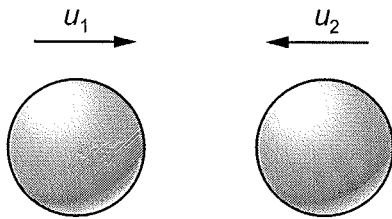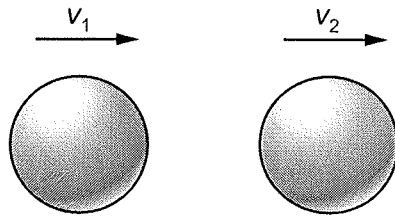5   Two spheres each have the same mass. They approach one another with speeds u_1 and u_2 and collide head-on as shown.

before collision   after collision

The speeds after impact are v_1 and v_2.

Which equation is correct if the collision is elastic?

A $u_1 - u_2 = v_2 - v_1$

B $u_1 - u_2 = v_2 + v_1$

C $u_1^2 + u_2^2 = v_1^2 + v_2^2$

D $u_1^2 - u_2^2 = v_1^2 + v_2^2$