

11 In perfectly elastic collisions between two atoms, it is always true to say that

- A** the initial speed of one atom will be the same as the final speed of the other atom.
- B** the relative speed of approach between the two atoms equals their relative speed of separation.
- C** the total momentum must be conserved, but a small amount of the total kinetic energy may be lost in the collision.
- D** whatever their initial states of motion, neither atom can be stationary after the collision.

12 Two railway trucks of masses m and $2m$ move towards each other in opposite directions with