

Problemas

Física

a) Trabajo

b) Tensión mecánica

$$F = 30 \text{ N}$$

$$d = 60 \text{ cm}$$

$$a) T = F \cdot d$$

$$T = (30)(0.6)$$

$$T = 18 \text{ J}$$

$$b) F = T \cos \theta$$

$$F = 18 \cos 30$$

$$F = 14.4$$

$$T = F \cdot d$$

$$T = (14.4)(0.6)$$

$$T = 8.64 \text{ J}$$

2° $M = 25 \text{ kg}$

$d = 6.4 \text{ m}$

Encontrar: Trabajo

$$F = P = M \cdot g$$

$$F = P = (25)(6.4)$$

$$F = 160 \text{ N}$$

$$T = F \cdot d$$

$$T = (160)(6.4)$$

$$T = 1024 \text{ J}$$

3° $F = 3 \text{ N}$

$d = 12.00 \text{ cm}$

Encontrar: Trabajo

$$T = F \cdot d$$

$$T = (3)(12)$$

$$T = 36 \text{ J}$$

4° $M = 6000 \text{ kg}$

$d = 150 \text{ m}$

$\theta = 20^\circ$

$\mu = 0.65$

a) Tensión

b) Trabajo

$$T = F \cdot d$$

$$T = (58860)(150)$$

$$T = 8829000 \text{ J}$$

$$F = P = M \cdot g$$

$$F = P = (6000)(9.81)$$

$$F = P = 58,860 \text{ N}$$

$$T = F \cos \theta \cdot d \cdot \mu$$

$$T = (58860)(0.93)(150)(0.65)$$

$$T = 5,337,130.5 \text{ J}$$

5) $F = 12 \text{ N}$
 $d = 7 \text{ m}$

a) Trabajo en la misma
 dirección

b) En la dirección contraria

a) $T = F \cdot d$
 $T = (12)(7)$
 $T = 84 \text{ J}$

b) $T = F \cdot d$
 $T = (12)(7)$
 $T = 84 \text{ J}$

6) $M = 50 \text{ kg}$
 $d = 8 \text{ m}$

a) Trabajo

b) Trabajo del mueble

a) $T = F \cdot g$
 $T = (50)(9.81)$
 $T = 490.5 \text{ J}$

b) El Trabajo del mueble
 es el mismo.

7) $U = 10 \text{ m}^3$
 $d = 3 \text{ m}$

a) Trabajo

$$\frac{10 \text{ m}^3}{10^3 \text{ m}^3} = 0.01 \text{ m}^3$$

$T = F \cdot d$
 $T = (10 \text{ kg})(9.81)(3)$
 $T = 294.3 \text{ J}$

$P = \rho \cdot U$
 $P = (1000)(0.01)$
 $P = 10 \text{ kg}$

$F = P \cdot g$
 $\rho \text{ de } H_2O = 1000 \text{ kg/m}^3$

8) $M = 20 \text{ ton}$
 $F = 20,000 \text{ N}$
 $d = 36 \text{ km}$

Trabajo $W_m = 1 \text{ h}$

9) $m = 65 \text{ kg}$
 $d = 10 \text{ m}$
 $F = 300 \text{ N}$
 $d = 75 \text{ m}$

a) trabajo

$$T_1 = m \cdot g \cdot d$$

$$T_1 = (65)(9.81)(10)$$

$$T_1 = 6376.5 \text{ J}$$

$$T_+ = T_1 + T_2$$

$$T_+ = 6376.5 + 225 \text{ J}$$

$$T_+ = 6601.5 \text{ J}$$

$$T_2 = (300 \text{ N})(0.75 \text{ m})$$

$$T_2 = 225 \text{ J}$$

10) $F = 240 \text{ N}$
 $d = 10 \text{ m}$

$a = 300$
 $b = 900$
 $c = 1200$

$$T = F \cdot d$$

$$T = (24)(10)$$

$$T = 240 \text{ J}$$

a) $T = T \cos \theta$
 $T = 240 \cos 300$
 $T = (240)(0.8)$
 $T = 192 \text{ J}$

b) $T = T \cos \theta$
 $T = 240 \cos 90$
 $T = (240)(0)$
 $T = 0 \text{ J}$

c) $T = T \cos \theta$
 $T = 240 \cos 120$
 $T = (240)(-0.5)$
 $T = -120 \text{ J}$

11) $M = 1500 \text{ kg}$
 $d = 1500 \text{ cm}$
 $t = 2 \text{ min}$

Power $P = a) \text{ W}$ b) Kw c) hp

$$F = M \cdot g$$

$$F = (1500)(9.81)$$

$$F = 14715 \text{ N}$$

$$T = F \cdot d$$

$$T = (14715)(15)$$

$$T = 220725 \text{ J}$$

$b = 1.3398$
 $c = 2.4$

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

$$P = \frac{220725}{120}$$

$$P = 1839.375 \text{ W}$$

12) $v = 50 \text{ km/h}$
 $P = 40 \text{ CV}$
 $d = 50 \text{ km}$
 $t = 3600$

$F =$

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

$t = \frac{T}{d}$

$F = \frac{105,840,000}{50}$

$F = 2,116,800 \text{ NW}$

$t = P \cdot t$

$t = (29 \text{ CV}) (3600)$

$T = 105,840,000 \text{ t}$

13) $m = 350 \text{ kg}$
 $d = 18 \text{ m}$
 $t = 40 \text{ s}$

Potencia = Kw
 ω

$F = m \cdot g$

$A = F \cdot d$

$F = (350)(9.81)$

$T = (3433.5)(18)$

$F = 3,433.5 \text{ NW}$

$T = 61803 \text{ J}$

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

$P = \frac{61803}{40}$

$1 \omega = 1000 \text{ Kw}$

$1545.07500 = 1575075 \text{ Kw}$

$P = 1545.075 \omega$

14) $m = 2500 \text{ kg}$
 $d = 16 \text{ m}$
 $t = 5 \text{ min}$

trabajo $P = \text{C.V}$

$F = m \cdot g$

$t = f \cdot d$

$F = (25000)(9.81)$

$T = (245250)(1600)$

$F = 245250 \text{ NW}$

$T = 392400000 \text{ W}$

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

$P = \frac{392400000}{300}$

$1 \text{ CV} = 735 \omega$

$1308000 \omega = 1779 \text{ CV}$

$P = 1308000 \omega$

15) $P = 20 \text{ CV}$
 $v = 50 \text{ m/min}$
 $d = 50 \text{ mm}$
 $t = 60 \text{ s}$

$P = \frac{T}{t} \quad P = P \cdot t$
 $t = (14700)(60)$
 $T = 882000 \text{ J}$

16) $P = 6 \text{ CV}$
 $v = 25 \text{ km/h}$
 $m = 0.2$

$P = \frac{T}{t}$
 $T = P \cdot t$
 $T = (125.5)(3000)$
 $T = 376500$
 $P = (17.64)(10.2)$
 $P = 3528 \text{ W}$

$17) P = 250 \text{ kW}$
 $m = 1000 \text{ kg}$

$1 \text{ CV} = 76 \text{ kg} \cdot \text{m}^2/\text{s}$
 $1 \text{ kW} = 133 \text{ CV}$

$v = \frac{P}{m} \quad v = \frac{25270}{1000}$

Halter Charge = 8000

$T = F \cdot d$
 $F = P$
 $P = F = \frac{T}{d}$

$P = F = \frac{882000}{50}$
 $P = 17640 \text{ N/W}$

Halter 8000

$T = F \cdot d$
 $T = P$
 $P = F = \frac{T}{d}$
 $P = F = \frac{451800}{25000}$
 $P = 1764 \text{ N/W}$

Halter velocity

$P = 250 \text{ kW} \quad 1 \text{ CV}$
 1.33 kW

$P = 332.5 \text{ CV} = 71 \text{ kg} \cdot \text{m}^2/\text{s}$
 1 CV
 $v = 25.27 \text{ m/s}$
 $25,270 \text{ m}$

18. $M = 1800$ $d = 300 \text{ m}$ $t = 3 \text{ min}$ $\text{Haukari} = \text{Potencia}$
 $F = M \cdot g$ $T = F \cdot d$ $P = \frac{T}{t}$
 $F = (1800)(9.81)$ $T = (17,638)(300)$
 $F = 17,658 \text{ NW}$ $T = 5297,400 \text{ J}$ $P = \frac{5297,400}{180}$
 $P = 29,430 \text{ W}$

19. $M = 130 \text{ kg}$ $d = 10 \text{ m}$ $t = 6 \text{ s}$ $\text{Haukari} = \text{Potencia}$
 $F = M \cdot g$ $T = F \cdot d$ $P = \frac{T}{t}$
 $F = (130)(9.81)$ $T = (1275.3)(10)$
 $F = 1275.3 \text{ NW}$ $T = 12750$ $P = \frac{12750}{6}$
 $P = 2125 \text{ W}$

20. $F = 1275.3$ $d = 10 \text{ m}$ $t = 60 \text{ s}$ $\text{Haukari} = \text{Potencia}$
 $T = F \cdot d$ $P = \frac{T}{t}$
 $T = (1275.3)(10)$ $P = \frac{12753}{60}$
 $T = 12753 \text{ J}$ $P = 212.55 \text{ W}$

21. $M = 2 \text{ kg}$ $h = 3 \text{ m}$ $g = 7$ $g = 10 \text{ m/s}^2 = \text{arku}$
 $a = E \cdot P = M \cdot g \cdot h$ $P = 0.289 \text{ W}$
 $E \cdot P = (2 \text{ kg})(10 \text{ m/s}^2)(3 \text{ m})$ $g = 10 \text{ m/s}^2 = \text{arku}$
 $E \cdot P = 60 \text{ J}$

b) $F = M \cdot g$ $(2 \text{ kg})(10)$
 $G = 20$
 $F = 20 \times 3$
 $F = 60$

22. $M = 200 \text{ kg}$ $v = 30 \text{ m/s}$ $f = 500$ $d = ?$ $f(\text{?}) = ?$
 $30 \text{ m} \leftarrow d = 30 \text{ m}$ $G = 90000$
 $d = 30 \text{ m}$ $T = 150 \text{ s}$
 $E \cdot P = \frac{M \cdot v^2}{2}$ $E \cdot P = \frac{200 \times 30^2}{2}$

$$23 \quad F = 12.5 \text{ kg} \quad d = 600 \text{ m} \quad n = 250 \text{ KO}$$

$$T = F \cdot M$$

$$T = (9.81)(12.5) = 122.625$$

$$(122.6)(600) = 735.60$$

$$FC = \frac{m \cdot v^2}{2}$$

$$F = T = 735 \text{ J}$$

$$260 = m \cdot v^2$$

$$\frac{260}{m} = v^2$$

$$v = \sqrt{\frac{260}{m}}$$

$$F = m \cdot g$$

$$F = (12.5)(9.81)$$

$$F = 122.6 \text{ N}$$

$$v = \sqrt{\frac{(2)(735.75)}{250}}$$

$$v = \sqrt{\frac{1471.5}{250}}$$

$$v = 5.826 = 2.2$$

$$v = 2.42$$

$$0.00$$

$$24 \quad EC = 6 \text{ gr} \quad v = 500 \text{ m/s}$$

$$FC = \frac{m \cdot v^2}{2} \quad F = \frac{(0.006)(500)^2}{2} = 75000$$

$$25 \quad P = 3.6 \text{ N} \quad v = 13 \text{ m/s}$$

$$P = m \cdot g$$

$$m = \frac{P}{g}$$

$$m = 0.36$$

$$FC = \frac{m \cdot v^2}{2}$$

$$FC = \frac{(0.36)(169)}{2}$$

$$P = 30.42$$

$$m = \frac{3.6}{9.81}$$

$$26: M = 5 \text{ kg}$$

$$G = 225 \text{ J}$$

$$G = \frac{M \cdot v^2}{2}$$

$$v = \sqrt{\frac{2G}{M}} = \sqrt{\frac{2 \cdot 225}{5}}$$

$$2G = M \cdot v^2$$

$$v = 9 \sqrt{2} \text{ m/s}$$

$$\frac{2G}{M} = v^2$$

$$v = \sqrt{\frac{2G}{M}}$$

$$27: G = 3 \text{ kg}$$

$$h = 2.5 \text{ m}$$

$$E_p = M \cdot g \cdot h$$

$$E_p = (3)(9.81)(2.5) = 73.575 \text{ J}$$

$$28: M = 6 \text{ kg}$$

$$E_p = 80$$

$$G_p =$$

$$H = \frac{G_p}{m \cdot g} = \frac{H = 80}{(6)(9.81)} = 1.36$$

$$29: M = 5 \text{ kg}$$

$$h = 10 \text{ m}$$

$$E_p = M \cdot g \cdot h$$

$$E_p = (5)(9.81)(10) = 490.5 \text{ J}$$

$$h = 490.5 \text{ J}$$