

- 9 In an experiment, a metal ball is dropped into a viscous liquid. The terminal velocity of the ball in the liquid is measured.

The experiment is repeated four times. For each repeat, a change is made to one of the following.

- 1 the density of the metal of the ball
- 2 the height from which the ball is dropped
- 3 the density of the liquid
- 4 the depth of the liquid

Which two changes separately affect the terminal velocity of the ball in the liquid?

- A** 1 and 2      **B** 1 and 3      **C** 2 and 4      **D** 3 and 4

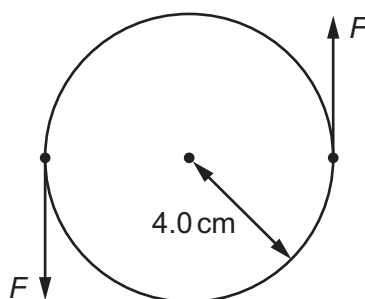
- 10 Two objects move towards each other along the same straight line.



After colliding, the two objects stick together and are stationary.

Which statement **must** be correct?

- A** The total kinetic energy of the two objects does not change during the collision.
- B** The total momentum of the two objects before the collision is zero.
- C** The two objects have equal mass.
- D** The two objects have the same speed before the collision.
- 11 A minimum torque of 20 N m must be applied to the lid of a jar for it to open. The radius of the lid is 4.0 cm.



What is the minimum force  $F$  that must act on each side of the lid in order to open it?

- A** 2.5 N      **B** 5.0 N      **C** 250 N      **D** 500 N