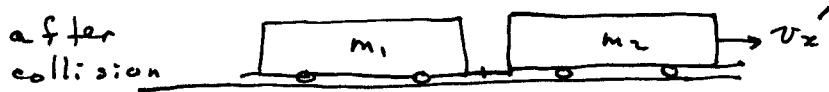
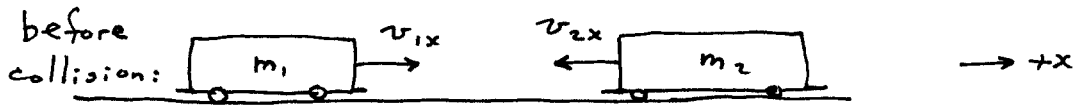


Exercise 8-19



Linear momentum is conserved.

$$\therefore m_1 v_{1x} + m_2 v_{2x} = (m_1 + m_2) v_x'$$

$$\therefore 40.0(20.0) + 125 \underset{\substack{\uparrow \\ \text{note}}}{-1.50} = (165) v_x'$$

$$\therefore v_x' = -0.652 \text{ m/s}$$

\therefore the final speed is 0.652 m/s and the cars move in the original direction of motion of car 2.