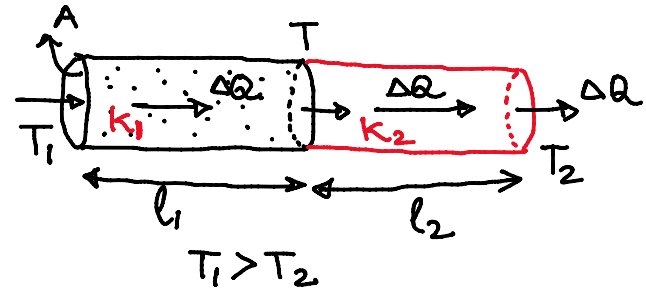


$$R = \frac{l}{\sigma A}$$

Thermal conductivity (κ) $\Leftrightarrow$ electrical conductivity (σ)

Combination of Thermal conductors:

(a) Series combination:
Heat is flowing in steady state.



For 1st conductor:

$$\frac{\Delta Q}{\Delta t} = k_1 \frac{A(T_1 - T)}{l_1} \quad \text{--- (6)}$$

For 2nd conductor

$$\frac{\Delta Q}{\Delta t} = k_2 \frac{A(T - T_2)}{l_2} \quad \text{--- (7)}$$

(1) For Junction Temp:

$$k_1 \frac{A(T_1 - T)}{l_1} = k_2 \frac{A(T - T_2)}{l_2}$$

$$\frac{k_1}{l_1} T_1 - \frac{k_1}{l_1} T = \frac{k_2}{l_2} T - \frac{k_2}{l_2} T_2$$

$$\frac{k_1}{l_1} T_1 + \frac{k_2}{l_2} T_2 = \left(\frac{k_1}{l_1} + \frac{k_2}{l_2} \right) T$$