

9)

a)



$$h = 0.3 - 0.3 \cos 60$$

$$KE_B = PE_T$$

$$\frac{1}{2} m_A V_A^2 = m_A g h$$

$$\frac{1}{2} V_A^2 = (9.8)(0.3 - 0.3 \cos 60)$$

$$V_A = 1.71 \text{ m/s}$$

b)

$$P = P'$$

$$P_A \cdot P_B = P_A' + P_B'$$

$$m_A V_A + 0 = m_A V_A' + m_B V_B'$$

$$(0.02)(1.71) = (0.02)V_A' + (0.068)V_B'$$

$$1.71 = V_A' + 3.4V_B'$$

$$V_A' = 1.71 - 3.4V_B'$$

$$KE = KE'$$

$$KE_A + KE_B = KE_A' + KE_B'$$

$$\frac{1}{2} m_A V_A^2 = \frac{1}{2} m_A V_A'^2 + \frac{1}{2} m_B V_B'^2$$

$$(0.02)(1.71)^2 = (0.02)V_A'^2 + (0.068)V_B'^2$$

$$(1.71)^2 = V_A'^2 + 3.4V_B'^2$$

2)

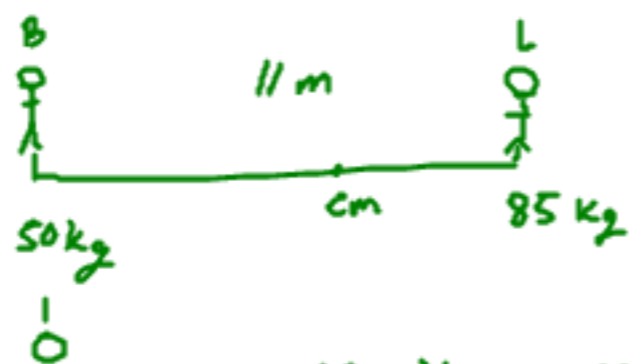
$$KE_{Brt} = PE_T$$

$$\frac{1}{2} m_A V_A'^2 = m_A g h_A \quad \& \quad \frac{1}{2} m_B V_B'^2 = m_B g h_B$$

$$V_A' = \text{[ ]}$$

$$V_B' = \text{[ ]}$$

5.1)



a)

$$m_T X_{cm} = m_B X_B + m_L X_L$$

$$(50 + 85) X_{cm} = (50)(0) + (85)(11)$$

$$X_{cm} = \underline{\hspace{2cm}}$$

b)



$$m_T X_{cm} = m_B X_B + m_L X_L$$

$$(50 + 85) (\underline{\hspace{2cm}}) = (50)(d_B) + (85)(11 - 1.3)$$

$$d_B = \underline{\hspace{2cm}}$$

$$d = 11 - d_B - 1.3$$

$$d = \boxed{\hspace{2cm}}$$