

0.6 m.
1. $F = 30 \text{ NW}$ $d = 60 \text{ cm}$ $\varphi = 30^\circ$
 $T = 18 \text{ J}$ $T = F \cdot d$ $T = 30 \cdot 0.6$ $T = 18 \text{ J}$
 $T = 15.48 \text{ J}$ $T = F \cos \alpha \cdot d$ $T = 30 \cdot 0.86 \cdot 0.6$

2. $m = 25 \text{ kg}$ $h = 6.4 \text{ Mt}$
 $T = m \cdot g \cdot h$
 $T = 25 \cdot 9.81 \cdot 6.4 = 1569 \text{ J}$

3. $F = 3 \text{ NW}$ $d = 1.200 \text{ mt}$
 $T = 3.6 \text{ J}$ $T = F \cdot d$ $T = 3 \cdot 1.200$ $T = 3.6 \text{ J}$

5. $F = 12 \text{ NW}$ $d = 7 \text{ Mt}$
 $T = 84 \text{ J}$ $T = F \cdot d$ $T = 12 \cdot 7$ $T = 84 \text{ J}$

6. $M = 50 \text{ kg}$ $d = 8 \text{ Mt}$
 $T = m \cdot g \cdot h$ a) $T = 50 \cdot 9.81 \cdot 8 = 3924 \text{ J}$

$T = F \cdot d \cdot \cos \alpha$ b) $T = 50 \cdot 8 \cdot 0 = 0 \text{ J}$

$$7.- m = 10 \text{ m}^3 = V = 10 \text{ L} = 10 \text{ Kg} \quad h = 3 \text{ m}$$

$$T = m \cdot g \cdot h$$

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

¿Que trabajo hace el peso del agua? = 294.30 J

$$8.- F = 20000 \text{ N} \quad d = 1 \text{ km} = 1000 \text{ m} \quad m = 20 \text{ Ton}$$

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

$$T = 20000 \cdot 1000 \cdot 1 = 20000000 \text{ J}$$

¿Que trabajo hace por cada hora si la velocidad es de 36 Km/h?

$$T = 20000000 \cdot 36 = 720000000 \text{ J}$$

$$9.- F = 300 \text{ N} \quad d = 10 \text{ m} \quad h = 75 \text{ cm} \quad m = 65 \text{ Kg}$$

$$T = F \cdot d$$

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

Y que despues lo sube a un camión cuya plataforma está a 75 cm del suelo?

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

$$T = m \cdot g \cdot h$$

$$\text{Trabajo total} = 3000 + 478.24 = 3478.24 \text{ J}$$

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

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

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

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

$$11.- t = 2 \text{ min} = 120 \text{ seg} \quad m = 1500 \text{ Kg} \quad h = 1500 \text{ cm} = 15 \text{ m}$$

$$T = m \cdot g \cdot h \quad P = \text{Trabajo} \div \text{tiempo}$$

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

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

$$P = 1839.38 \div 1000 = 1.839380 \text{ kW}$$

$$P = 1.83938 \cdot 1.33 / 1000 = 2.4463 \text{ CV}$$

22.- $v_f = 30 \text{ m/s}$ $F = 300 \text{ N}$ $m = 200 \text{ kg}$ $v_i = 0$ $a = 2.5 \text{ m/s}^2$
 $d = 180 \text{ m}$ $E_c = \frac{m \cdot v^2}{2}$ b) $E_c = 200 \cdot (30)^2$
 $E_c = \frac{200 \cdot 900}{2} = 90000 \text{ J}$

23.- $d = 6 \text{ m}$ $F = 122.62 \text{ N}$ $m = 250 \text{ kg}$ $v_i = E_{ci} = 0$

$T = 122.62 \text{ N} \cdot 6 \text{ m} = 735.72 \text{ J}$ $v = \sqrt{2 \cdot 735.72 \div 250} = 2.43 \text{ m/s}$

24.- $v = 500 \text{ m/s}$ $m = 0.006 \text{ kg}$

$E_c = \frac{m \cdot v^2}{2}$ $E_c = 0.006 \cdot (500)^2$ $E_c = \frac{0.006 \cdot 250000}{2} = 750 \text{ J}$

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

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

$m = 3.6 \div 9.81 = \frac{0.006 \cdot 250000}{2} = 0.37 \text{ kg}$ $E_c = \frac{0.37 \cdot 169}{2} = 31.27 \text{ J}$

26.- $E_c = 225 \text{ J}$ $m = 5 \text{ kg}$ $E_c = \frac{m \cdot v^2}{2}$ $v = \sqrt{\frac{2 \cdot E_c}{m}}$

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

27.- $h = 2.5 \text{ m}$ $m = 3 \text{ kg}$ $E_p = m \cdot g \cdot h$

$E_p = 3 \cdot 9.81 \cdot 2.5 = 70.575 \text{ J}$

28.- $E_p = 80 \text{ J}$ $m = 5 \text{ kg}$ $E_p = m \cdot g \cdot h$ $h = E_p \div m \cdot g$

$h = 80 \text{ J} \div 9.81 \text{ m/s}^2 \cdot 5 \text{ kg} = 32 \div 49.05 = 1.36 \text{ m}$

$$17.- P = 250000 \text{ W} \quad m = 1000 \text{ Kg}$$

$$P_{\text{peso}} = \text{Potencia} \cdot \text{velocidad} \quad \text{velocidad} = \text{potencia} \div \text{peso}$$

$$P_{\text{peso}} = \text{Fuerza} \quad F = m \cdot g \cdot \text{velocidad}$$

$$F = 1000 \cdot 9.81 = 9810 \text{ NW} \quad v = 250000 \div 9810 = \underline{25.48 \text{ m/s}}$$

$$18.- t = 180 \text{ seg} \quad m = 800 \text{ Kg} \quad m_{\text{del ascensor}} = 1000 \text{ Kg} \quad h = 300 \text{ m}$$

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

$$P = 1000 + 800 \cdot 9.81 \cdot 300 = 5297,400 \text{ NW}$$

$$P = 5297400 \div 180 = \underline{29430 \text{ W}}$$

$$19.- t = 120 \text{ seg} \quad m = 130 \text{ Kg} \quad d = 10 \text{ m}$$

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

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

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

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

$$20.- T = 1 \text{ min} = 60 \text{ seg} \quad m = 130 \text{ Kg} \quad d = 130 \text{ m} \quad F = 1275.30 \text{ NW}$$

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

$$T = 1275.30 \cdot 130 = 165789 \text{ J}$$

$$P = 165789 \div 60 = 2763.15 \text{ W} = (2763.15 \cdot 1.33 \div 1000) = \underline{0.28 \text{ CV}}$$

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

$$E_p = m \cdot g \cdot h$$

$$E_p = E \cdot f$$

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

$$b) 60 \text{ J}$$

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

$$F = P \div V \quad P = 40 \text{ CV} = 30075.19 \text{ W}$$

$$F = 30075.19 \div 13.88 = 2166.80 \text{ N}$$

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

$$T = m \cdot g \cdot h \quad P = \text{Trabajo} \div \text{tiempo}$$

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

$$P = 61803 \div 40 = 1545.08 \text{ W}$$

$$P = 1545.08 \div 1000 = 1.54508 \text{ kW}$$

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

$$T = m \cdot g \cdot d \quad P = \text{Trabajo} \div \text{tiempo}$$

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

$$P = 392400000 \div 300 = 1308000 \text{ W}$$

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

$$15. \quad P = 20 \text{ CV} = (20 \cdot 1000 \div 1.33) \quad P = 15037.59 \text{ W} \quad V = 50 \text{ m/min} = 0.833 \text{ m/s}$$

$$P = F \cdot V \quad F = P \div V$$

$$F = 15037.59 \text{ W} \div 0.833 \text{ m/s} = 18052.33 \text{ N}$$

$$16. \quad P = 6 \text{ CV} = (6 \cdot 1000 \div 1.33) = 4511.28 \quad V = 25 \text{ km/h} = 6.944 \text{ m/s}$$

$$\text{Peso} = \frac{\text{Potencia}}{\text{Velocidad} \cdot \text{Coeficiente}}$$

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

$$P = 4511.28 \text{ W} \div 1.3888 = 3249.22 \text{ N}$$



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