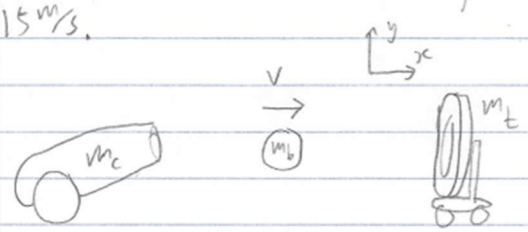
(2) A 1000kg cannon on wheels shoots a 50kg cannon at a 10kg target, also on wheels. If the collision is completely elastic, determine the final velocity of the cannon and the target. The cannonball travels at 15 m/s.



$-m_c v_c = m_b v_b \qquad v_c = -\frac{m_b v_b}{m_c} = -0.75\ m/s$

$m_b v_b = (m_b + m_t) v_t \qquad v_t = \frac{m_b v_b}{(m_b + m_t)} = 12.5\ m/s$