Physics

Conduction and convection

Conduction

- Transfer of heat When vibrating particles pass energy to their neighbouring particle
- Happens mostly in solids
- When heated particles vibrate faster they collide more and transfer energy from hotter to colder area
- heat energy moves as thermal energy
- thermal conductivity is how fast a material Transfer energy
- High conductivity means quick transfer heat

Example of conduction

- heating a pan

stove heats the pan, pan heats the food

- Ironing clothes

hot iron transverse heat to cooler fabric and it removes wrinkles

Convection

- Transfer of heat when energetic particles move from hotter region to cold a region

- it happens only in liquids and gases
- Process is like when we heat something particles move faster gaps between them increases and density decreases
- Low density particles that are called hot particles will rise
- high density particles that are called Cold particles will sink
- this will create a Convection current

Formula

Density = Mass / Volume

Mass= density x volume

Volume = mass/ density

Reducing unwanted energy transfer

It is important because to save heat at home and to reduce heating costs

Lubrication insulation are the two ways we can reduce unwanted energy transfer

Lubrication:

- Moving surfaces cause friction and friction produces heat
- use lubricants to reduce friction and heat loss

Insulation

- Insulation slows down heat transfer
- Thicker walls with low conductivity means less heat loss
- Examples of insulation are
- Cavity wall insulation
- Loft of insulation

Cavity wall insulation

- wall has inner and outers layers with air gaps
- air gaps reduces conduction
- filling gap with foam reduces Convection too

Loft Insulation

- Fibre glass wool placed in the roof or ceiling
- reduces heat loss by conduction and convection
- Examples are double glazed Windows and draught excluders
- double glazed Windows
- Work like cavity walls with two layers with air gap
- Draughts excluders
- It is placed on the doors and windows and

- **It stop warm air escaping and it reduce convection**