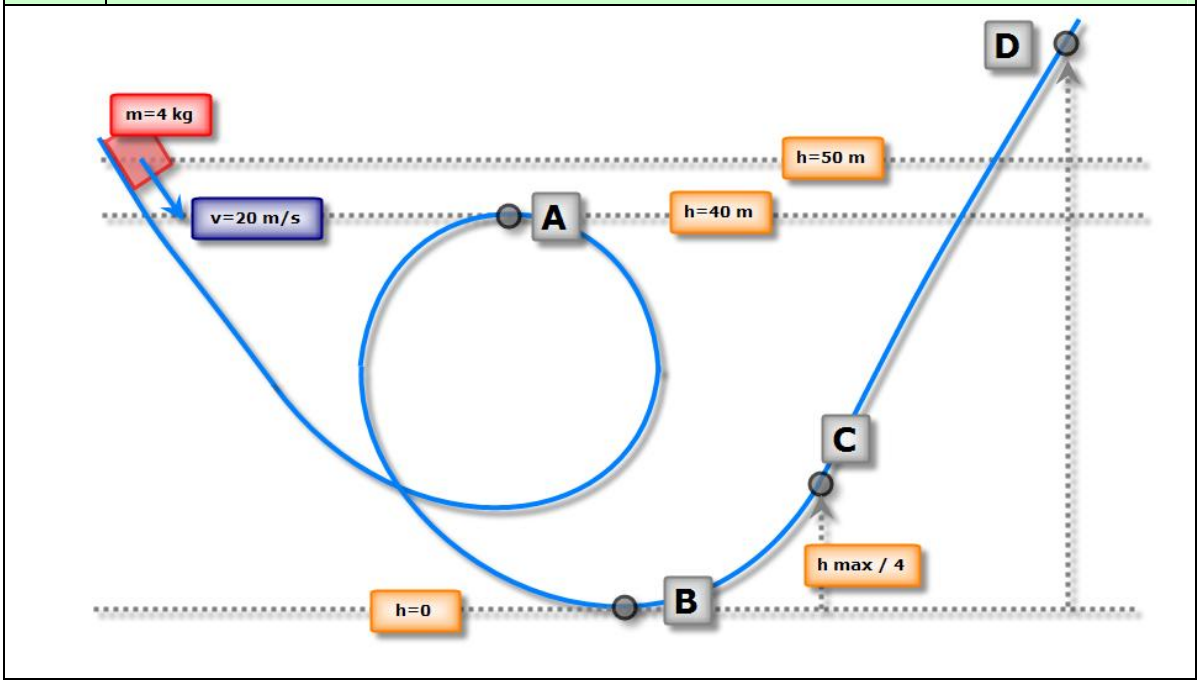
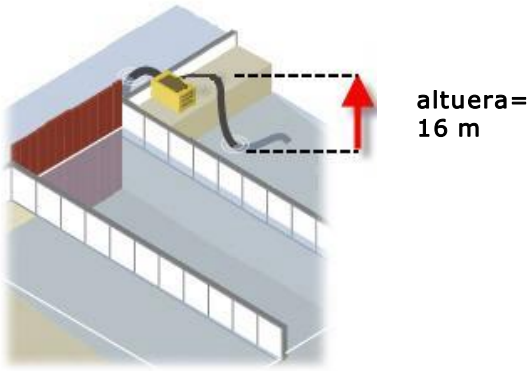
AZTERKETA – DBH 4 Presioa – Energia - Potentzia	
Izena:	**Kurtsoa:**

1	**Hona hemen higikari batek egindako bidea. Adierazi edo kalkulatu:** • **"D" puntuaren altuera (altuera maximoa da "D" puntuan hartzen duena)** [0,5 puntu] • **"A" puntuko energia potentziala** [0,5 puntu] • **"B" puntuko abiadura** [0,5 puntu] • **"C" puntuko energia potentziala** [0,5 puntu] PUNTUAZIOA: 2 PUNTU ESTIMATUTAKO DENBORA: 15 MINUTU

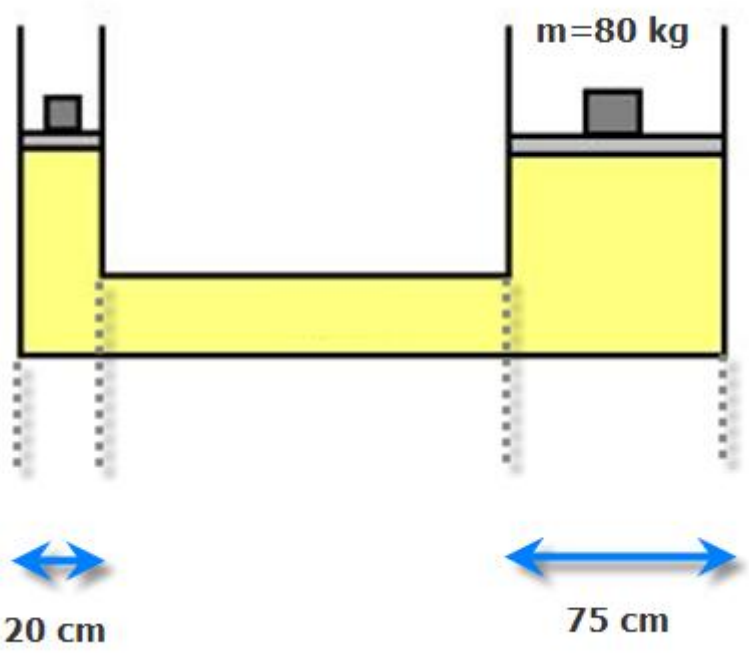


2	**Irudiko higikariaren gainean 40 N-eko marruskadura-indarra dago eta 35 m-tan 105 N-eko laguntza-indarra egiten zaio. Kalkulatu amaierako abiadura** PUNTUAZIOA: 2 PUNTU ESTIMATUTAKO DENBORA: 10 MINUTU

3	**Irudiko ponparen potentzia 15 kW-ekoa da. Kalkulatu:** **a) bere potentzia ZP-tan** [0,5 puntu] **b) zenbat denbora behar duen 20 m^3 ur igotzeko** [1,5 puntu] DATUAK: 1 ZP=736 W PUNTUAZIOA: 2 PUNTU ESTIMATUTAKO DENBORA: 10 MINUTU



4	**Kalkulatu zenbateko indarra egin behar den (indar minimoa) prentsa hidrauliko honetan 80 kg-ko masa altxa ahal izateko.** PUNTUAZIOA: 2 PUNTU ESTIMATUTAKO DENBORA: 10 MINUTU



① ⓐ

$$E_{mek_{buk}} = E_{mek_{has}} + W_{F,FR}$$

$W_{F,FR} = 0$

$E_{mek_{buk}} = \frac{1}{2}mv^2 + mgh = 4Kg.10\frac{m}{s^2}.h = 40N.h$ ($\frac{1}{2}mv^2 = 0$)

$E_{mek_{has}} = \frac{1}{2}mv^2 + mgh = \frac{1}{2}.4Kg.\left(20\frac{m}{s}\right)^2 + 4Kg.10\frac{m}{s^2}.50m =$

$= 800\,J + 2000\,J = 2800\,J$

$40N.h = 2800\,J \rightarrow h = \frac{2800\,J}{40\,N}$ **70 m**

ⓑ $E_p = mgh = 4Kg.10\frac{m}{s^2}.40\,m =$ **1600 J**

ⓒ $E_{mek_{buk}} = E_{mek_{has}} + W_{F,FR}$

$W_{F,FR} = 0$

$E_{mek_{has}} = 2800J$

$E_{mek_{buk}} = \frac{1}{2}mv^2 + mgh = \frac{1}{2}.4Kg.v^2 = 2Kg.v^2$ ($mgh = 0$)

$2800\,J = 2Kg.v^2 \rightarrow v = \sqrt{\frac{2800\,J}{2Kg}} =$ **37'4 $\frac{m}{s}$**

ⓓ $E_p = mgh$

$h = \frac{h_{max}}{4} = \frac{70\,m}{4} = 17'5\,m$

$E_p = 4Kg.10\frac{m}{s^2}.17'5\,m =$ **700 J**

② $E_{mek_{buk}} = E_{mek_{has}} + W_{F,FR}$

$\leftarrow E_{mek_{buk}} = \frac{1}{2} \cdot 12Kg \cdot v^2 + mg\underset{\parallel}{h}_{0} = \boxed{6Kg \cdot v^2}$

$\leftarrow E_{mek_{has}} = \frac{1}{2} \cdot 12Kg \cdot \left(10 \frac{m}{s}\right)^2 = \boxed{600J}$

$v_0 = 36 \frac{Km}{h} \frac{1h}{3600s} \frac{1000m}{1Km} = 10 \frac{m}{s}$

$\leftarrow W_{F,FR} = 105N \cdot 35m - 40N \cdot 80m =$
$= 3675J - 3200J = \boxed{475J}$

$6Kg \cdot v^2 = 600J + 475J \rightarrow v = \sqrt{\frac{600J + 475J}{6Kg}} = \boxed{13'39 \frac{m}{s}}$

③ a) $P = 15\,KW \frac{1000W}{1KW} \frac{1ZP}{736W} = \boxed{20'38\,ZP}$

b) $P = \frac{W}{t}$

$\leftarrow P = 15.000W$

$m = 20m^3 \frac{1000L}{1m^3} \frac{1Kg}{1L} = 20.000Kg$

$E_{mek\ has} = 0$

$E_{mek\ buk} = mgh = 20.000Kg \cdot 10 \frac{m}{s^2} \cdot 16m = 3'2 \cdot 10^6 J$

$\leftarrow W = E_{mek_{buk}} - E_{mek_{has}} = 3'2 \cdot 10^6 J$

$15.000W = \frac{3.200.000J}{t} \rightarrow t = \frac{3.200.000J}{15.000W} = \boxed{213s}$

④

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

$S_A = \pi R^2 = \pi \cdot \left(\frac{0'2\,m}{2}\right)^2 = 0'0314\ m^2$

$S_B = \pi R^2 = \pi \left(\frac{0'75\,m}{2}\right)^2 = 0'442\ m^2$

$F_B = P = m \cdot g \rightarrow F_B = 80\,Kg \cdot 10\,\frac{m}{s^2} = 800\,N$

$$\frac{F_A}{0'0314\ m^2} = \frac{800\,N}{0'442\ m^2} \rightarrow F_A = 800\,N\ \frac{0'0314\ m^2}{0'442\ m^2} = \boxed{56'83\,N}$$