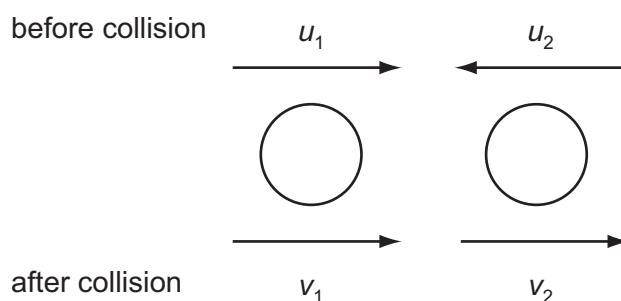


- 9 A ball falls vertically and bounces on the ground.

The following statements are about the forces acting while the ball is in contact with the ground.

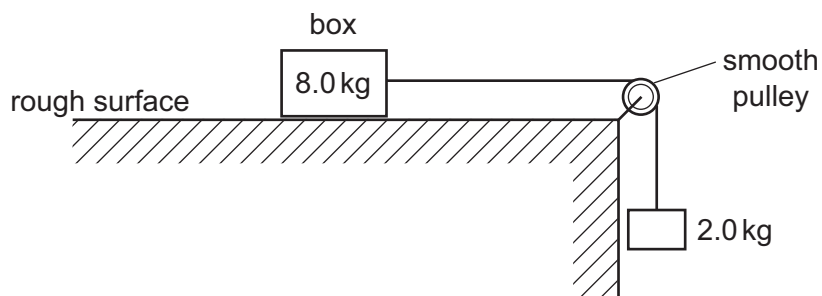
Which statement is correct?

- A The force that the ball exerts on the ground is always equal to the weight of the ball.
  - B The force that the ball exerts on the ground is always equal in magnitude and opposite in direction to the force the ground exerts on the ball.
  - C The force that the ball exerts on the ground is always less than the weight of the ball.
  - D The weight of the ball is always equal in magnitude and opposite in direction to the force that the ground exerts on the ball.
- 10 Two spheres approach each other along the same straight line. Their speeds are  $u_1$  and  $u_2$  before collision, and  $v_1$  and  $v_2$  after collision, in the directions shown below.



Which equation is correct if the collision is perfectly elastic?

- A  $u_1 - u_2 = v_2 + v_1$
  - B  $u_1 - u_2 = v_2 - v_1$
  - C  $u_1 + u_2 = v_2 + v_1$
  - D  $u_1 + u_2 = v_2 - v_1$
- 11 A box of mass 8.0 kg rests on a horizontal, rough surface. A string attached to the box passes over a smooth pulley and supports a 2.0 kg mass at its other end.



When the box is released, a friction force of 6.0 N acts on it.

What is the acceleration of the box?

- A  $1.4 \text{ ms}^{-2}$
- B  $1.7 \text{ ms}^{-2}$
- C  $2.0 \text{ ms}^{-2}$
- D  $2.5 \text{ ms}^{-2}$