

Act. n° 4. pag 19. (+1)

Datos

$$m = 10000 \text{ kg}$$

$$v_0 = 108 \frac{\text{km}}{\text{h}}$$

$$v_f = 0$$

$$\frac{108 \frac{\text{km}}{\text{h}} \cdot \frac{1000 \text{ m}}{1 \text{ km}} \cdot \frac{1 \text{ h}}{3600 \text{ s}} = 30 \text{ m/s}$$

a)

$$\Delta E_c = \frac{1}{2} m v (v_f^2 - v_0^2) = -\frac{1}{2} 10000 \cdot 30^2 = -450.000 \text{ J}$$

$$Q = 450.000 \text{ J} \cdot \frac{1 \text{ cal}}{4,18 \text{ J}} = 107655,50 \text{ cal}$$

$$b) Q = m \cdot c_e \Delta T \Rightarrow \Delta T = \frac{Q}{m c_e} = \frac{107655,50}{10.000 \cdot 1} = 10,76^\circ \text{C}$$

$$10 \text{ l} = 10 \text{ kg} = 10.000 \text{ g}$$

$$\text{ya que } c_{e_{\text{H}_2\text{O}}} = 1 \frac{\text{cal}}{\text{g} \cdot ^\circ \text{C}}$$

o tambien

$$c_{e_{\text{H}_2\text{O}}} = 4180 \frac{\text{J}}{\text{kg} \cdot ^\circ \text{K}}$$