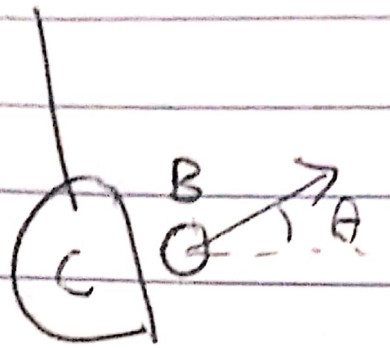

$$\frac{1}{2}m_C v_{C1}^2 = \frac{1}{2}m_C v_{C2}^2 + \frac{1}{2}m_B v_B^2$$

$$v_B = \sqrt{\frac{m_C}{m_B}\left(v_{C1}^2 - v_{C2}^2\right)}$$

$$v_{BY} = v_B \sin\theta \qquad v_{BX} = v_B \cos\theta$$

$$y = v_{BY}t - \frac{1}{2}gt^2 \qquad y = 0$$

$$t = \frac{2v_{BY}}{g}$$

$$x = v_{BX} \cdot t = \frac{2 \cdot v_{BX} \cdot v_{BY}}{g}$$