Yr8 Chapter 6.3 Types of Reactions
Knowledge organiser

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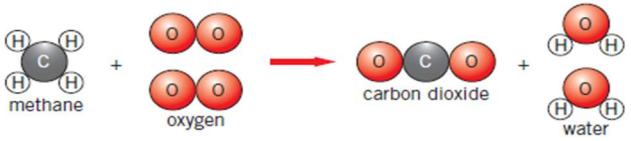
Chemical reactions

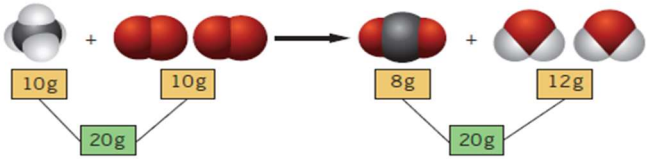
- Word equations can represent a **chemical reaction:**



- The **reactants** are on the left side of the arrow and the **products** are on the right side of the arrow
- We use an arrow instead of an equals sign as it represents that the reactants are changing into a new substance
- In a reaction, the amount of each type of atom stays the same, however they are rearranged to form a new product

Conservation of mass

- In a reaction the mass will be **conserved**, this means that the total mass of the reactants will be equal to the total mass of the products
- If it appears that some of the mass has been lost, this means that a gas has been produced and escaped, accounting for the lost mass



Balanced symbol equations show the amounts of all of the individual atoms in a reaction

- The symbols used are from the Periodic Table
- They also show:
  - Formulae of reactants and products
  - How the atoms are rearranged
  - Relative amounts of reactants and products

$$2H_2 + O_2 \rightarrow 2H_2O$$

Combustion

- **Combustion** is the burning of a **fuel** in oxygen
- A fuel is a substance which stores energy in a chemical store
- Examples of fuels include petrol, diesel, coal and hydrogen
- When a carbon based fuel undergoes combustion, it will produce water and carbon dioxide

methane + oxygen → carbon dioxide + water

- Hydrogen can also be used as a fuel, this is much better than traditional fossil fuels as it does not produce carbon dioxide:

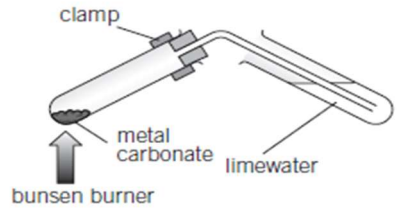
hydrogen + oxygen → water

Thermal decomposition

- A **thermal decomposition** reaction is one where the reactants are broken down (decomposition) using heat (thermal energy)
- An example of this is with metal carbonates:

zinc carbonate → zinc oxide + carbon dioxide

- We can test for this carbon dioxide by bubbling the gas through limewater, if the limewater turns cloudy, the gas is carbon dioxide



Key Terms

Balance symbol equation chemical bond products fuel chemical reaction combustion conserved reactants conservation of mass decomposition thermal decomposition