

1. Trabajo $T = F \cdot d$

Datos:

a) $T = (30\text{ N}) \cdot (0.6\text{ m}) = 18\text{ J}$

b) $T = F \cos \alpha \cdot d$

$T = (30) \cos 30 \cdot (0.6\text{ m})$

$T = 15.588\text{ J}$

2 Trabajo

Datos $T = m \cdot y \cdot d$ $F = m \cdot y$

$m = 25\text{ Kg}$

$y = 9.81\text{ m/s}^2$

$d = 6.4\text{ m}$

$F = m \cdot y$ $(25\text{ Kg})(9.81\text{ m/s}^2)$

245.25 m/s^2

$T = d \cdot 245.25 (6.4) = 1,568$

3 Trabajo

Datos

$F = 3\text{ N}$

$d = 1,200\text{ cm}$

$\hookrightarrow 12\text{ m}$

$T = F \cdot d$

$T = (3\text{ N}) \cdot (12\text{ m})$

$T = 36\text{ J}$

4 Datos

$m = 6000\text{ Kg}$

$d = 150\text{ m}$

$\alpha = 76^\circ$

$M = 0.65$

b) $M, M \cdot d$

$T = 58860 \cdot 0.65 \cdot 150$

$T = 5,738850\text{ J}$

5: $F = 18\text{ N}$

$d = 7\text{ m}$

$T = F \cdot d = 12.7 T = 3.6\text{ J}$

$T = 84\text{ J}$

7. $m = 10 \text{ Dm}^3 = V = 10 \text{ L} = 10 \text{ kg}$ $h = 3 \text{ m}$
 $T = m \cdot g \cdot h$

$$T = 10 \text{ kg} \cdot 9.81 \cdot 3 = 294.30 \text{ J}$$

¿Que trabajo hace el peso del agua?
 $R = 294.30 \text{ J}$

8. $F = 20,000 \text{ N}$ $d = 1 \text{ km} = 1000 \text{ m}$ $m = 20 \text{ ton}$
 $T = F \cdot d \cdot \cos \alpha$

$$T = 20,000 \cdot 1000 \cdot 1 = 20,000,000 \text{ J}$$

¿Que trabajo hace por cada hora si la velocidad es de 36 km/h ? $T = 20,000,000 \cdot 36 = 720,000,000$

9. $F = 300 \text{ N}$ $d = 10 \text{ m}$ $h = 75 \text{ cm}$ $m = 65 \text{ kg}$
 $T = F \cdot d$

$$T = 300 \cdot 10 = 3000 \text{ J}$$

¿Que despues lo sube a un camion cuyo plataforma esta a 75 cm del suelo?

$$T = 65 \cdot 9.81 \cdot 0.75 \text{ m} = 478.24 \text{ J}$$

$$T = m \cdot g \cdot h \quad \text{Trabajo total} = 3000 + 478.24 = 3478.24 \text{ J}$$

10. $F = 24 \text{ N}$ $d = 10 \text{ m}$ $T = F \cdot d \cdot \cos \alpha$

A) $24 \cdot 10 \cdot \cos(30^\circ) = 24 \cdot 10 \cdot 0.8660254 = 207.85 \text{ J}$

B) $24 \cdot 10 \cdot \cos(90^\circ) = 24 \cdot 10 \cdot 0 = 0 \text{ J}$

C) $24 \cdot 10 \cdot \cos(120^\circ) = 24 \cdot 10 \cdot (-0.5) = -120 \text{ J} //$

$$11. t = 2 \text{ min} = 120 \text{ seg} \quad m = 1500 \text{ kg} \quad h = 1500 \text{ m} = 15 \text{ mt}$$

$$T = m \cdot g \cdot h \quad P = \text{trabajo} : \text{Tiempo}$$

$$T = 1500 \text{ kg} \cdot 9.81 \cdot 15 \text{ m} = 220725 \text{ J}$$

$$P = 220725 \text{ J} : 120 \text{ seg} = 1839.38 \text{ W}$$

$$P = 1839.38 : 1000 = 1.839380 \text{ KW}$$

$$P = 1839.38 \cdot 1.33 / 100 = 2.4463 \text{ CV}$$

$$12. v = 50 \text{ km/h} = 1 \text{ km/h} = 0.277777778 \text{ m/s} = 13.88 \text{ m/s}$$

$$F = P : v \quad P = 40 \text{ cv} = 30075.19 \text{ W}$$

$$F = 30075.19 : 13.88 = 2166.80 \text{ Nw} //$$

$$13. t = 40 \text{ seg} \quad m = 350 \text{ kg} \quad h = 18 \text{ m} = d \quad T = m \cdot g \cdot h$$

$$P = \text{trabajo} : \text{tiempo}$$

$$T = 350 \cdot 9.81 \cdot 18 = 61803 \text{ J} //$$

$$P = 61803 : 40 = 1545.08 \text{ Watts}$$

$$P = 1545.08 : 1000 = 1.54508 \text{ kw}$$

$$14. t = 5 \text{ min} = 300 \text{ seg} \quad m = 25000 \text{ kg} \quad h = 16 \text{ km} = d = 16000 \text{ mts}$$

$$T = m \cdot g \cdot d \quad P = \text{trabajo} : \text{tiempo}$$

$$T = 25000 \cdot 9.81 \cdot 16000 = 392400000 \text{ J}$$

$$P = 392400000 : 300 = 1308000 \text{ W} //$$

$$P = 1308000 \cdot 1.33 : 1000 = 1739.64 \text{ CV}$$

$$15. P = 20 \text{ cv} = (20 \cdot 1000 : 1.33) \quad P = 15037.59 \text{ W}$$

$$P = F \cdot v \quad F = P : v$$

$$F = 15037.59 \text{ W} : 0.833 \text{ m/s} = 6.9444 \text{ m/s}$$

$$16: P = 6cv = (6 \cdot 1000 \div 1.33) P = 4511.28 \quad v = 25 \text{ km/h} = 6.94 \text{ m/s}$$

Peso = potencia

velocidad · coeficiente

$$P = 4511.28 \text{ W} \div 6.944 \text{ m/s} \cdot 0.2$$

$$P = 4511.28 \text{ W} \div 1.3888 = 3248.33 \text{ NW} //$$

$$17: P = 250000 \text{ W} \quad m = 1000 \text{ kg}$$

Peso = potencia / velocidad velocidad = potencia ÷ peso

Peso = fuerza $F = m \cdot \text{gravidad}$

$$F = 1000 \cdot 9.81 = 9810 \text{ NW} \quad v = 25000 \div 9810 = 25.48 \text{ m/s}$$

$$18: t = 18 \text{ seg} \quad m = 800 \text{ kg} \quad \text{model ascensor} = 1000 \text{ kg} \quad h = 300 \text{ m}$$

$$P = m \cdot g \cdot h \div t$$

$$P = 1000 + 800 \cdot 9.81 \cdot 300 = 5297400 \text{ NW}$$

$$P = 5297400 \div 180 = 294300 \text{ W} //$$

$$19: t = 120 \text{ seg} \quad m = 130 \text{ kg} \quad d = 10 \text{ m}$$

$$T = m \cdot g \quad t = F \cdot d \quad P = t \div T$$

$$F = 130 \cdot 9.81 = 1275.30 \text{ NW}$$

$$T = 1275.30 \cdot 10 = 12753 \text{ J}$$

$$P = 12753 \text{ J} \div 120 \text{ seg} = 106.28 \text{ W} //$$

$$20: T = 1 \text{ mm} = 60 \text{ seg} \quad m = 130 \text{ kg} \quad d = 130 \text{ m} \quad F = 1275.30$$

$$T = F \cdot d \quad P = t \div T$$

$$T = 1275.30 \cdot 10 = 12753 \text{ J}$$

$$P = 12753 \div 60 = 212.55 \text{ W} = (212.55 \cdot 7.33 + 1000) = 0.28 \text{ cv}$$

21. $m = 2 \text{ Kg}$ $h = 3 \text{ m}$

$E_p = m \cdot g \cdot h$ a) $E_p = 2 \text{ Kg} \cdot 10 \text{ m/s}^2 \cdot 3 \text{ m} = 60 \text{ J} //$

$E_p = E_{ek}$ b) 60 J //

22. $d = 6 \text{ m}$ $F = 122.62 \text{ NW}$ $m = 230 \text{ Kg}$ $v_i = v_f = 0$

$T = 122.62 \text{ NW} \cdot 6 \text{ m} = 735.72 \text{ J}$ $v = \sqrt{2 \cdot 735.72 + 250} = 2.13 \text{ m/s}$

23. $v = 500 \text{ m/s}$ $m = 0.006 \text{ Kg}$

$E_c = m \cdot v^2$ $E_c = 0.006 \cdot 1500^2$ $E_c = 0.006 \cdot 250000 = 1500 \text{ J}$

24. $v = 13 \text{ m/s}$ $P = 3.6 \text{ NW}$

$E_c = \frac{m \cdot v^2}{2}$ $P = m \cdot g$ $m = P \div g$

$m = 3.6 \div 9.81 = 0.006 \cdot 250000 = 0.37 \text{ Kg}$ $E_c = 0.37 \cdot 169$
 $= 31.27 \text{ J} //$

25. $E_c = 225 \text{ J}$ $m = 5 \text{ Kg}$ $E_c = \frac{m \cdot v^2}{2}$ $v = \sqrt{\frac{2 \cdot E_c}{m}}$

$v = \sqrt{\frac{2 \cdot 225 \text{ J}}{5 \text{ Kg}}} = \sqrt{450 \div 5} = \sqrt{90} = 9.49 \text{ m/s}$

26. $h = 2.5 \text{ m}$ $m = 3 \text{ Kg}$ $E_{pe} = m \cdot g \cdot h$

$E_p = 80 \text{ J}$ $m = 6 \text{ Kg}$ E_p

$E_p = 3 \cdot 9.31 \cdot 2.5 = 73.58 \text{ J} //$