

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

$$\Delta K_c = \frac{1}{2} (m_1 + m_2) v_2^2 - \frac{1}{2} m_1 v_1^2$$

$$\Delta K_c = \frac{1}{2} (m_1 + m_2) \left[\frac{m_1}{m_1 + m_2} v_1 \right]^2 - \frac{1}{2} m_1 v_1^2$$

$$\Delta K_c = \frac{-m_1 m_2 v_1^2}{2 (m_1 + m_2)}$$