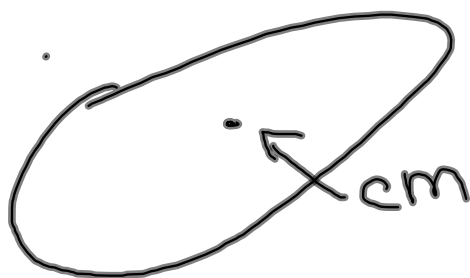
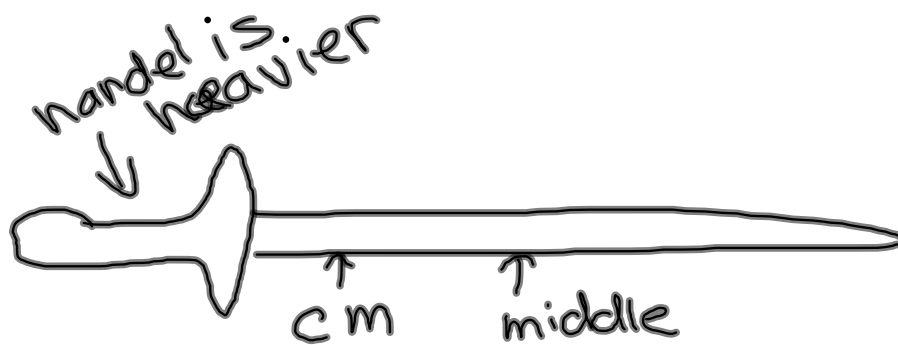


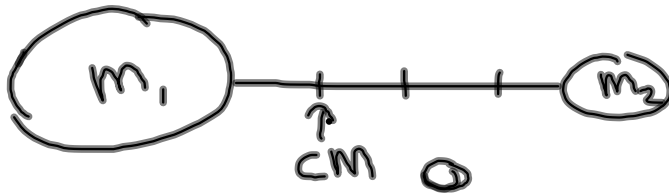
Physics: Center of Mass





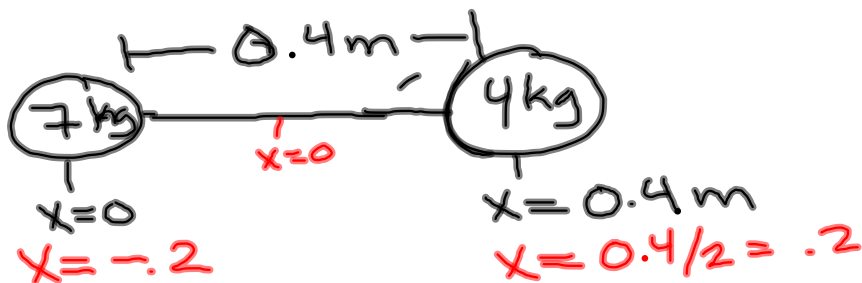
$m_1 = m_2$ cm in the middle

$m_1 = 2m_2$ cm is $\frac{1}{2}$ of the way towards m_1



$$CM = \frac{\sum m_i x_i}{\sum m_i}$$

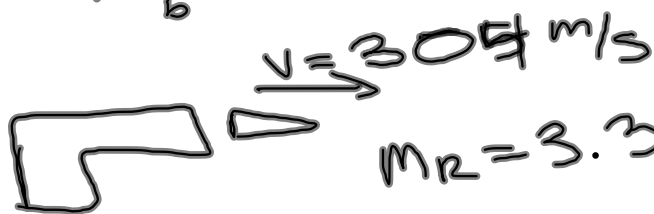
$$CM = \frac{\sum m_i x_i}{\sum m_i}$$



$$CM = \frac{\sum m_i x_i}{\sum m_i} = \frac{(7 \text{ kg})(0) + (4 \text{ kg})(.4 \text{ m})}{7 \text{ kg} + 4 \text{ kg}}$$

$$= \frac{1.6}{11} = 0.145 \text{ m}$$

10. $m_b = 0.035 \text{ kg}$



$$m_{R+B} = 3.31 \text{ kg}$$

$$p_i = m_{R+B} \cdot v_{R+B} = m(0) = 0$$

$$p_f = 0 = p_b + p_R$$

$$= (0.035 \text{ kg})(305 \text{ m/s}) + (3.275 \text{ kg})v$$

$$0 = 10.67 + 3.275v$$

$$v = -3.26 \text{ m/s}$$