

- 12** Two spheres approach each other along the same straight line. Their speeds are  $u_1$  and  $u_2$  before collision. After the collision, the spheres separate with speeds  $v_1$  and  $v_2$  in the directions shown below.



Which equation must be 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**  $u_1 + u_2 = v_2 - v_1$

- 13** A box of mass  $8.0\text{ kg}$  rests on a horizontal rough surface. A string attached to the box passes