

$$m = 400 \text{ kg}$$

$$h = 6 \text{ m} \Rightarrow v = 12 \text{ m/s}$$

L'energia mecànica es conserva (no hi ha fregament)

$$\text{Si } h = 10 \text{ m.} \Rightarrow v = ?$$

$$\text{Com l'energia es conserva: } \bar{E}_m = \frac{1}{2} m v^2 + mgh = \frac{1}{2} \cdot 400 \cdot 12^2 + 400 \cdot 9,81 \cdot 6$$

$$E_m = 52344 \text{ J}$$

Quan tenim $h = 10 \text{ m}$.

$$E_m = E_c + U \quad \bar{E}_c = \bar{E}_m - U = 52344 - mgh$$

$$E_c = 52344 - 400 \cdot 9,81 \cdot 10 = 13104 \text{ J}$$

$$E_c = \frac{1}{2} m v^2 \Rightarrow v = \sqrt{\frac{2 \bar{E}_c}{m}} = \sqrt{\frac{2 \cdot 13104}{400}} = \boxed{8,09 \text{ m/s}}$$

A nivell de terra $U = 0 \Rightarrow E_c = E_m = 52344 \text{ J}$

$$v = \sqrt{\frac{2 \bar{E}_c}{m}} = \sqrt{\frac{2 \cdot 52344}{400}} = \boxed{16,3 \text{ m/s}}$$

Quan assolim l'altura màxima: $v = 0$

$$E_m = U = mgh_{\text{màx}}$$

$$h_{\text{màx}} = \frac{E_m}{mg} = \frac{52344}{400 \cdot 9,81} = \boxed{13,3 \text{ m}}$$