

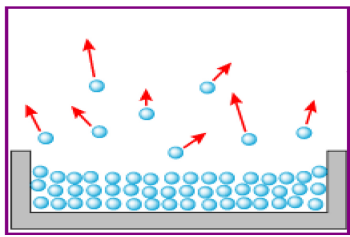
# HEAT TRANSFER

**CONVECTION:** *How does a glider fly?*  
 Convection is the method of heat transfer through **FLUIDS (liquids & gases)**  
 The particles in the fluid gain energy, **move faster** and **spread apart**  
 This causes the warmer parts of the fluid to **expand** and **become less dense**  
 The **warmer fluid rises** and cooler fluid takes its place  
 The process repeats and we now have a **convection current** flowing

**CONDUCTION:** *Why do we make our cooking pans out of metal?*  
 Conduction is the method of heat transfer through **SOLIDS**  
 Metals are much better at conducting heat because they contain **free electrons**  
 This is because the ions and free electrons **gain kinetic energy** from the heat source  
 The free electrons transfer energy by **collisions** with ions. Energy is also transferred by collisions between neighbouring vibrating ions

**RADIATION:** *How does the Sun's energy reach us?*  
**ALL** objects **emit** infra-red radiation  
 The **hotter** the object the **more** radiation it gives off  
 Infra-red radiation is a wave found in the **electromagnetic spectrum** and can travel through a **vacuum**

**TOP TIP:**  
**Dark, matt** surfaces are **good absorbers** and **good emitters** of infra-red radiation whereas **light, shiny** surfaces are **good reflectors**



**EVAPORATION:** *Why does your skin feel cold when a liquid evaporates off it?*  
 The particles with the **most energy** will be able to break away from the other particles  
 These particles **escape** from the surface of the liquid  
 So the **average energy** of the remaining particles goes down  
 And the **lower the average energy** of molecules the **lower the temperature** of the liquid

**KEY WORDS:**  
**CONDUCTION, CONVECTION, RADIATION, FREE ELECTRONS, INSULATORS, EMITTERS, ABSORBERS, REFLECTOR, DENSE, FLUID, CONVECTION CURRENT, EVAPORATION**

