

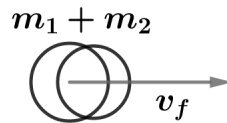
2018B F=ma Exam: Problem 3

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Conserving linear momentum, we have

$$m_1 v_1 + m_2 v_2 = (m_1 + m_2) v_f$$
$$v_f = \frac{m_1 v_1 + m_2 v_2}{m_1 + m_2}$$



Thus, the kinetic energy after the collision is

$$K = \frac{1}{2}(m_1 + m_2)v_f^2 = \frac{(m_1 v_1 + m_2 v_2)^2}{2(m_1 + m_2)} = 2560 \text{ J}$$