9 Which statement about a perfectly elastic collision between two bodies in an isolated system is correct?

A Both total kinetic energy and total momentum are conserved.

B Total kinetic energy is conserved, but total momentum is not conserved.

C Total momentum is conserved, but total kinetic energy is not conserved.

D Neither total kinetic energy nor total momentum is conserved.

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

before collision　　after collision

The collision is perfectly elastic. Which equation must be correct?

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 $u_1 + u_2 = v_2 - v_1$