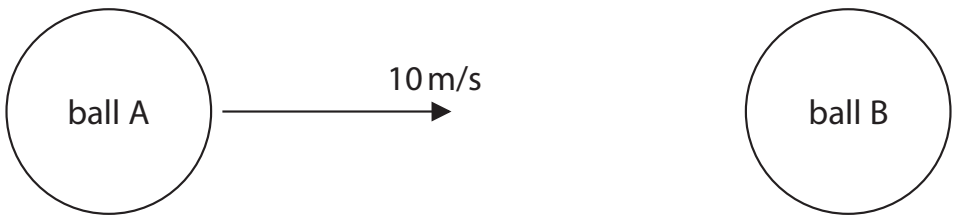
4 This question is about collisions.

The diagram shows ball A moving in the direction shown by the arrow.

Ball A collides with ball B, a stationary ball of the same mass and size as ball A.



(a) State the principle of conservation of momentum.

(1)

.....

.....

(b) Ball A collides with ball B.

- before the collision, ball A moves with a velocity of 10 m/s
- after the collision, ball B moves in the same direction as ball A with a velocity of 8 m/s
- ball A continues to move in the same direction, but at a lower velocity

Calculate the velocity of ball A after the collision.
[mass of each ball = 0.16 kg]

(3)

velocity of ball A = ... m/s

(c) During the collision some kinetic energy is lost.

Calculate the kinetic energy lost in the collision.

[kinetic energy = $\frac{1}{2} \times \text{mass} \times \text{velocity}^2$]

(3)

kinetic energy lost = ... J

(Total for Question 4 = 7 marks)

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