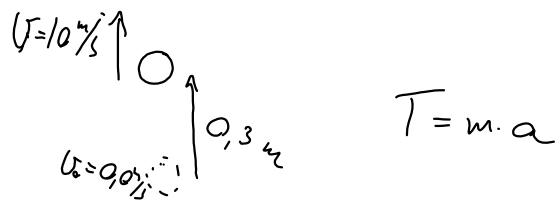


4.16

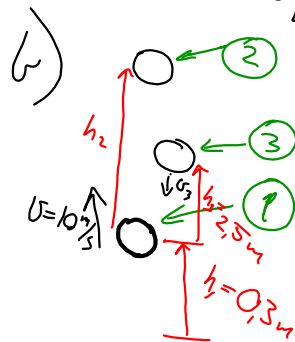


$$a = \frac{\Delta v}{\Delta t}$$

$$a = \frac{v^2 - u^2}{2s} = \frac{10^2 - 0^2 \left[\frac{\text{m}^2}{\text{s}^2} \right]}{2 \cdot 0,3 \text{ [m]}}$$

$$= \frac{100}{0,6} \left[\frac{\text{m}}{\text{s}^2} \right] = 167 \left[\frac{\text{m}}{\text{s}^2} \right]$$

$$T = m \cdot a = 0,120 \text{ [kg]} \cdot 167 \left[\frac{\text{m}}{\text{s}^2} \right] = 20 \text{ [N]}$$



$$E_{p1} + E_{k1} = E_{p2} + E_{k2}$$

$$mgh_1 + \frac{1}{2}mv^2 = mg(h_1 + h_2)$$

$$gh_1 + \frac{1}{2}v^2 = g(h_1 + h_2)$$

$$\frac{1}{2}v^2 = gh_2$$

$$h_2 = \frac{v^2}{2g} = \frac{10^2}{2 \cdot 9,81} = \frac{100}{19,62} = 5,1 \text{ [m]}$$

c)

$$E_{p2} + E_{k2} = E_{p3} + E_{k3}$$

$$mg(h_1 + h_2) = mg(h_1 + h_3) + \frac{1}{2}mv_3^2$$

$$g(h_1 + h_2) = g(h_1 + h_3) + \frac{1}{2}v_3^2$$

$$gh_1 + gh_2 = gh_1 + gh_3 + \frac{1}{2}v_3^2$$

$$gh_2 = gh_3 + \frac{1}{2}v_3^2$$

$$g(h_2 - h_3) = \frac{1}{2}v_3^2$$

$$h_1 = 0,3 \text{ m}$$

$$h_2 = 5,1 \text{ m}$$

$$h_3 = 2,5 \text{ m}$$

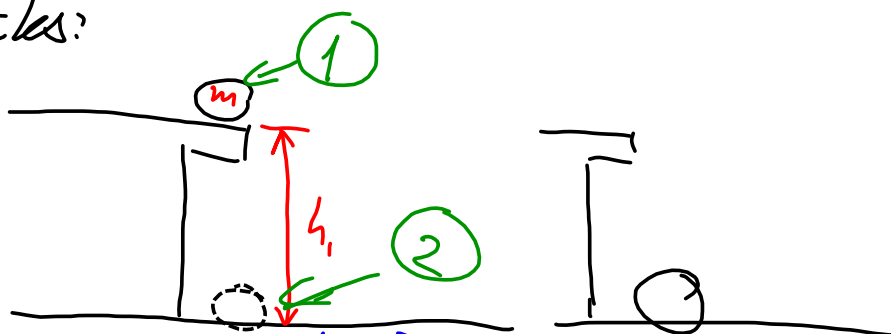
$$v_3 = \sqrt{2 \cdot g \cdot (h_2 - h_3)} = \sqrt{2 \cdot 9,81 \cdot (5,1 - 2,5)}$$

$$= 7,1 \text{ m/s}$$

Bevaring av mekanisk energi

$$E_m = E_k + E_p$$

Ekse:



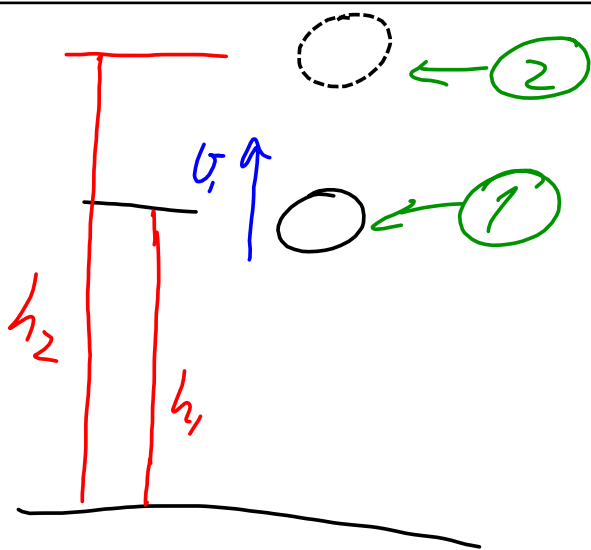
$$E_{p1} + E_{k1} = E_{p2} + E_{k2}$$

$$mgh_1 = \frac{1}{2}mv_2^2$$

$$gh_1 = \frac{1}{2}v_2^2$$

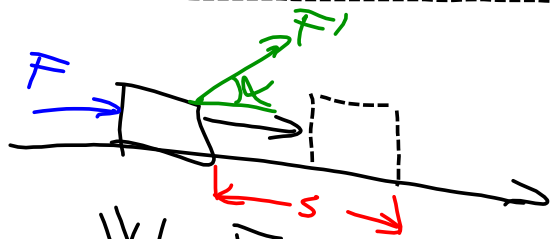
$$v_2^2 = 2 \cdot g \cdot h_1$$

$$v_2 = \sqrt{2 \cdot g \cdot h_1}$$



$$E_{p1} + E_{k1} = E_{p2} + E_{k2}$$

$$mgh_1 + \frac{1}{2}mv_1^2 = mgh_2$$



$$W = F' \cdot \cos \alpha \cdot s$$

$$W = F \cdot s$$

$$[N] \cdot [m]$$

$$[N \cdot m] = [J]$$

($W = E$)
 Effekt : P [W] ← Watt

$$P = \frac{E}{t}$$

$$[W] \Rightarrow [J]$$

$$t \Rightarrow [s]$$

$$[W] = \frac{[J]}{[s]}$$

Virkningsgrad : η

$\frac{\text{Benyttet effekt}}{\text{Effekt inn}}$



$$\eta = \frac{P_{brukt}}{P_{inn}} \Rightarrow \left[\frac{\%}{\%} \right]$$