WEEK ASSIGNMENT 1

Question:

A short summary about the conductive heat transfer and solving the same exercise with: L=0.4m ; A=20m^2 ; ΔT=25 and k=0.78W/mK using both simple method and using the resistance concept.

Summary:

Conduction heat transfer represents temperature changes due to molecular motion in solids. The transfer of heat always goes in the same direction, from high to low temperature, with tending to balance each others.

Solution:

Simple method:

$$\dot{Q} = kA\frac{\Delta T}{L} = 0.78\frac{W}{mk} * 20m^2 * \frac{25k}{0.4m} = 975W$$

Using the resistence concept:

$$Rwall = \frac{L}{kA} = \frac{0.4m}{0.78\frac{W}{mK}} * 20m^2 \approx 0.02564\frac{K}{W}$$

$$\dot{Q} = \frac{\Delta T}{Rwall} = \frac{25K}{0.02564\frac{K}{W}} \approx 976.6W$$