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

Short summary:

Generally, we have 3 ways of heat transferring. Conduction is one of them that heat can move between two solid or liquid and gas. in this way the heat can be transferred through the object's molecules. In fact the molecules can transfer the heat from warmer object to the cold object. This transferring need to have contact with physical objects. Because of different molecules types of solid, gas and liquid, the time of transferring in this way depends on the shape of objects.

$\dot{Q}$=$KA * \frac{\Delta T}{L}$= 0.78*20 $\frac{25}{0.4}$= 975W

R_{WALL}= $\frac{L}{KA}$= $\frac{0.4}{0.78*20}$=0.0256 ℃/W

$\dot{Q}$=$\frac{\Delta T}{R_{WALL}}$= $\frac{25}{0.0256}$=≅976.5625W