

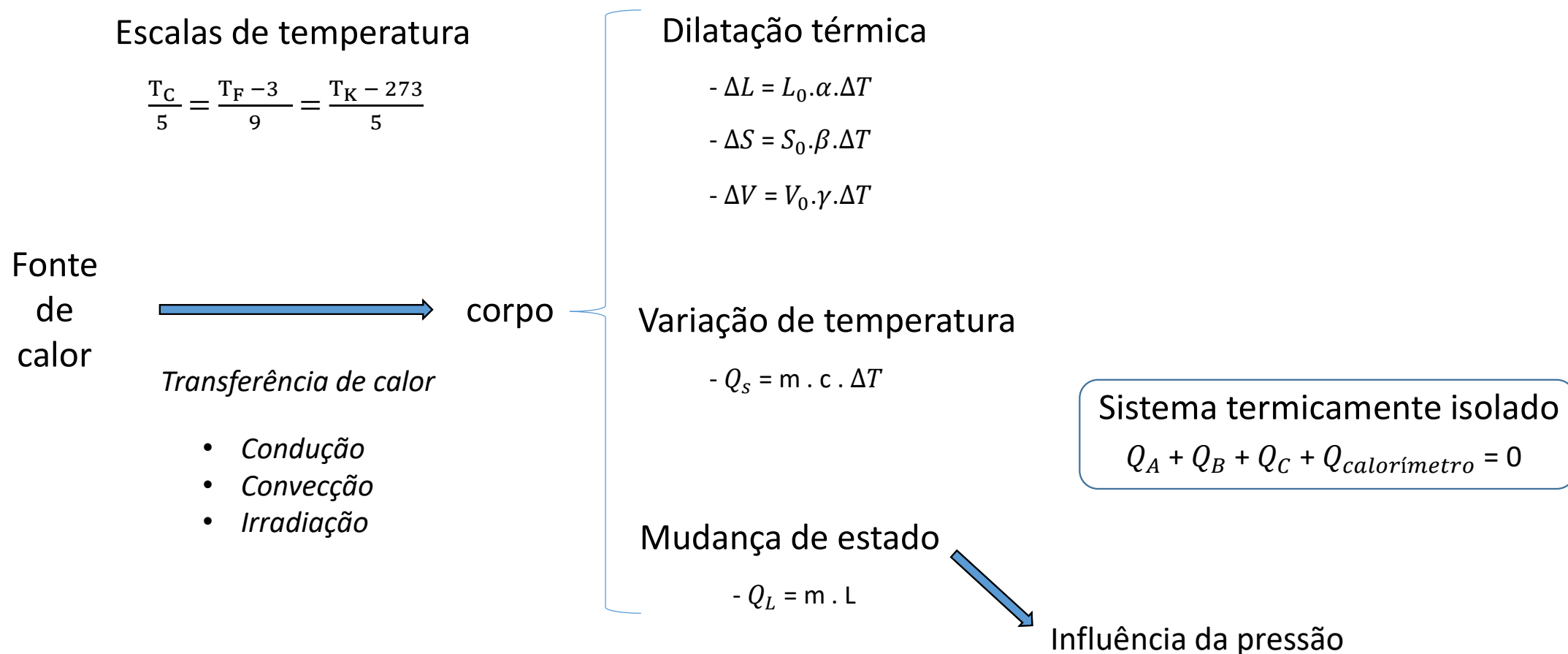
Estudo da dilatação em três dimensões (sólidos)

Aula 4 / Pg. 501 / Alfa 1

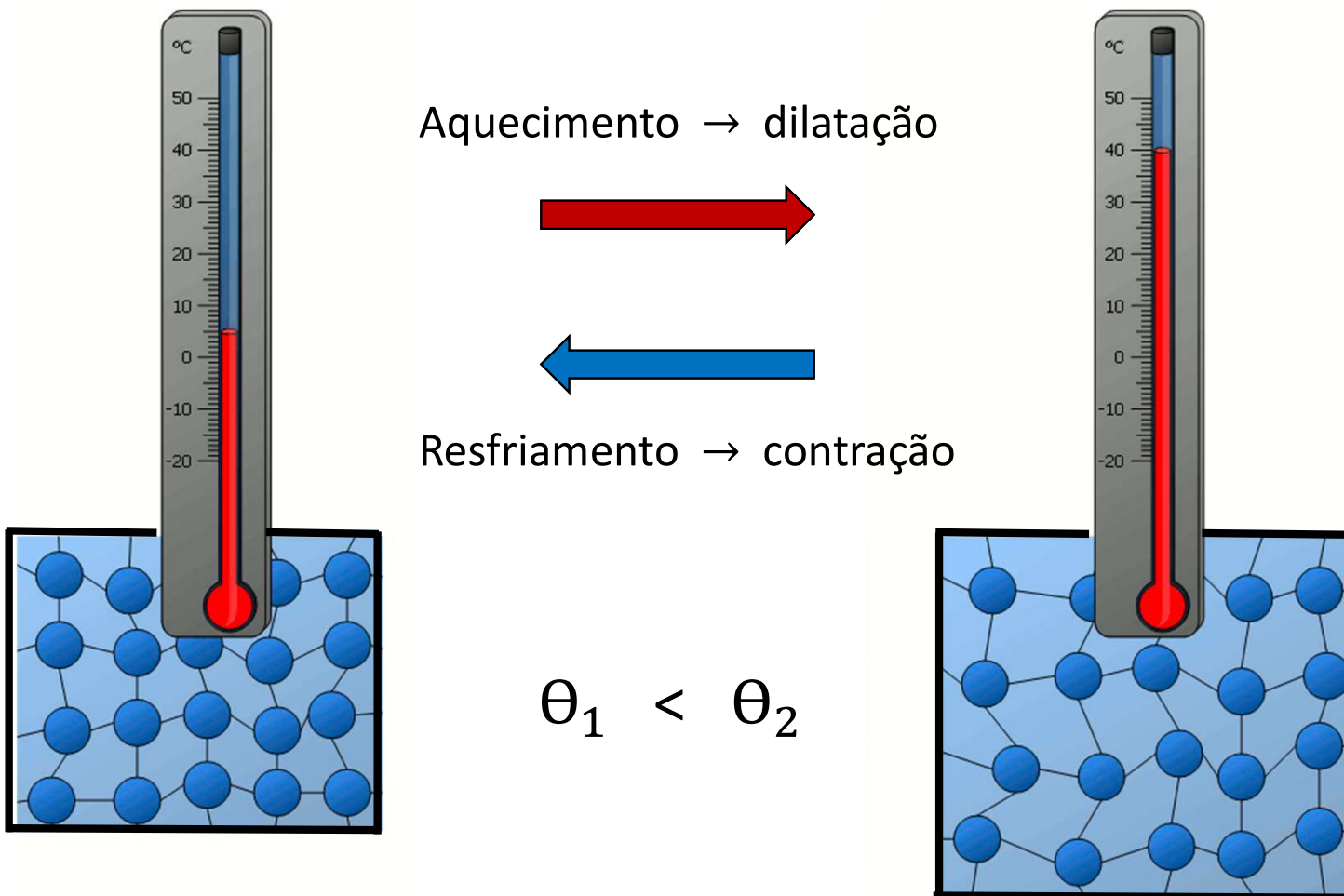
Apresentação e demais documentos: fisicasp.com.br

Professor Caio - Física C

Mapa conceitual



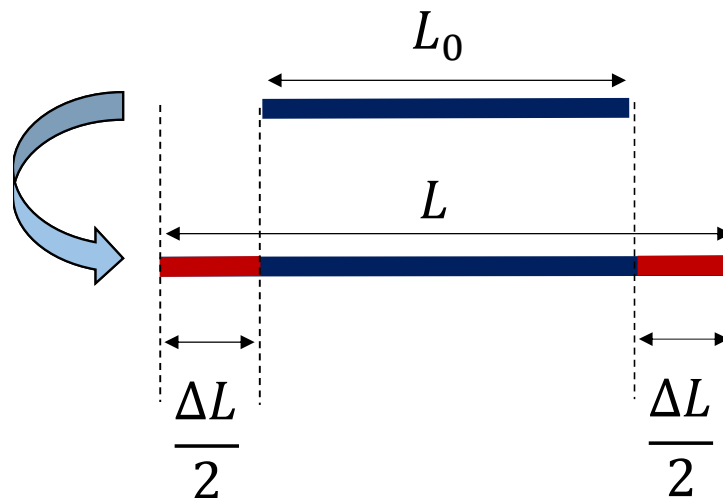
Dilatação térmica de sólidos



1. Dilatação linear (1D)

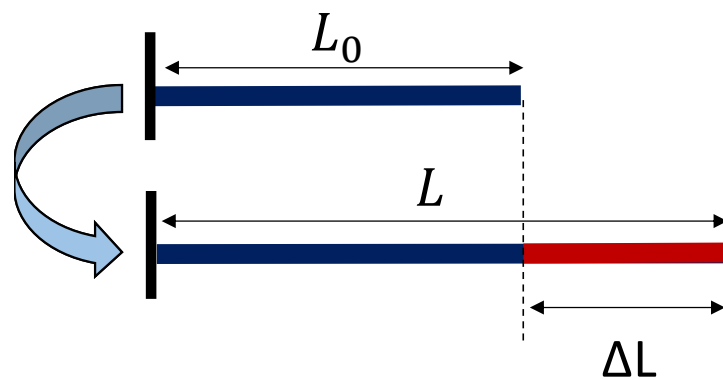
Barra livre

Aquecimento → dilatação



Barra apoiada

Aquecimento → dilatação



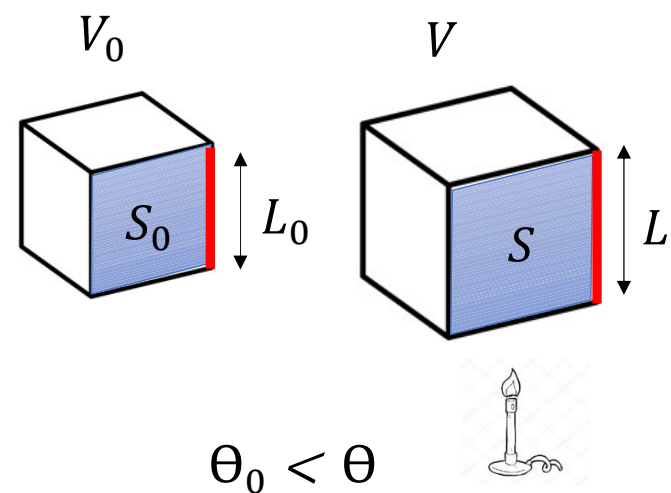
2. Equações

(1D)

Aresta – dilatação linear

(2D)

Face – dilatação superficial



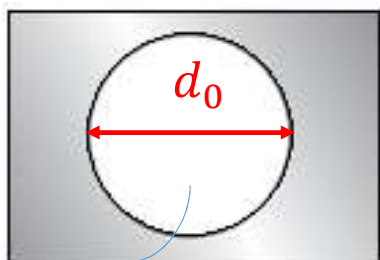
(3D)

Volume – dilatação volumétrica

Relação entre os coeficientes

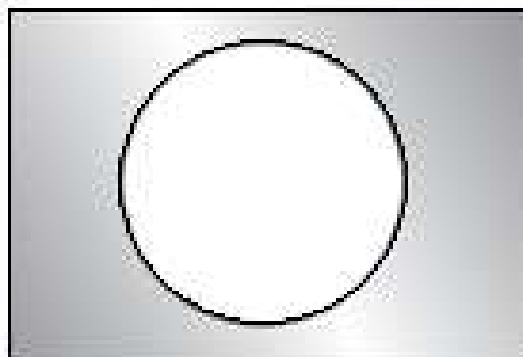
3. Corpo oco ou com furo

Exemplo: chapa metálica com furo



A_0

$$T_0 < T$$



Área do buraco

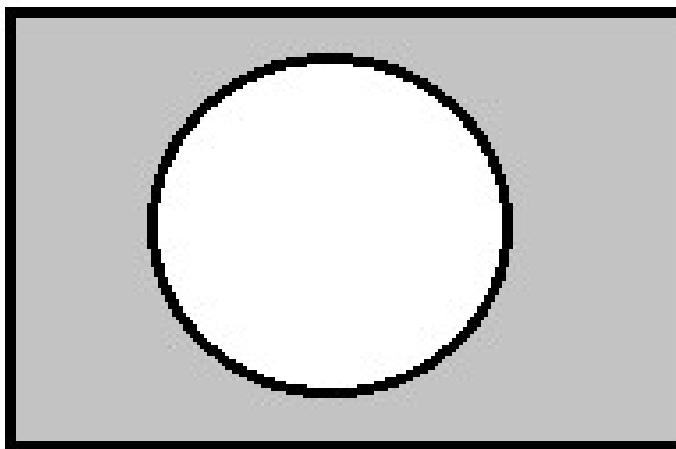
Diâmetro do buraco

Conclusões

- O furo /parte oca se comporta como se fosse maciça e preenchida pelo mesmo material que compõe a chapa /corpo.
- Aquecimento \rightarrow buraco aumenta
- Resfriamento \rightarrow buraco diminui

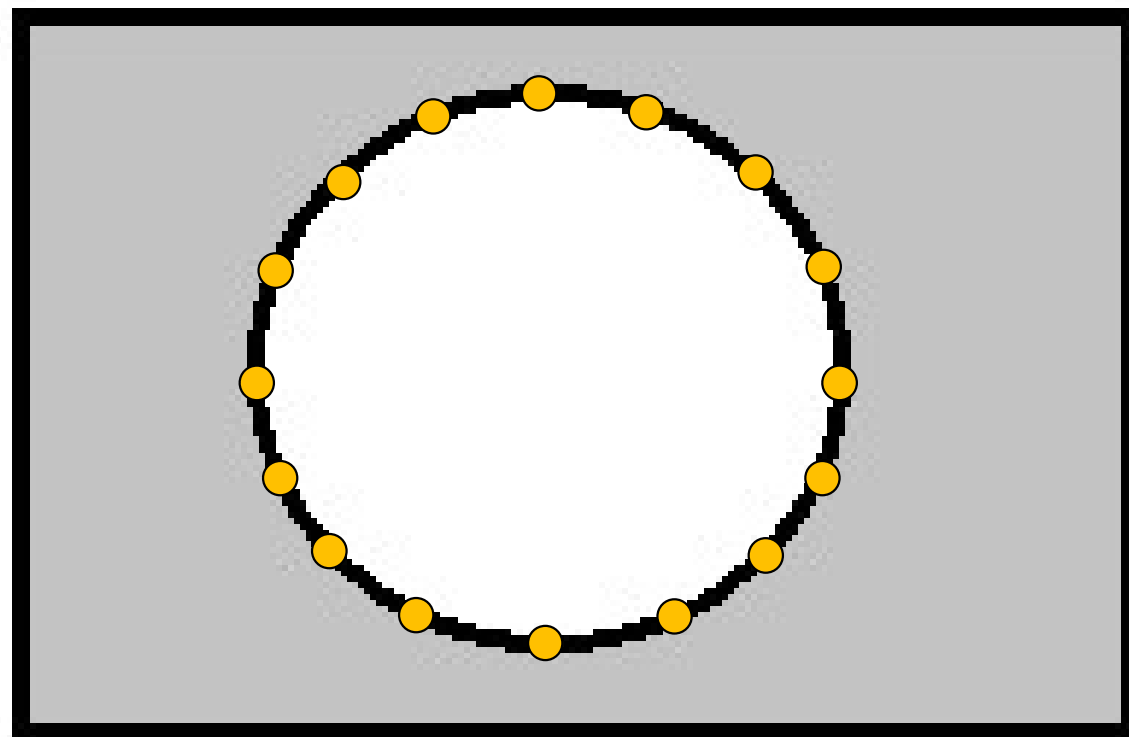
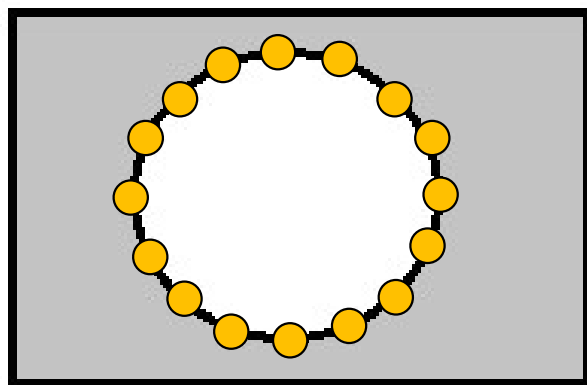
3. Corpo oco ou com furo

Chapa metálica com furo



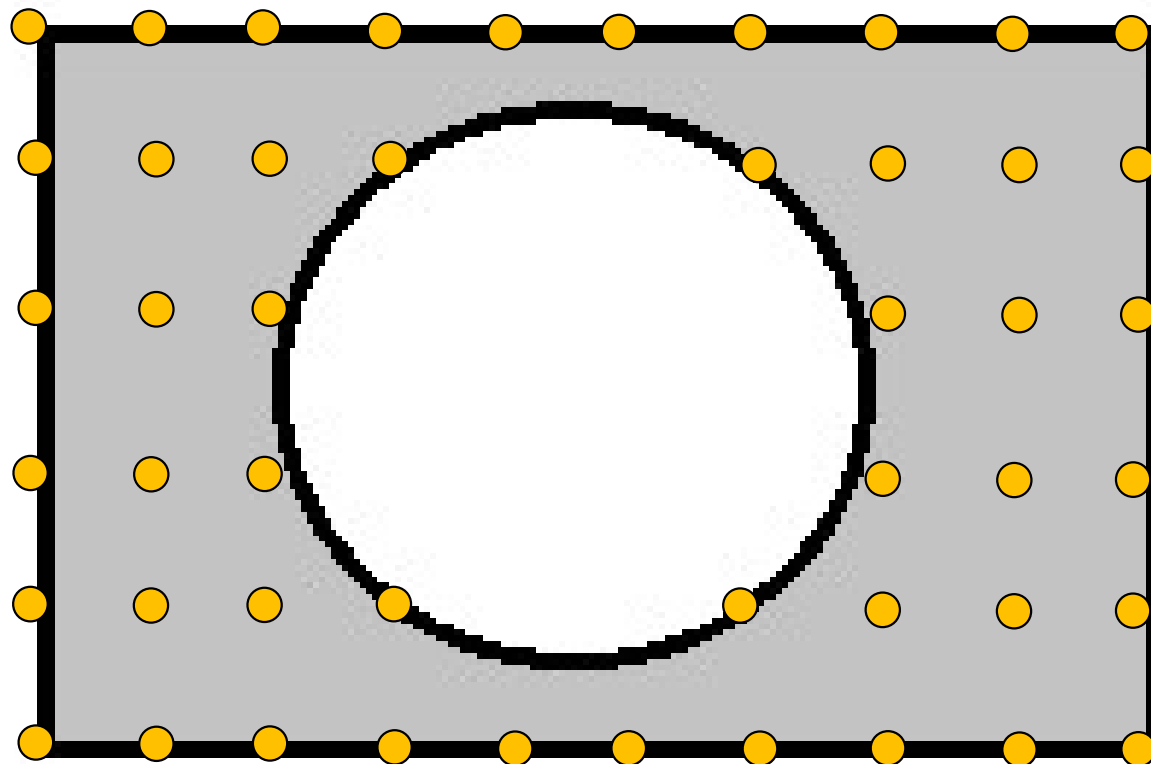
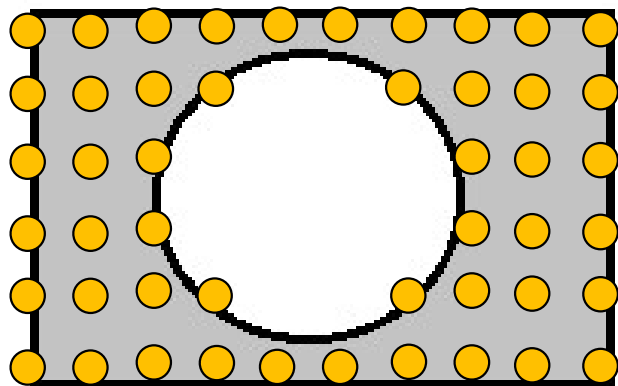
3. Corpo oco ou com furo

Chapa metálica com furo



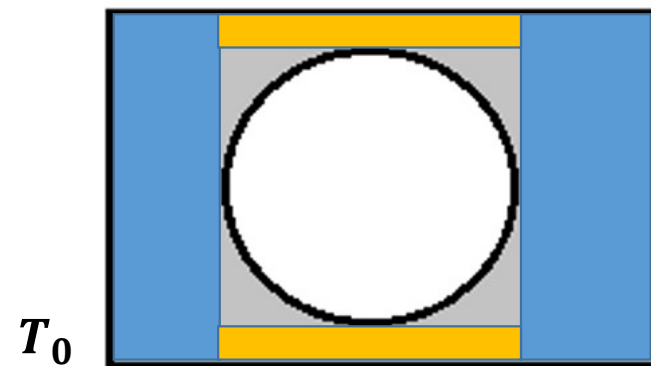
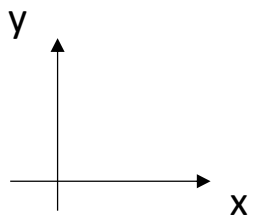
3. Corpo oco ou com furo

Chapa metálica com furo

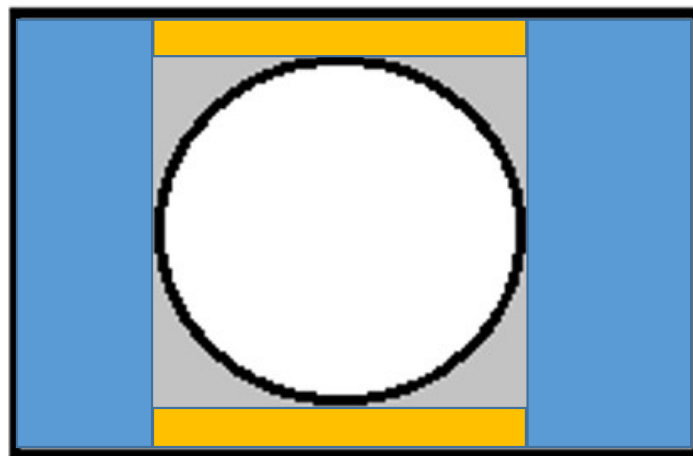


3. Corpo oco ou com furo

Chapa metálica com furo



T_0



T

$$T_0 < T$$

4. Exemplos



4. Exemplos



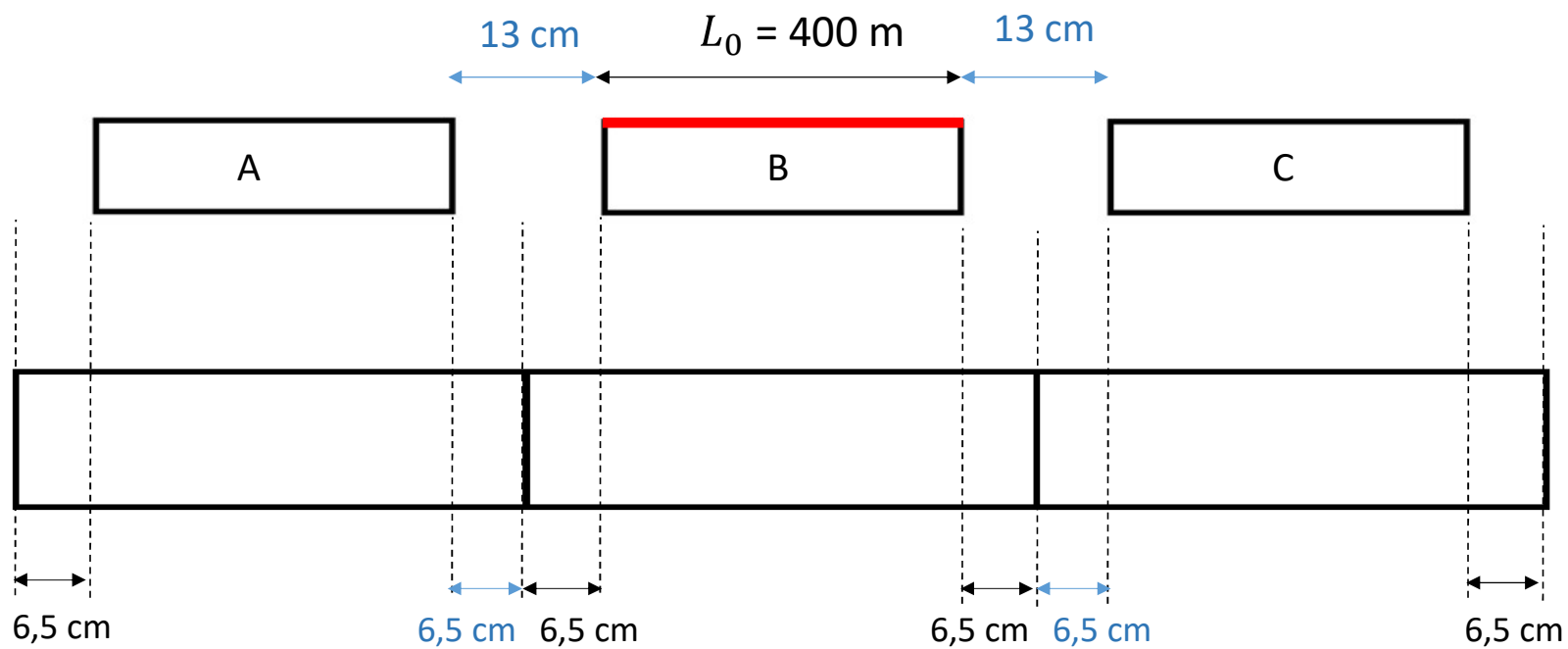
4. Exemplos



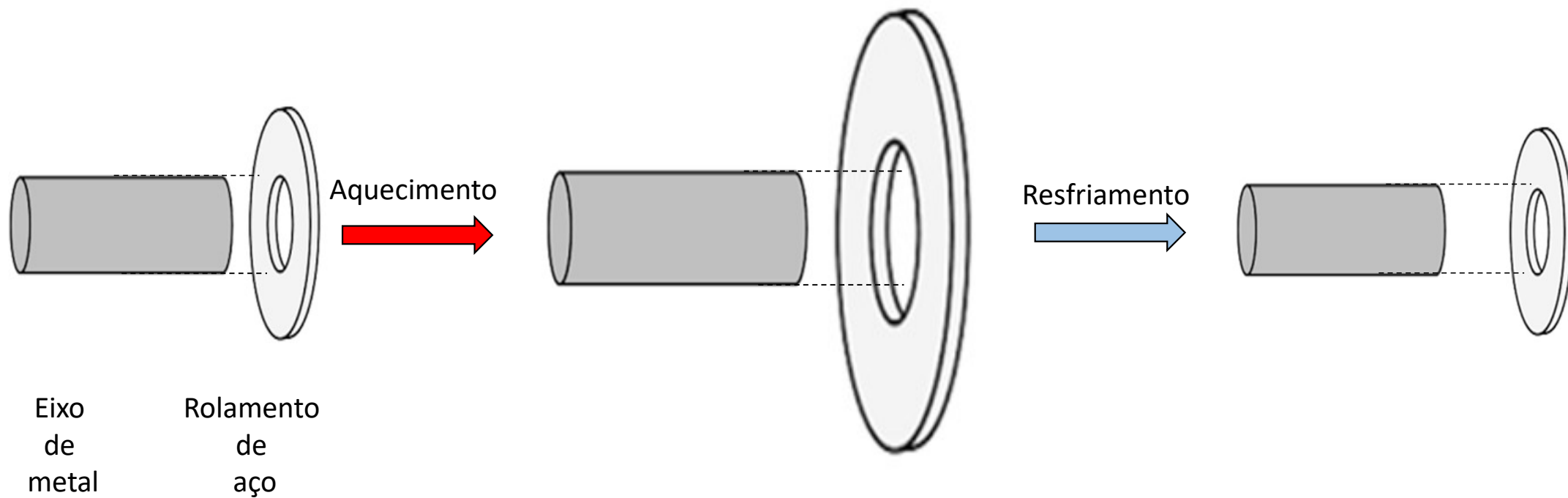
4. Exemplos



4. Exemplos



Exercício 3 da apostila Alfa



$$L_{0\text{metal}} \cong L_{0\text{aço}}$$

$$\Delta\theta_{\text{metal}} = \Delta\theta_{\text{aço}}$$

$$\alpha_{\text{metal}} < \alpha_{\text{aço}}$$

Maior $\alpha \rightarrow$ maior dilatação (aquecimento)
 Maior $\alpha \rightarrow$ maior contração (resfriamento)