



Organisation of the Periodic Table	Development of the Periodic Table	Properties of Metals and Non-metals	Ceramics, Composites and Polymers	Group 1	Group 7	Group 0
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Key Words

Key Word	Definition
Physical Properties	Features of a substance that can be observed without changing the substance
Chemical Properties	Features of the way a substance reacts with other substances
Groups	Vertical columns of the periodic table
Periods	Rows of the periodic table
Ceramic	A substance made from clay which is shaped and heated in a kiln to become hard and brittle
Composite	Composite materials are made from two or more different types of material.
Polymer	A molecule made of thousands of similar molecules in a repeating pattern.
Inert	Unreactive
Density	The mass of a substance per unit volume
Ductile	Can be drawn into wires
Malleable	Can bend without breaking

Misconceptions

Mendeleev's periodic table is arranged by atomic weight.

Groups are vertical rows and periods are horizontal rows.

Key questions

Describe how Mendeleev arranged the periodic table

Describe what happens to the reactivity as you go down group 1

Organisation of the Periodic Table

- Metals are on the left side of the table and non-metals are on the right
- The vertical columns are called groups and the rows are called periods
- Group 1 = alkali metals, middle block = transition metals, group 7 = halogens, group 0 = noble gases.

Metals ← | → Non-metals

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

hydrogen 1

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 sulfur 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						

Development of the Periodic Table

Mendeleev produced the first accepted periodic table, his table:

- Was arranged by atomic weight
 - Left gaps for undiscovered elements
 - Swapped the order of some elements so they were placed with other elements with similar properties.
- He also could predict the properties of undiscovered elements

I H 1.01	II	III	IV	V	VI	VII	VIII		
Li 6.94	Be 9.01	B 10.8	C 12.0	N 14.0	O 16.0	F 19.0			
Na 23.0	Mg 24.3	Al 27.0	Si 28.1	P 31.0	S 32.1	Cl 35.5			
K 39.1	Ca 40.1		Ti 47.9	V 50.9	Cr 52.0	Mn 54.9	Fe 55.9	Co 58.9	Ni 58.7
Cu 63.5	Zn 65.4			As 74.9	Se 79.0	Br 79.9			
Rb 85.5	Sr 87.6	Y 88.9	Zr 91.2	Nb 92.9	Mo 95.9		Ru 101	Rh 103	Pd 106
Ag 108	Cd 112	In 115	Sn 119	Sb 122	Te 128	I 127			
Ce 133	Ba 137	La 139		Ta 181	W 184		Os 194	Ir 192	Pt 195
Au 197	Hg 201	Tl 204	Pb 207	Bi 209					
			Th 232		U 238				

Metals Vs Non-metal Properties

Metal properties

Malleable
Ductile
Good conductor of heat
Good conductor of electricity
Shiny
Solid at room temperature
Dense
Sonorous

Non-metal properties

Won't stretch easily
Weak and brittle
Poor conductors of electricity
Poor conductors of heat
Dull
Solid, liquid or gas at room temperature
Not dense
Not sonorous

Ceramics, Composites and Polymers

Ceramics are materials which are made from clay which harden when fired in a kiln. They make a hard and brittle product

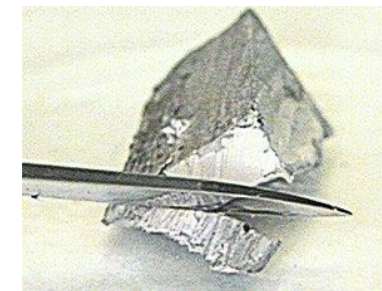
Composite materials are made from two or more different types of material. The different properties of the material make a more useful product.

Polymers are very long chain molecules made from small repeating units called monomers. Some examples are; DNA and proteins.

Group 1 – Alkali metals

Group 1 are called the alkali metals and are found on the left of the periodic table and are:

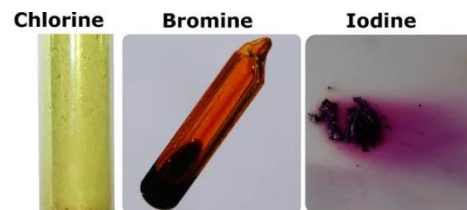
- Soft (easy to cut)
- Have low melting points
- Have low densities (can float on water)



Group 7 - Halogens

Group 7 are called the halogens and are non-metals found on the right of the periodic table The first three elements are the following at room temperature:

Chlorine – pale green gas
Bromine – dark red liquid
Iodine grey solid



They also react with a metal to form a metal halide

Metal + chlorine -> metal chloride

Group 0 – Noble Gases

Group 0 – elements are non-metals found on the very right of the periodic table. They are inert (unreactive) as they have a full outer shell of electrons.