

find and fix the error.

Bubba ($m_B = 80 \text{ kg}$) is standing on a frictionless skateboard. He is holding 2 10-kg watermelons. Starting from rest, he throws one watermelon and then the other straight forward at 7.0 m/s relative to the skateboard.

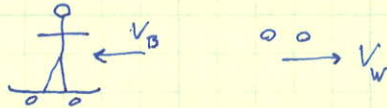
What is Bubba's final speed?

Initial state:



$$p_i = 0 \quad (\text{since } v_B = 0)$$

final state:



$$p_f = m_w v_w - m_B v_B$$

$$p_i = p_f \Rightarrow m_w v_w - m_B v_B = 0$$

$$m_w v_w = m_B v_B$$

$$v_B = v_w \frac{m_w}{m_B} = (7 \text{ m/s}) \left(\frac{20 \text{ kg}}{80 \text{ kg}} \right) = \boxed{1.75 \text{ m/s}}$$