

## ESEMPIO

$$L_{im} = 12 \text{ m}$$

$$\Delta t = 60^\circ\text{C} \quad -20^\circ\text{C} \rightarrow 40^\circ\text{C}$$

$$\lambda_{Fe} = 12 \times 10^{-6} \frac{1}{^\circ\text{C}}$$

$$\Delta L = \lambda L_{im} \Delta t$$

$$= 12 \times 10^{-6} \frac{1}{^\circ\text{C}} \cdot 12 \text{ m} \cdot 60^\circ\text{C} = 8640 \cdot 10^{-6} \text{ m} =$$

$$= 0,00864 \text{ m} = 8,64 \text{ mm} \approx 9 \text{ mm}$$

## ESEMPIO

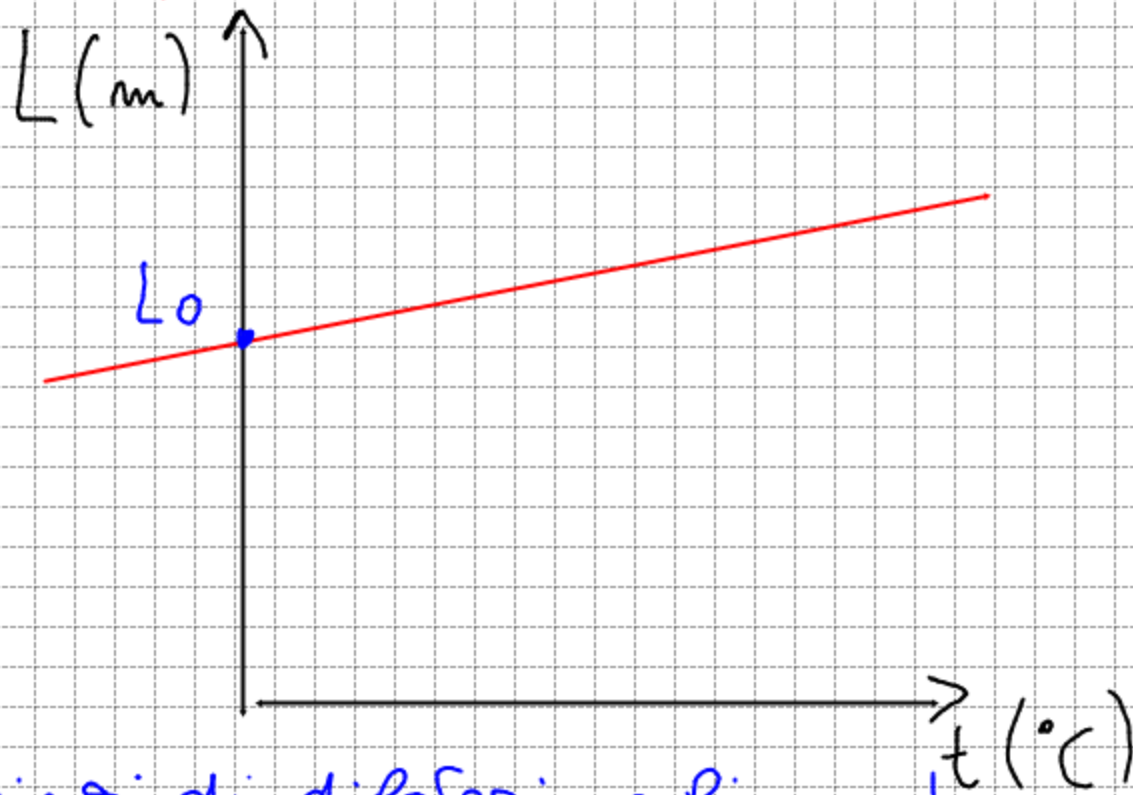
a  $t_{in} = 0^\circ\text{C}$  e  $L_{im} = L_0$  e  $\Delta t = t_{fim} - t_{in} = t_{fim} = t$

$$L_{fim} = L \quad ; \quad L = L_0 + \Delta L \quad ; \quad \Delta L = \lambda L_0 \Delta t$$

$\Delta L = \lambda L_0 t$

$$L = L_0 + \lambda L_0 t$$

$$L = L_0 (1 + \lambda t)$$



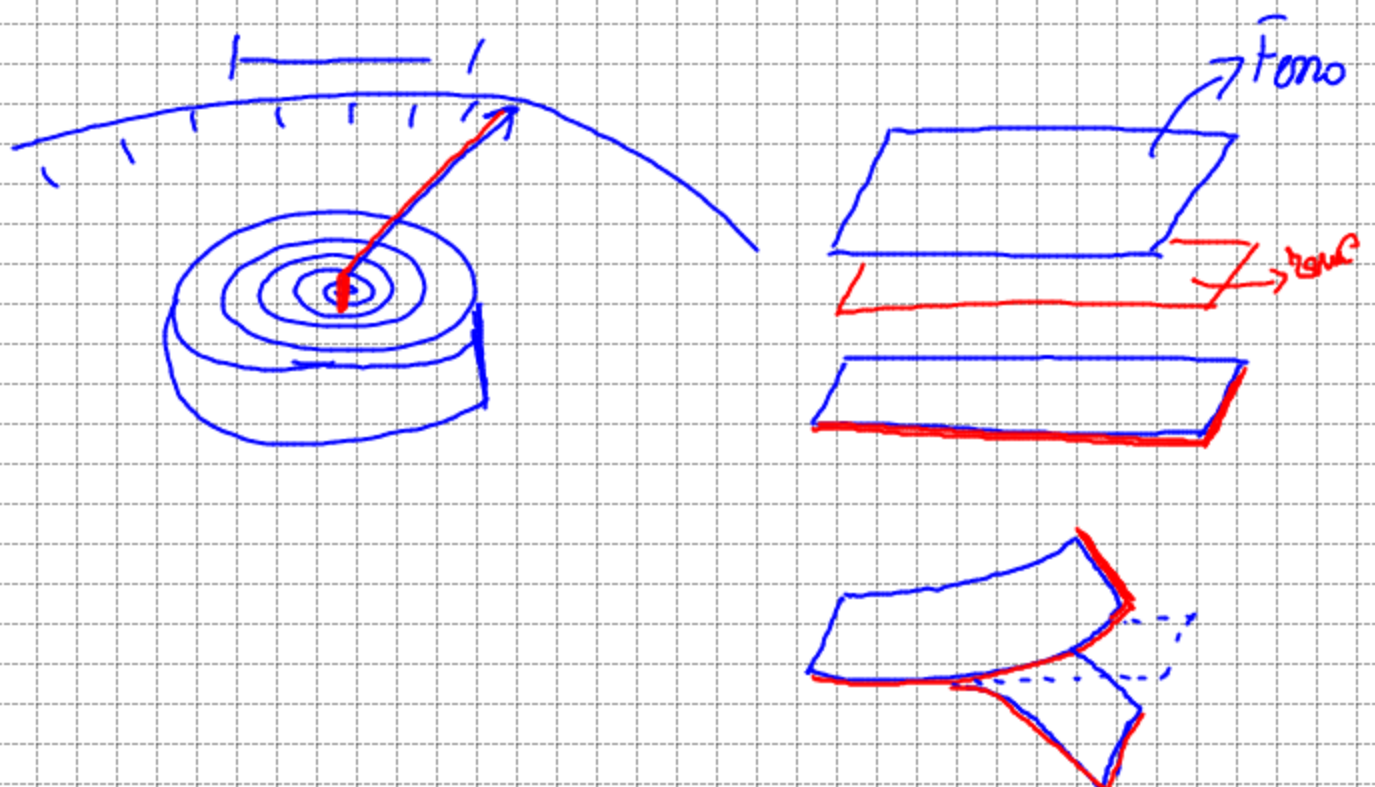
coefficienti di dilatazione lineare  $\lambda$ :

$$\lambda_{Al} \approx 23 \times 10^{-6} \frac{1}{\text{K}}$$

$$\lambda_{Fe} \approx 12 \times 10^{-6} \frac{1}{\text{K}}$$

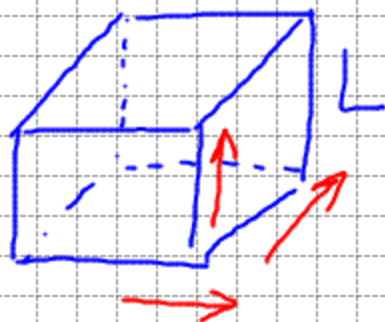
$$\lambda_{Cu} \approx 17 \times 10^{-6} \frac{1}{\text{K}}$$

$$\lambda_{vetro} \approx 9 \times 10^{-6} \frac{1}{\text{K}}$$



# DILATAZIONE VOLUMICA

2/2



$$\Delta V = V_{\text{fim}} - V_{\text{in}}$$

$$V_{\text{in}} = V$$

$$\alpha = 3\lambda$$

$$\Delta t = t_{\text{fim}} - t_{\text{in}}$$

$$\Delta V = \alpha V \Delta t$$

$$\Delta L = \lambda L \Delta t$$

$$3 L^2 \Delta L = \Delta V$$

$$\Delta V = 3 L^2 (\lambda L \Delta t)$$

$$\Delta V = 3 \lambda L^3 \Delta t$$

$\alpha$   
coeff. dilatazione  
volumica.