

The Periodic Table of Elements

Group 1 +	Group 2 2+											Group 3 3+	Group 4 no ions	Group 5 3-	Group 6 2-	Group 7 -	4 He 2
7 Li 3	9 Be 4	Transition metals many different ions										11 B 5	12 C 6	14 N 7	16 O 8	19 F 9	20 Ne 10
23 Na 11	24 Mg 12											27 Al 13	28 Si 14	31 P 15	32 S 16	35.5 Cl 17	40 Ar 18
39 K 19	40 Ca 20	45 Sc 21	48 Ti 22	51 V 23	52 Cr 24	55 Mn 25	56 Fe 26	59 Co 27	59 Ni 28	63.5 Cu 29	65 Zn 30	70 Ga 31	73 Ge 32	75 As 33	79 Se 34	80 Br 35	84 Kr 36
85 Rb 37	88 Sr 38	89 Y 39	91 Zr 40	93 Nb 41	96 Mo 42	99 Tc 43	101 Ru 44	103 Rh 45	106 Pd 46	108 Ag 47	112 Cd 48	115 In 49	119 Sn 50	122 Sb 51	128 Te 52	127 I 53	131 Xe 54
133 Cs 55	137 Ba 56	La-Lu 57-71	178 Hf 72	181 Ta 73	184 W 74	186 Re 75	190 Os 76	192 Ir 77	195 Pt 78	197 Au 79	201 Hg 80	204 Tl 81	207 Pb 82	209 Bi 83	210 Po 84	210 At 85	222 Rn 86
223 Fr 87	222 Ra 88	Ac-Lr 89-103	metals													non-metals	

Metal & Non-metal

IONIC BONDING → electrons are transferred to make ions.

Non-metal(s) only

COVALENT BONDING → electrons are shared between atoms.

Metal(s) only

METALLIC BONDING → sea of delocalised electrons holds atoms together.

Group number = number of outer-shell electrons

Period number = number of shells of electrons



Science Exams Sorted – Useful Chemical Data

Common ions			
Positive ions (cations)		Negative ions (anions)	
Group 1	+	Group 5	3-
Group 2	2+	Group 6	2-
Group 3	3+	Group 7	-
Silver	Ag ⁺	Hydroxide	OH ⁻
Zinc	Zn ²⁺	Nitrate	NO ₃ ⁻
Ammonium	NH ₄ ⁺	Cyanide	CN ⁻
Iron (II)	Fe ²⁺	Hydrogencarbonate	HCO ₃ ⁻
Iron (III)	Fe ³⁺	Sulphate	SO ₄ ²⁻
Copper (II)	Cu ²⁺	Carbonate	CO ₃ ²⁻
Lead (II)	Pb ²⁺	Sulphite	SO ₃ ²⁻

Acid reaction rules
Acid + alkali → salt + water
Acid + base → salt + water
Acid + metal → salt + hydrogen gas
Acid + carbonate → salt + carbon dioxide + water

Solubilities	
Note: All group 1 compounds and ammonium compounds are soluble.	
Salts	Most are soluble with some exceptions
Nitrates & ethanoates	All soluble.
Sulphates	All soluble. Except BaSO ₄ , PbSO ₄ & CaSO ₄ .
Halides (Cl, Br, & I)	All soluble. Except when containing silver (Ag) and lead (Pb).

Bases & Carbonates	Are insoluble with the exceptions below.
Carbonates	All insoluble. Except Na ₂ CO ₃ , K ₂ CO ₃ & (NH ₄) ₂ CO ₃ .
Hydroxides	All insoluble. LiOH, NaOH, KOH, Ca(OH) ₂ .
Oxides	All insoluble. Though group 1 & 2 oxides react with water.

Common acids	
Hydrochloric acid	HCl
Sulphuric acid	H ₂ SO ₄
Nitric acid	HNO ₃



Common alkalis	
Lithium hydroxide	LiOH
Sodium hydroxide	NaOH
Potassium Hydroxide	KOH

Common Covalent Elements and Compounds			
Hydrogen	H ₂	Carbon dioxide	CO ₂
Oxygen	O ₂	Water	H ₂ O
Nitrogen	N ₂	Ammonia	NH ₃