


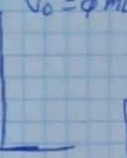
m  $E_c = \frac{1}{2} m v^2 = \frac{1}{2} 200 \cdot 20^2 = 40 \cdot 10^5 \text{ J}$  W  $W = E_F - E_C = \frac{1}{2} 200 \cdot 25^2 - \frac{1}{2} 200 \cdot 20^2 = 105 \cdot 10^5 \text{ J}$

m  $120 \frac{\text{km}}{\text{h}} = 33,333 \text{ m/s}$   $V_F = 0 \text{ m/s}$   $80 \text{ m}$   $W = -F_R \cdot r \rightarrow F_R = \frac{-W}{r} =$   
 $W = E_F - E_C = 0 - \frac{1}{2} 600 \cdot 33,333^2 = -3,33 \cdot 10^5 \text{ J}$   $F_R = \frac{+3,33 \cdot 10^5}{80} = 4166,58 \text{ N}$

rc  $20 \text{ g} = 0,02 \text{ kg}$   $r = 0,6 \text{ m}$   $V_0 = 0 \text{ m/s}$   $V_F = 250 \text{ m/s}$  rc IGUAL QUE EL ANTERIOR  
 $W = E_F - E_C = \frac{1}{2} 0,02 (250)^2 = 625 \text{ J}$   $W = F \cdot r \rightarrow F = \frac{W}{r} = \frac{625}{0,6} = 1041,667 \text{ N}$

re  $m = 72 \text{ kg}$   $h = 6,05 \text{ m}$   $E_P = m \cdot g \cdot h = 72 \cdot 9,8 \cdot 6,05 = 4268,58 \text{ J}$

re   $3 \text{ m}$   $m = 10 \text{ kg}$   
 $E_{CF} - E_{CI} + E_{PF} - E_{PI} = 0$   $V = \sqrt{2gh} = \sqrt{2 \cdot 9,8 \cdot 3} = 7,668 \text{ m/s}$   
 $\frac{1}{2} m V_F^2 - mgh = 0$

re   $200 \text{ m}$   $V_0 = 0 \text{ m/s}$   
 $E_{CF} - E_{CI} + E_{PF} - E_{PI} = 0$   $V = \sqrt{2gh} = \sqrt{2 \cdot 9,8 \cdot 200} = 62,64 \text{ m/s}$

rg  $m = 3000 \text{ kg}$   $V_0 = 90 \frac{\text{km}}{\text{h}} = 25 \text{ m/s}$   $W = E_F - E_C = \frac{1}{2} 3000 \cdot 0^2 - \frac{1}{2} 3000 \cdot 25^2$   
 $W = -937500 \text{ J} = -F \cdot r$   
 $\rightarrow$  LA F SE OPONE AL MOVIMIENTO

ro  $m = 10 \text{ g} = 0,01 \text{ kg}$   $V_0 = 400 \text{ m/s}$   $F = \frac{937500}{120} = 7812,5 \text{ N}$   
 $E_{CF} - E_{CI} + E_{PF} - E_{PI} = 0$   
 $-\frac{1}{2} m V_F^2 + mgh = 0 \rightarrow h_F = \frac{V_F^2}{2g} = \frac{400^2}{2 \cdot 9,8} = 20,408 \text{ m}$