

Summary – “Chemicals”

Signs of a Chemical Reaction

The three **main signs** that a chemical reaction has happened are a **colour change**, **solid produced** (goes cloudy) or a **gas is given off** (fizzing/bubbles).

Chemical Reactions and Energy

A chemical reaction often turns **chemical energy** into **light**, **sound** and **heat** energy.

Elements

The **elements** are the **simplest “building blocks”** that make up us, the earth and the universe. They are listed in the **Periodic Table**.

Metals and Non-Metals

You can mark the **metals** and the **non metals** by drawing a **staircase** down the periodic table (see over). **Metals conduct** electricity. Most **non-metals do not conduct** electricity **apart from carbon** which does.

Groups (columns) of elements

The elements are arranged in “**families**” or “**groups**” which are the **columns** in the Periodic Table. They have numbers from 1-8/0. Some of the families also have names.

Alkali Metals

The **alkali metals** are **group 1** in the Periodic Table. They **react violently with water** producing **hydrogen gas** and the **hydroxide** of the alkali metal.

e.g. lithium + water → lithium hydroxide

Noble Gases

The **noble gases** are **group 8/0** of the Periodic Table. Most of the time, they **do not react with anything** which is why they are called “noble”. They are often used in lights

Halogens

The **halogens** are **group 7** of the Periodic Table. They are quite reactive.

Compounds and Mixtures

A **compound** is **more than one element joined together**. In a **mixture**, the **elements are not joined together**. Compounds with **only two elements** in them get their names from the **name of the two elements with “ide” at the end**. If there is a **metal**, it is **written first**. If a compound name ends in “**ate**”, then it contains **oxygen**.

e.g. iron + oxygen → iron oxide

e.g. sulphur + chlorine → sulphur chloride

e.g. iron + carbon + oxygen → iron carbonate

Writing down Chemical Reactions

A chemical reaction can be **written** with the **reactants** (things you start with) on the **left** and the **products** (things you end up with) on the **right** with an **arrow** pointing between them.

e.g. hydrogen + oxygen → hydrogen oxide

The Periodic Table

Metals ← → Non-metals

Group	1	2	3	4	5	6	7	8	9	10	11	12																																																																																																									
Group 1 (alkali metals)	3 Li Lithium	4 Be Beryllium	5 B Boron	6 C Carbon	7 N Nitrogen	8 O Oxygen	9 F Fluorine	10 Ne Neon	Group 8/0 (Noble Gases)	11 Na Sodium	12 Mg Magnesium	13 Al Aluminium	14 Si Silicon	15 P Phosphorus	16 S Sulfur	17 Cl Chlorine	18 Ar Argon	19 K Potassium	20 Ca Calcium	21 Sc Scandium	22 Ti Titanium	23 V Vanadium	24 Cr Chromium	25 Mn Manganese	26 Fe Iron	27 Co Cobalt	28 Ni Nickel	29 Cu Copper	30 Zn Zinc	31 Ga Gallium	32 Ge Germanium	33 As Arsenic	34 Se Selenium	35 Br Bromine	36 Kr Krypton	37 Rb Rubidium	38 Sr Strontium	39 Y Yttrium	40 Zr Zirconium	41 Nb Niobium	42 Mo Molybdenum	43 Tc Technetium	44 Ru Ruthenium	45 Rh Rhodium	46 Pd Palladium	47 Ag Silver	48 Cd Cadmium	49 In Indium	50 Sn Tin	51 Sb Antimony	52 Te Tellurium	53 I Iodine	54 Xe Xenon	55 Ba Barium	56 Ra Radium	57 La Lanthanum	58 Ce Cerium	59 Pr Praseodymium	60 Nd Neodymium	61 Pm Promethium	62 Sm Samarium	63 Eu Europium	64 Gd Gadolinium	65 Tb Terbium	66 Dy Dysprosium	67 Ho Holmium	68 Er Erbium	69 Tm Thulium	70 Yb Ytterbium	71 Lu Lutetium	72 Hf Hafnium	73 Ta Tantalum	74 W Tungsten	75 Re Rhenium	76 Os Osmium	77 Ir Iridium	78 Pt Platinum	79 Au Gold	80 Hg Mercury	81 Tl Thallium	82 Pb Lead	83 Bi Bismuth	84 Po Polonium	85 At Astatine	86 Rn Radon	87 Fr Francium	88 Ra Radium	89 Ac Actinium	90 Th Thorium	91 Pa Protactinium	92 U Uranium	93 Np Neptunium	94 Pu Plutonium	95 Am Americium	96 Cm Curium	97 Bk Berkelium	98 Cf Californium	99 Es Einsteinium	100 Fm Fermium	101 Md Mendelevium	102 No Nobelium	103 Lr Lawrencium	104 Rf Rutherfordium	105 Db Dubnium	106 Sg Seaborgium	107 Bh Bohrium	108 Hs Hassium	109 Mt Meitnerium	110 Ds Darmstadtium	111 Rg Roentgenium	112 Cn Copernicium	113 Uut Ununtrium	114 Fl Flerovium	115 Uup Ununpentium	116 Lv Livermorium	117 Uus Ununseptium	118 Uuo Ununoctium

 **Liquids**

 **Gases**

 **1**
H
Hydrogen

77 La Lanthanum	78 Ce Cerium	79 Pr Praseodymium	80 Nd Neodymium	81 Pm Promethium	82 Sm Samarium	83 Eu Europium	84 Gd Gadolinium	85 Tb Terbium	86 Dy Dysprosium	87 Ho Holmium	88 Er Erbium	89 Tm Thulium	90 Yb Ytterbium	91 Lu Lutetium	92 U Uranium	93 Np Neptunium	94 Pu Plutonium	95 Am Americium	96 Cm Curium	97 Bk Berkelium	98 Cf Californium	99 Es Einsteinium	100 Fm Fermium	101 Md Mendelevium	102 No Nobelium
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