Energi Arbeid

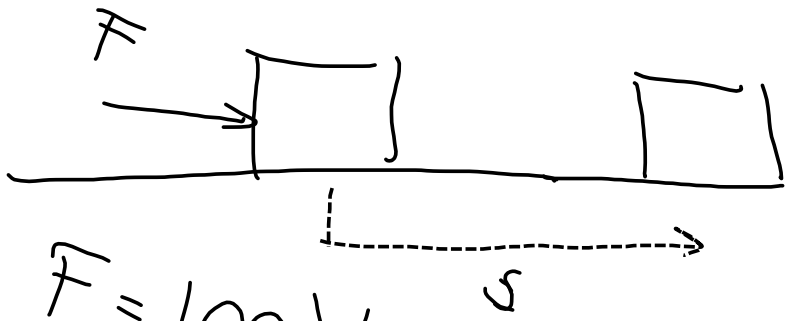
$W = F \cdot s$

Symbol for arbeid — kraft — avstand

$[N] = [kg \frac{m}{s^2}]$

$[N \cdot m] = [J]$ (Joule)

Ekstra



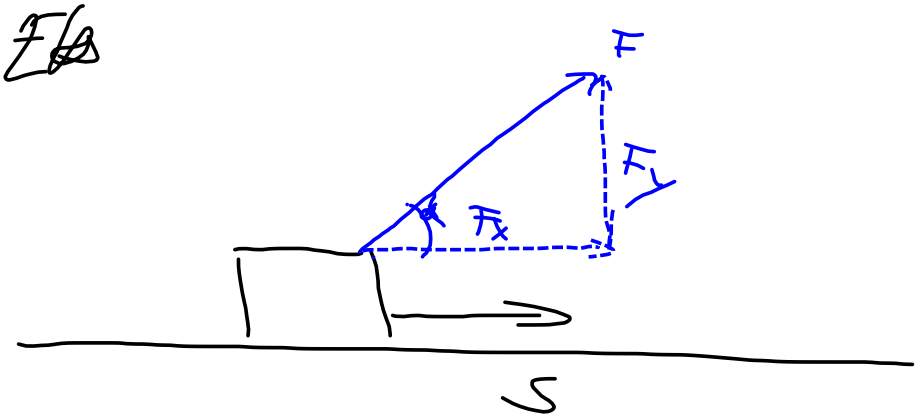
$F = 100\,N$

$s = 0{,}5\,m$

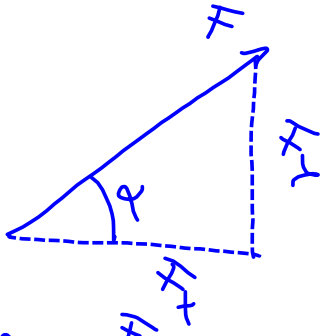
$W = F \cdot s = 100[N] \cdot 0{,}5[m]$

$= 50[N \cdot m] = 50[J]$

Eks



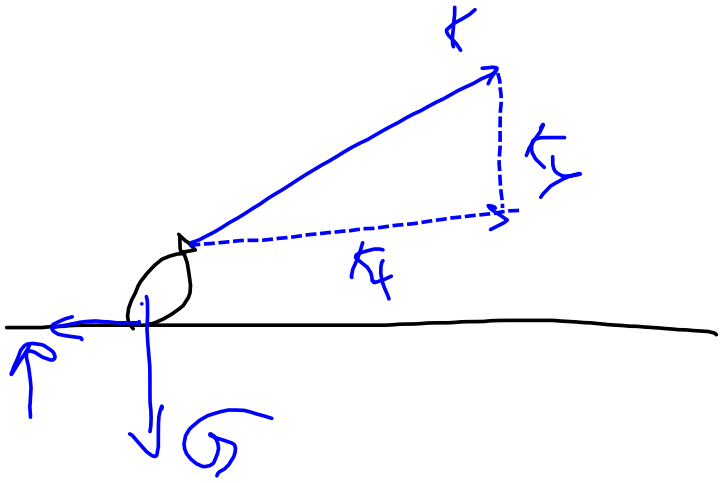
$W = F_x \cdot s$



$\cos\alpha = \frac{F_x}{F} \Rightarrow F_x = F \cdot \cos\alpha$

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

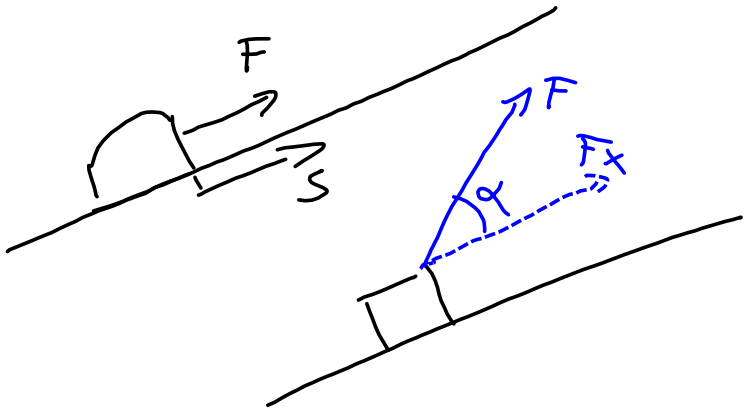
4.03



b) $W = K \cdot s \cdot \cos 38° = 300[N] \cdot 5{,}0[m] \cdot \cos 38°$

$= 1182[J] = 1{,}2[kJ]$

c) $W_N = F \cdot s \cdot \cos 90° = 0[J]$



Kinetisk energi

(bevegelsesenergi)

$$E_k = \frac{1}{2} m v^2$$

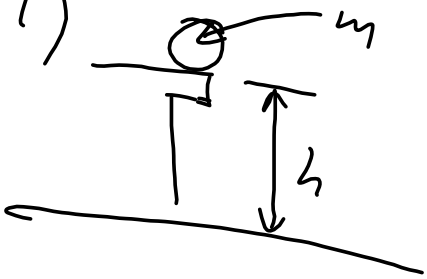
$$W = \sum F \cdot s = ma s = m \frac{v^2 - v_0^2}{2} \cdot$$

$$E_k = \frac{m \cdot v^2}{2} - \frac{m \cdot v_0^2}{2} = \frac{1}{2} m v^2$$

$v_0 = 0$

Potensiell energi

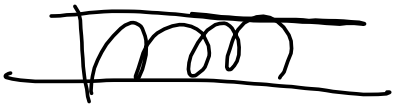
1)



$E_p = m \cdot g \cdot h$

2) Fjær

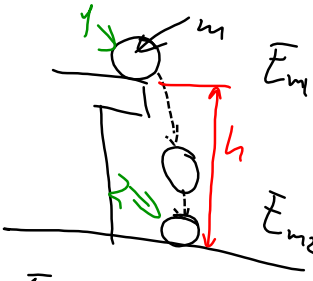
$E_f = \frac{1}{2} k x^2$



3) Bombe. Bevsyn

Mekanisk energi

$E_m = E_p + E_k$



$E_{m_1} = E_{p_1} + E_{k_1}$

$E_{m_2} = E_{p_2} + E_{k_2}$

$E_{p_1} = m \cdot g \cdot h$ $\quad E_{k_1} = \frac{1}{2} m v^2 = 0$ $\quad E_{m_1} = E_{m_2}$

$E_{p_2} = mgh = 0$ $\quad E_{k_2} = \frac{1}{2} m v^2$

$E_{p_1} + E_{k_1} = E_{p_2} + E_{k_2}$

$E_{p_1} = E_{k_2}$

$m \cdot g \cdot h = \frac{1}{2} m v^2$

$v^2 = 2gh$

$v = \sqrt{2gh} = \sqrt{2 \cdot 9{,}81 \cdot 0{,}9 \left[\frac{m}{s^2} \cdot m\right]} = 4{,}2 \, m/s$

3 $h_3 = 0{,}2 \, m$ Ekv: $h = 0{,}9 \, m$

$E_{p_3} + E_{k_3} = E_{p_1} + E_{k_1}$ (0)

$E_{k_3} = E_{p_1} - E_{p_3} = mgh - m \cdot g \cdot h_3 = mg(h - h_3)$

$\frac{1}{2} m v_3^2 = mg(0{,}9 - 0{,}2)$

$v_3^2 = 2g \cdot (0{,}7)$

$v_3^2 = \sqrt{2g \cdot 0{,}7}$