

Presioa, energia, potentzia  
AZTERKETA

Izena

Kurtsoa

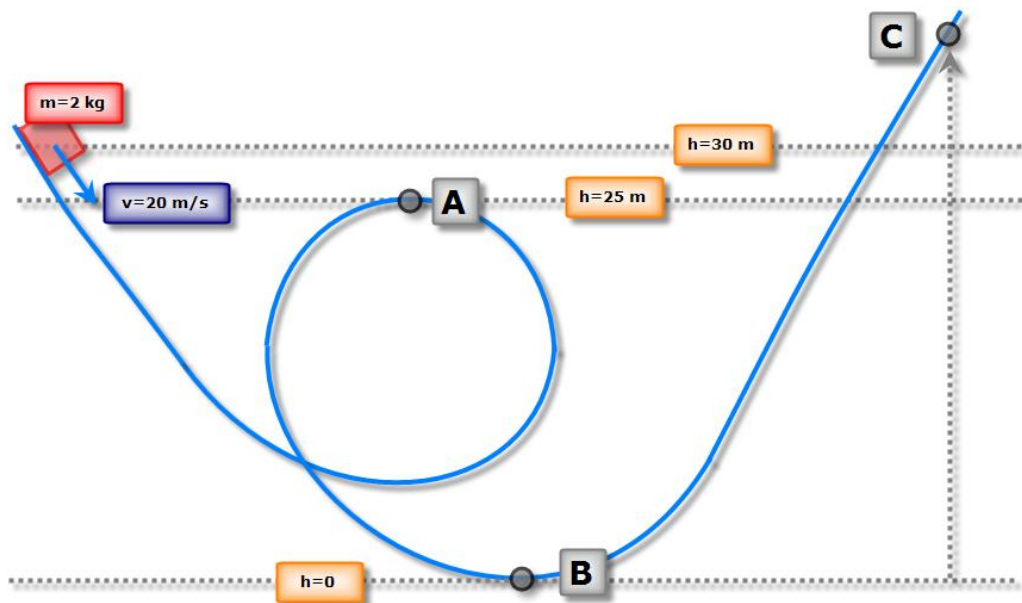
1 Ondoko irudian 2 kg-ko gorputz bat daukagu eta abiatzen da 20 m/s-ko abiadurarekin, "C" punturaino iristeko (ez doa gorago). Kalkulatu:

- "B" puntuan izango duen energia zinetikoa [0,5 puntu]
- "B" puntuan izango duen abiadura [0,5 puntu]
- "A" puntuan izango duen abiadura [0,5 puntu]
- "C" puntuan izango duen altuera [0,5 puntu]

Bidean ez dago marruskadura-indarra ezta kanpoko indarrik ere.

PUNTUAZIOA: 2 PUNTU

Ariketa egiteko behar den denboraren estimazioa: 15 minutu



①  $E_{\text{mek buk}} = E_{\text{mek has}} + W_{F, F_R} \rightarrow 0$   
 ②③

←  $E_{\text{mek has}} = \frac{1}{2}mv^2 + mgh = \frac{1}{2} \cdot 2\text{Kg} \cdot \left(20\frac{\text{m}}{\text{s}}\right)^2 + 2\text{Kg} \cdot 10\frac{\text{m}}{\text{s}^2} \cdot 30\text{m} = 400\text{J} + 600\text{J} = \boxed{1000\text{J}}$

←  $E_{\text{mek buk}} = \frac{1}{2}mv^2 + mgh = \frac{1}{2} \cdot 2\text{Kg} \cdot v^2 = \boxed{1\text{Kg} \cdot v^2}$   
 ⓑ

ⓐ  $E_{2B} = 1000\text{J}$

$1\text{Kg} \cdot v^2 = 1000\text{J} \rightarrow v = \sqrt{\frac{1000\text{J}}{1\text{Kg}}} = \boxed{31'62\frac{\text{m}}{\text{s}}}$  ⓑ

ⓐ ←  $E_{\text{mek buk}} = \frac{1}{2}mv^2 + mgh = \frac{1}{2} \cdot 2\text{Kg} \cdot v^2 + 2\text{Kg} \cdot 10\frac{\text{m}}{\text{s}^2} \cdot 25\text{m} = 1\text{Kg} \cdot v^2 + 500\text{J}$   
 ⓐ

$1000\text{J} = 1\text{Kg} \cdot v^2 + 500\text{J} \rightarrow v = \sqrt{\frac{1000\text{J} - 500\text{J}}{1\text{Kg}}} = \boxed{22'36\frac{\text{m}}{\text{s}}}$  ⓐ

ⓐ ←  $E_{\text{mek buk}} = \frac{1}{2}mv^2 + mgh = 2\text{Kg} \cdot 10\frac{\text{m}}{\text{s}^2} \cdot h = 20\text{N} \cdot h$   
 ⓐ

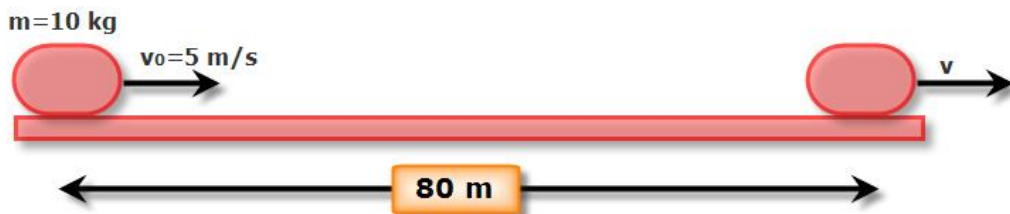
$1000\text{J} = 20\text{N} \cdot h \rightarrow h = \frac{1000\text{J}}{20\text{N}} = \boxed{50\text{m}}$

2 10 kg-ko gorputz batek 5 m/s-ko hasierako abiadura du eta horizontalki mugitzen da. Kalkulatu 80 m ibili ondoren izango duen abiadura, indar hauek agertzen badira bide horretan:

- 25 N-eko marruskadura-indarra bide osoan
- 40 N-eko laguntza-indarra (higiduraren noranzkoan) 60 m-tan

PUNTUAZIOA: 2 PUNTU

Ariketa egiteko behar den denboraren estimazioa: 10 minutu



$$E_{\text{mek}_{\text{buk}}} = E_{\text{mek}_{\text{has}}} + W_{F, F_R}$$

$$\leftarrow E_{\text{mek}_{\text{buk}}} = \frac{1}{2}mv^2 + mgh_{\text{b}} = \frac{1}{2} \cdot 10 \text{ kg} \cdot v^2 = 5 \text{ kg} \cdot v^2$$

$$\leftarrow E_{\text{mek}_{\text{has}}} = \frac{1}{2}mv^2 + mgh_{\text{b}} = \frac{1}{2} \cdot 10 \text{ kg} \cdot \left(\frac{5 \text{ m}}{\text{s}}\right)^2 = 125 \text{ J}$$

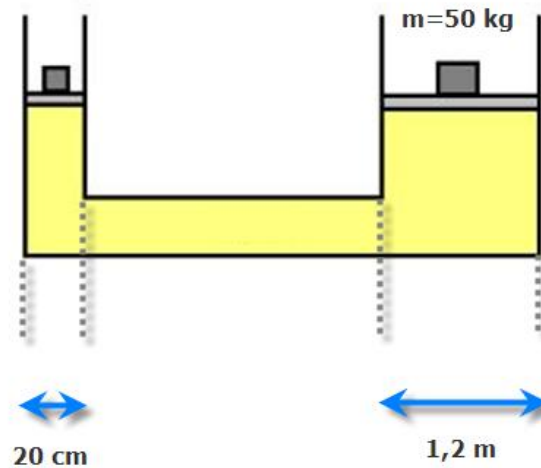
$$\leftarrow W_{F, F_R} = 40 \text{ N} \cdot 60 \text{ m} - 25 \text{ N} \cdot 80 \text{ m} = 2400 \text{ J} - 2000 \text{ J} = 400 \text{ J}$$

$$5 \text{ kg} \cdot v^2 = 125 \text{ J} + 400 \text{ J} \rightarrow v = \sqrt{\frac{125 \text{ J} + 400 \text{ J}}{5 \text{ kg}}} = \boxed{10,25 \frac{\text{m}}{\text{s}}}$$

3 Kalkulatu zenbateko indarra egin behar den (indar minimoa) prentsa hidrauliko honetan 50 kg-ko masa altxa ahal izateko.

PUNUAZIOA: 2 PUNTU

ESTIMATUTAKO DENBORA: 10 MINUTU



$$\frac{F_A}{S_A} = \frac{F_B}{S_B}$$

$$S_A = \pi R^2 = \pi \cdot (0'1 \text{ m})^2 = 0'0314 \text{ m}^2$$

$$S_B = \pi R^2 = \pi \cdot (0'6 \text{ m})^2 = 1'13 \text{ m}^2$$

$$F_B = P = m \cdot g = 50 \text{ kg} \cdot 10 \frac{\text{m}}{\text{s}^2} = 500 \text{ N}$$

$$\frac{F_A}{0'0314 \text{ m}^2} = \frac{500 \text{ N}}{1'13 \text{ m}^2} \rightarrow F_A = \frac{500 \text{ N}}{1'13 \text{ m}^2} \cdot 0'0314 \text{ m}^2 = \boxed{13'89 \text{ N}}$$

4 Garabi batek 400 kg-ko karga igozten du lurretik 40 m-ko altuerara. Garabi horren potentzia 20 ZP-koa bada, kalkulatu

- Garabi horren potentzia watt-etan [0,5 puntu]
- Garabi horrek behar duen denbora karga igozteko [1,5 puntu]

$$1 \text{ ZP} = 736 \text{ W}$$

PUNTUAZIOA: 2 PUNTU

Ariketa egiteko behar den denboraren estimazioa: 10 minutu



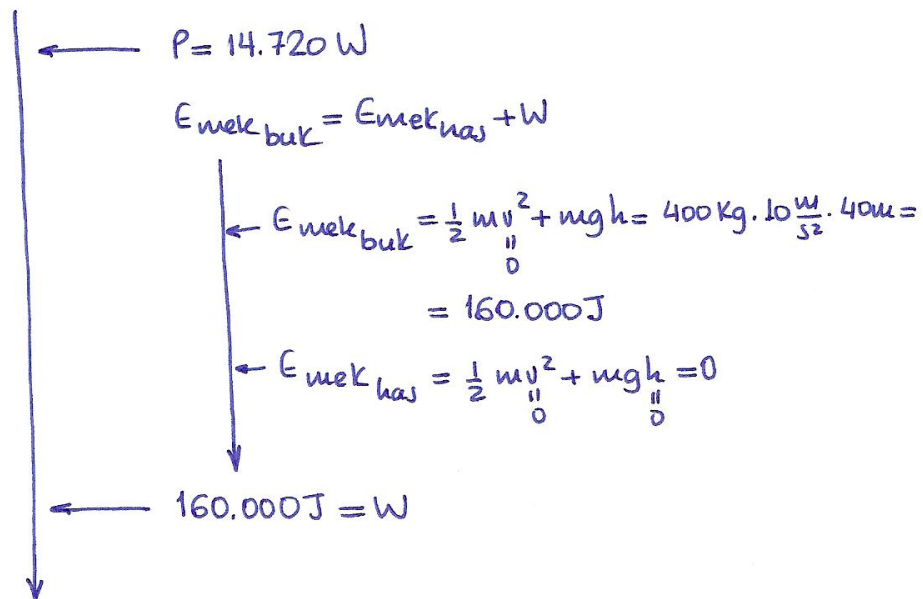
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④ a

$$P = 20 \text{ ZP} \frac{736 \text{ W}}{1 \text{ ZP}} = \boxed{14.720 \text{ W}}$$

⑥

$$P = \frac{W}{t} \rightarrow t = \frac{W}{P}$$



$$t = \frac{160.000 \text{ J}}{14.720 \text{ W}} = \boxed{10'87 \text{ s}}$$