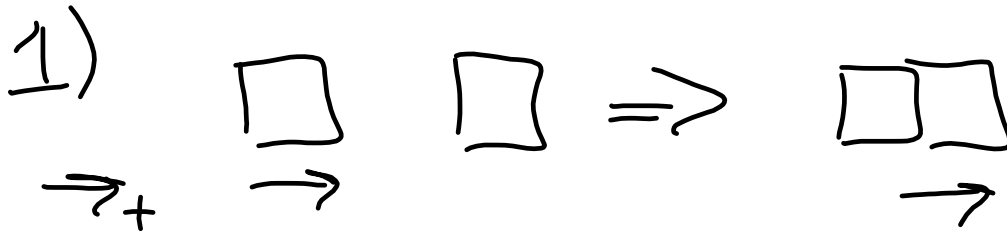


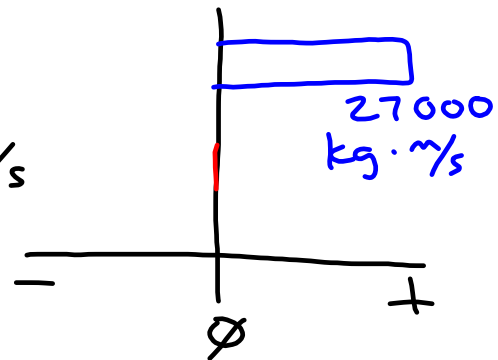
IFM Worksheet 3



initial
0 m/s

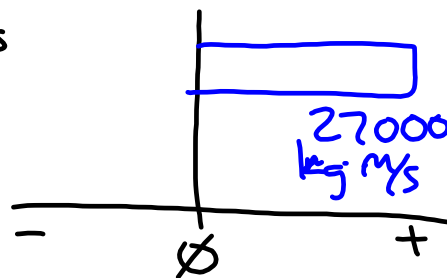
$m_1 \rightarrow 9000 \text{ kg at } 3 \text{ m/s}$

$m_2 \rightarrow 64000 \text{ kg at } 0 \text{ m/s}$



final
0 m/s

$m_1 + m_2 \rightarrow 73000 \text{ kg at } ? \text{ m/s}$



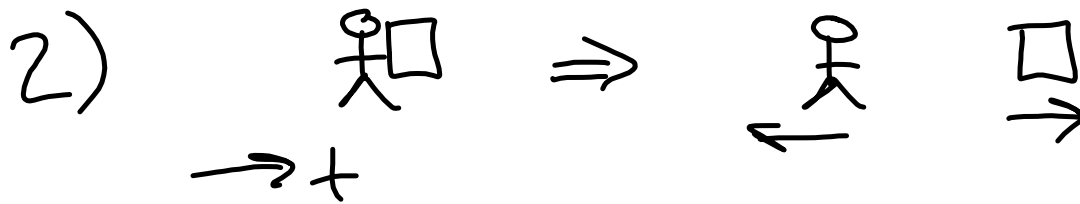
$$\bar{P} = m\bar{v}$$

$$\bar{P}_i = \bar{P}_f$$

$$m_1 v_{1i} = (m_1 + m_2) v_f$$

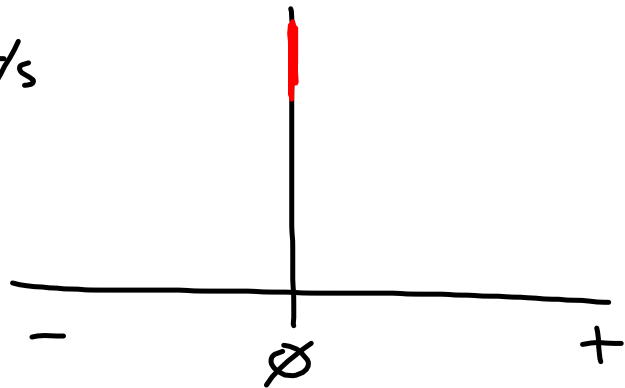
$$v_f = \frac{m_1 v_{1i}}{m_1 + m_2}$$

$$= 0.369 \text{ m/s}$$



initial
0 m/s

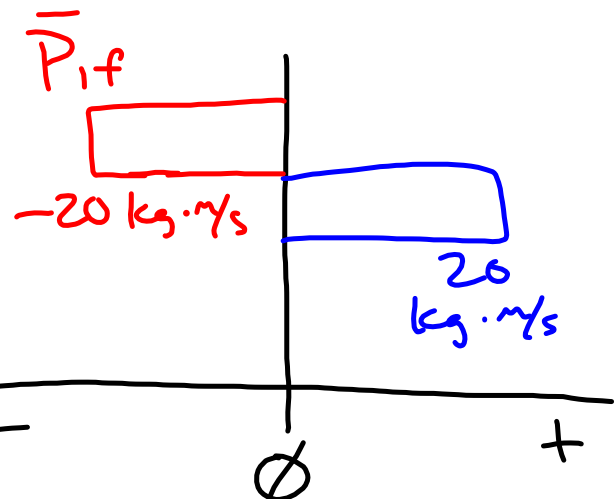
$m_1 + m_2 \rightarrow 90 \text{ kg at } 0 \text{ m/s}$



final
0 m/s

$m_1 \rightarrow 80 \text{ kg at } ? \text{ m/s}$

$m_2 \rightarrow 10 \text{ kg at } 2 \text{ m/s}$



$$\bar{P}_{if} = m \bar{V}_{if}$$

$$V_{if} = \frac{P_{if}}{m} = \frac{-20 \text{ kg} \cdot \text{m/s}}{80 \text{ kg}} = -0.25 \text{ m/s}$$