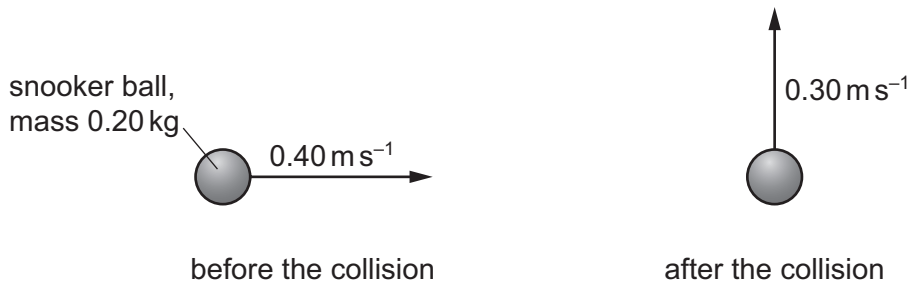4 A snooker ball of mass 0.20 kg has a collision so that its direction of movement changes by an angle of 90°, as shown.

snooker ball,
mass 0.20 kg

0.40 m s⁻¹

before the collision

0.30 m s⁻¹

after the collision

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

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

A $0.020\,\text{kg m s}^{-1}$

B $0.10\,\text{kg m s}^{-1}$

C $0.14\,\text{kg m s}^{-1}$

D $0.50\,\text{kg m s}^{-1}$