WEEK ASSIGNMENT 1

Question:

A short summary about the conductive heat transfer and solving the same exercise with: L= 0.4 m, A= 20 m2, ΔT= 25, and k=0.78 W/m K using both simple method and using the resistance concept.

Summary:

Conduction is transfer of heat through solid materials where differences in temperature are occurred. It happens due to transfer by molecules vibrating of their positions.

Solution:

Simple method:

$$\dot{Q} = kA\frac{\Delta T}{L} = 0.78\frac{W}{mK} * 20m2 * \frac{25K}{0.4m} = 975w$$

Using the resistance concept:

$$Rwall = \frac{L}{kA} = \frac{0.4m}{0.78\frac{W}{mK} * 20m2} \approx 0.02564\frac{K}{W}$$

$$\dot{Q} = \frac{\Delta T}{Rwall} = \frac{25K}{0.0256K\frac{K}{W}} \approx 976.6W$$