

Chemistry: The Periodic Table

Key word	Definition
Properties	How something looks or how it behaves
Density	The mass of a material in a certain volume
Malleable	Can be bent and shaped
Ductile	Can be pulled into wires
Brittle	Easily broken
Atomic Number	Number of protons
Ion	A charged atom

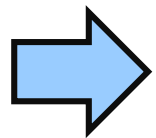
Alkali formers	Salt formers
Li 7	Cl 35.5
Na 23	Br 80
K 39	I 127

Newlands' Octaves (his 'Periodic Table' of 1866)

H	Li	Ga	B	C	N	O
F	Na	Mg	Al	Si	P	S
Cl	K	Ca	Cr	Ti	Mn	Fe
Co, Ni	Cu	Zn	Y	In	As	Se
Br	Rb	Sr	Ce, La	Zr	Di, Mo	Ro, Ru
Pd	Ag	Cd	U	Sn	Sb	Te
I	Cs	Ba, V	Ta	W	Nb	Au
Pt, Ir	Tl	Pb	Th	Hg	Bi	Th

Mendeleev's Table of the Elements

H											B	C	N	O	F													
Li	Be											Al	Si	P	S	Cl												
Na	Mg											K	Ca	*	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	*	*	As	Se	Br
Rb	Sr	Y	Zr	Nb	Mo	*	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I												
Cs	Ba	*	*	Ta	W	*	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi														



Early 1800s: Döbereiner & Newland
 Arranged by:

- Physical and chemical properties
- Relative atomic mass

Mendeleev (1869) did 3 things:

- Grouped together elements with **similar properties**
- Put elements in order of **relative atomic mass**
- Left **gaps** for unknown elements & predicted their properties

- Metals**
- Left of the periodic table
 - Form **positive ions** by losing electrons
 - Good conductors of heat and electricity
 - High melting and boiling points
 - High density
 - Ductile
 - Malleable

The Modern Periodic Table:

- In order of increasing **atomic number**
- Elements with similar **properties** form columns
- The group number shows how many electrons are in the outer shell
- Groups** are the columns, **periods** are the rows

Key: relative atomic mass, atomic symbol, atomic (proton) number

1	2											3	4	5	6	7	0
7 Li lithium 3	9 Be beryllium 4											11 B boron 5	12 C carbon 6	14 N nitrogen 7	16 O oxygen 8	19 F fluorine 9	20 Ne neon 10
23 Na sodium 11	24 Mg magnesium 12											27 Al aluminium 13	28 Si silicon 14	31 P phosphorus 15	32 S sulphur 16	35.5 Cl chlorine 17	40 Ar argon 18
39 K potassium 19	40 Ca calcium 20	45 Sc scandium 21	48 Ti titanium 22	51 V vanadium 23	52 Cr chromium 24	55 Mn manganese 25	56 Fe iron 26	59 Co cobalt 27	59 Ni nickel 28	63.5 Cu copper 29	65 Zn zinc 30	70 Ga gallium 31	73 Ge germanium 32	75 As arsenic 33	79 Se selenium 34	80 Br bromine 35	84 Kr krypton 36
85 Rb rubidium 37	88 Sr strontium 38	89 Y yttrium 39	91 Zr zirconium 40	93 Nb niobium 41	96 Mo molybdenum 42	[98] Tc technetium 43	101 Ru ruthenium 44	103 Rh rhodium 45	106 Pd palladium 46	108 Ag silver 47	112 Cd cadmium 48	115 In indium 49	119 Sn tin 50	122 Sb antimony 51	128 Te tellurium 52	127 I iodine 53	131 Xe xenon 54
133 Cs caesium 55	137 Ba barium 56	139 La* lanthanum 57	178 Hf hafnium 72	181 Ta tantalum 73	184 W tungsten 74	186 Re rhenium 75	190 Os osmium 76	192 Ir iridium 77	195 Pt platinum 78	197 Au gold 79	201 Hg mercury 80	204 Tl thallium 81	207 Pb lead 82	209 Bi bismuth 83	[209] Po polonium 84	[210] At astatine 85	[222] Rn radon 86
[223] Fr francium 87	[226] Ra radium 88	[227] Ac* actinium 89	[261] Rf rutherfordium 104	[262] Db dubnium 105	[266] Sg seaborgium 106	[264] Bh bohrium 107	[277] Hs hassium 108	[268] Mt meitnerium 109	[271] Ds darmstadtium 110	[272] Rg roentgenium 111	Elements with atomic numbers 112-116 have been reported but not fully authenticated						



- Non-Metals**
- Right of the periodic table
 - Form **negative ions** by gaining electrons
 - Poor conductors of heat and electricity
 - Low melting and boiling points
 - Low density
 - Brittle
 - Aren't always solid at room temperature

