

- 10 A stationary nucleus has nucleon number  $A$ .

The nucleus decays by emitting a proton with speed  $v$  to form a new nucleus with speed  $u$ . The new nucleus and the proton move away from one another in opposite directions.

Which equation gives  $v$  in terms of  $A$  and  $u$ ?

- A**  $v = (\frac{A}{4} - 1)u$   
**B**  $v = (A - 1)u$   
**C**  $v = Au$   
**D**  $v = (A + 1)u$

- 11 Two spheres travel along the same line with velocities  $u_1$  and  $u_2$ . They collide and after collision their velocities are  $v_1$  and  $v_2$ .



Which collision is **not** elastic?

	$u_1/\text{ms}^{-1}$	$u_2/\text{ms}^{-1}$	$v_1/\text{ms}^{-1}$	$v_2/\text{ms}^{-1}$
<b>A</b>	2	-5	-5	-2
<b>B</b>	3	-3	0	6
<b>C</b>	3	-2	1	6
<b>D</b>	5	2	3	6

Space for working