Chapter 5 chemistry

Energy changes in chemical reaction

- Energy changes happen in all chemical reactions
- This can make things heat up or cool down
- Every chemical store energy and different chemical so different amount

Energy in reactions

- If products have more energy than reactants so they took energy from the surrounding
- If products have less energy than reactants so they give extra energy to the surrounding
- Total energy never changes energy can't be made or destroyed it only moves from one place to another

Exothermic reactions

- Exothermic reactions give out energy to this surrounding
- usually heat is released and temperature rises up
- burning fuels releases lots of heat
- Neutralization releases heat

- Neutralization is the process When acid and base are mixed together so they will produce water and this process will release heat
- Oxidation reactions gives off energy
- Hand warmers
- self heating drinking can

Endothermic reaction

- Endothermic reactions take in energy from the surrounding
- temperature goes down
- thermal decomposition, heating calcium carbonate will produce calcium oxide and carbon dioxide
- melting of Ice and cold packs

Bond energy

Why Reactions happen

- reaction happen because old Bond break and new bonds form

- Breaking Bond need energy so it is endothermic
- forming Bond releases energy so it is exothermic

When burning wood bonds in wood break and new bonds in carbon dioxide and water is formed and heat is released

Reaction profile

What is reaction profile
A graph showing energy changes in a reaction is called reaction profile

It shows

- **energy of reactants**
- **energy of products**
- **how energy changes during the reaction**

Exothermic reaction profile

- **Products lower energy than reactants and energy is released**
- **Small rise at start and it is called activation energy**
- **Activation energy is energy needed to start a reaction**

Endothermic reaction profile

- **Products higher energy then reactant because energy is taken in**

- Rise show energy absorb from the surrounding

Activation energy

- activation energy is the minimum energy needed for reactants to collide and react
- more activation energy it is harder to start the reaction
- It may need a lot of heat to begin the reaction
- example is lighting match requires friction to give enough energy to start a reaction