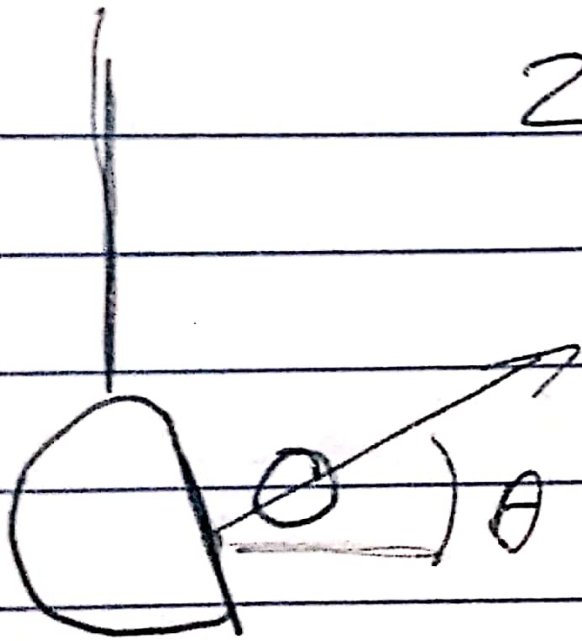$$\frac{1}{2}m_C V_{C1}^2 = \frac{1}{2}m_C V_{C2}^2 + \frac{1}{2}m_B V_B^2$$

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

$$V_{BY} = V_B \sin\theta$$

$$h = \frac{V_{BY}}{2g}$$