2015 F=ma Exam: Problem 7

Kevin S. Huang

m   **3m**   **9m**

v_0
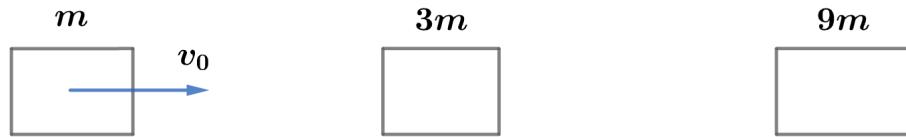
The initial momentum of the system is

$$p_i = mv_0$$

Since the collisions are completely inelastic, all the masses stick together so the final momentum is

$$p_f = (m + 3m + 9m)v_f = 13mv_f$$

Conserving linear momentum $p_i = p_f$,

$$mv_0 = 13mv_f$$
$$v_f = \frac{v_0}{13}$$

so the answer is $\boxed{A}$.