**Conduction**

Conduction:

Conduction-heat transfer between or through a solid medium

Fouriers law of conduction for one dimension

$$q\_{cd}=kA\frac{dt}{dx}$$

Where:

*qcd* =heat transfer (conduction)

 *k* =thermal conductivity (different value for different substances)

$dt$= change in temperature surface to surface (t final –t initial) ∆T

$dx$= wall thickness ∆d

Equation can be rewritten to establish heat transfer/area

$$\frac{q}{A}=k\frac{dt}{dx}$$

What is the heat loss per area if a 10cm thick piece of wood wall experiences a temperature decrease of 15$°C$ from the inside of a building to the outside of a building. kwood = 0.17 (watts/(m°C)

$\frac{q}{A}=0.17\frac{watts}{m °C}\frac{15℃}{10cm}\frac{100cm}{m}=\frac{25.5watts}{m^{2}}$

23°C

Inside

8°C

Outside

The watt is a derived unit of power.

 The unit is defined as one joule per second and

measures the rate of energy conversion or transfer.