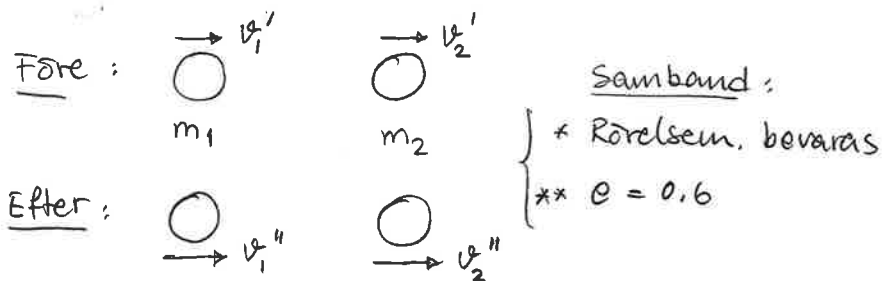


1)

Stöt förlopp:



$$* (\rightarrow) m_1 v_1' + m_2 v_2' = m_1 v_1'' + m_2 v_2'' \quad \dots (1)$$

$$** e = \frac{v_2'' - v_1''}{v_1' - v_2'} = 0.6; \quad 0.6(5-3) \text{ m/s} = v_2'' - v_1'';$$

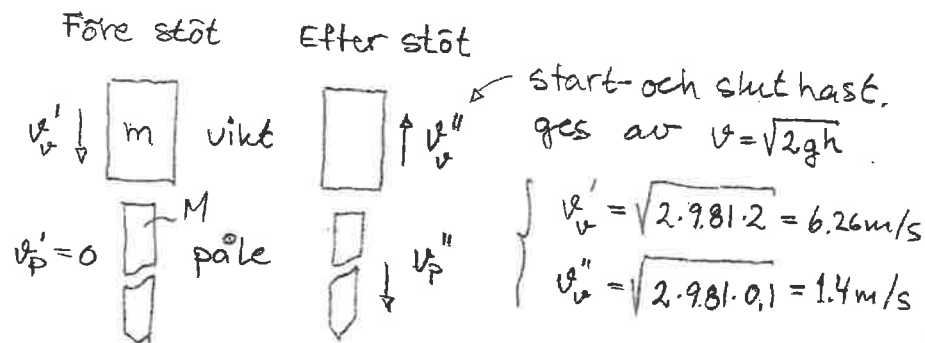
$$v_2'' = 1.2 + v_1'' \quad \dots (2)$$

(2) insatt i (1) \Rightarrow

$$3 \cdot 5 + 5 \cdot 3 = 3 \cdot v_1'' + 5 \cdot (1.2 + v_1'') \Rightarrow v_1'' = \underline{\underline{3.0 \text{ m/s}}}$$

$$(2) \Rightarrow v_2'' = \underline{\underline{4.2 \text{ m/s}}}$$

2)



* Rörelsemängden bevaras:

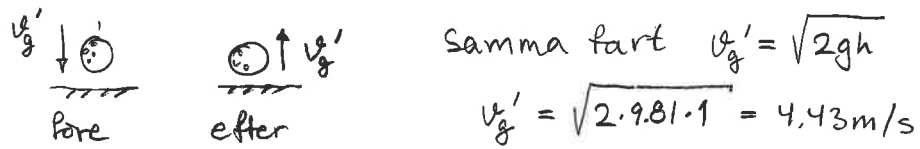
$$(\downarrow) m v_v' + M v_p' = -m v_v'' + M v_p''; \quad v_p'' = \frac{m}{M} (v_v' + v_v'');$$

$$v_p'' = \frac{800}{2400} \cdot (6.26 + 1.4) = \underline{\underline{2.55 \text{ m/s}}}$$

$$* \text{ stötalet } e = \frac{|\Delta v_{\text{etter}}|}{|\Delta v_{\text{före}}|} = \frac{v_v'' + v_p''}{v_v'} = \frac{1.4 + 2.55}{6.26} = \underline{\underline{0.63}}$$

3) Max höjd då $e=1$ (idealisering)

stöt 1: Golfboll mot golv med $e=1 \Rightarrow$



stöt 2: Golfboll mot pingisboll



Rörelsemängden bevaras:

$$(\uparrow) \quad m_g \cdot v_g' - m_p v_p' = m_g v_g'' + m_p v_p''$$

$$m_g \gg m_p \Rightarrow v_g'' = v_g' = 4.43 \text{ m/s}$$

Stöt koef. ($e=1$):

$$e = \frac{v_p'' - v_g''}{v_g' + v_p'} = 1 \quad ; \quad v_p'' = v_g'' + v_g' + v_p' \quad ;$$

$$v_p'' = 3 \cdot 4.43 \text{ m/s} = 13.3 \text{ m/s}$$

Höjden: $v_p'' = \sqrt{2gh} \quad ; \quad h = \frac{(v_p'')^2}{2g} = 9 \text{ m}$