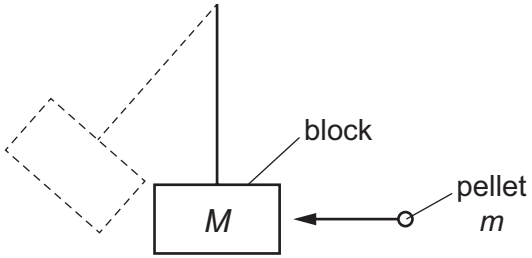
**11** The diagram shows a 'ballistic pendulum'.




A pellet of mass $m$ travelling at a speed $u$ hits a stationary block of mass $M$. The pellet becomes embedded in the block and causes the block to move at a speed $v$ immediately after the impact.

When a pellet of mass $2m$, travelling at a speed $2u$, hits a block of mass $2M$, what is the speed of the block immediately after the impact? (Neglect the small increase in the mass of the block as the pellet's mass is added during the collision.)

**A** $v$ **B** $v\sqrt{2}$ **C** $2v$ **D** $4v$