

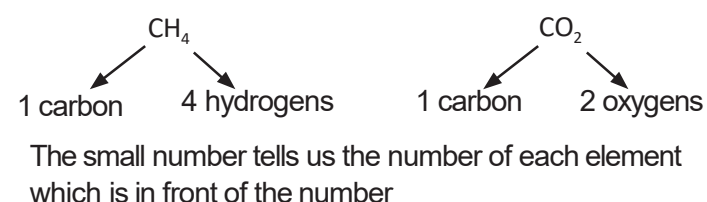
Elements and the periodic table

- An **element** is a substance that only contains one type of atom, it is found on the **Periodic Table**
- Each element has its own unique chemical symbol which is the same in every language, these are also found on the Periodic Table
- An **atom** is the smallest part of which an element can be broken down into
- As there are around 100 types of elements that can occur naturally, there are around 100 different atoms

Compounds

- Compounds** are formed when two or more different elements chemically bond together
- The compound will have different **physical properties** to the elements which make up the compound, for example water is a liquid, but it is made from oxygen and hydrogen which are both gases
- Compounds are hard to separate and need a chemical reaction to do this

- When naming a compound, we always mention the metal first and the non metal second
- The name of the metal will not change but the name of the non metal will, for example oxygen can change to oxide
- Chemical formulae tell us how many atoms of each element are in the compound in relation to each other



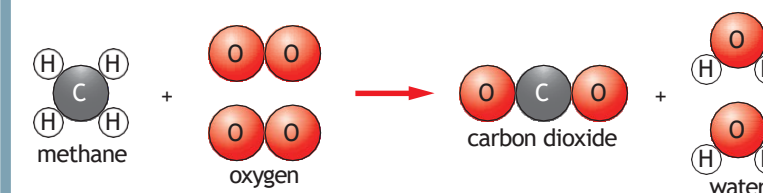
																		group number					0		
1	2																			He					
Li	Be																			B	C	N	O	F	Ne
Na	Mg																			Al	Si	P	S	Cl	Ar
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr								
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe								
Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn								
Fr	Ra																								

Groups and periods

- Groups** are the columns in the Periodic Table, they go downwards
- Periods** are the rows in the Periodic Table, they go sideways
- Elements in the same group normally follow the same trends in properties such as melting point, boiling point and reactivity
- By placing these elements into these groups, scientists can make predictions about their properties

Chemical reactions

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

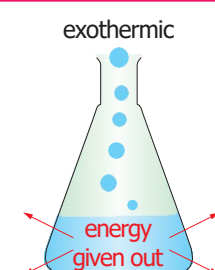


- The **reactants** are on the left side of the arrow and the **products** are on the right side of the arrow
- We use an arrow instead of an equals sign as it represents that the reactants are changing into a new substance
- In a reaction, the amount of each type of atom stays the same, however they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

Exothermic and endothermic reactions

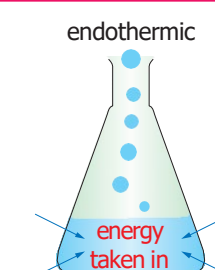
Exothermic reactions involve a transfer of energy from the reactants to the surroundings

- As energy is transferred to the surroundings this will show an increase in temperature
- Examples of exothermic reactions include combustion, freezing, and condensing



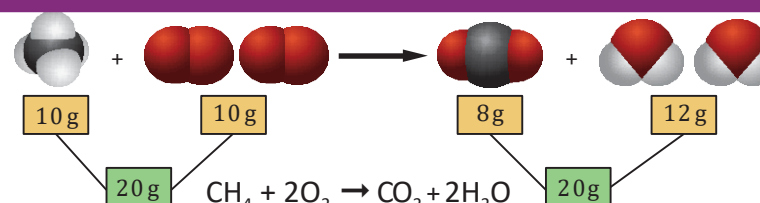
Endothermic reactions involve a transfer of energy from the surroundings to the reactants

- As energy is taken into the reactants a decrease in temperature will be shown
- Examples of endothermic reactions include thermal decomposition, melting, and boiling



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 show:

- Formulae of reactants and products.
- How the atoms are rearranged.
- Relative amounts of reactants and products



Key terms

Make sure you can write definitions for these key terms.

atom	compound	conserved	displacement reaction	element	group	Group 1	Group 7	Group 0	halogen	balanced symbol equation	chemical bond
Conservation of mass	Period	Periodic Table	physical properties	endothermic		polymer	trend	chemical reaction	fuel	products	reactants