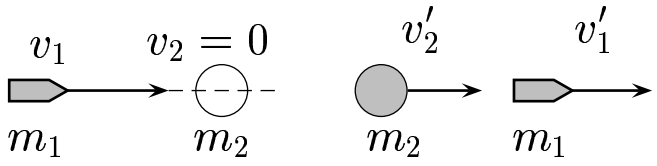
Given: A bullet m_1 is approaching $m_2 = 2\,m_1$ with a high speed v_1. After piercing through m_2, its final velocity is $v_1' = \dfrac{v_1}{2}$.



before after

Find the final velocity v_2' of m_2.

A) $v_2' = \dfrac{v_1}{8}$.

B) $v_2' = \dfrac{v_1}{4}$.

C) $v_2' = \dfrac{v_1}{3}$.

D) $v_2' = \dfrac{v_1}{2}$.

Conservation of momentum $m_1\,v_1 + m_2\,v_2 = m_1\,v_1' + m_2\,v_2'$.
Solve for v_2'.
$v_1 = v_1' + 2\,v_2' = \dfrac{v_1}{2} + 2\,v_2'$,
$v_2' = \dfrac{1}{2}\left(v_1 - \dfrac{v_1}{2}\right) = \dfrac{v_1}{4}$.
Answer **B**.