

# The Periodic Table

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# How it was created

By the 1860's, a lot of elements had been discovered, but they had no organization.

Dmitri Mendeleev enjoyed playing with the element cards

He was able to predict new elements

Mendeleev's periodic table, showing elements arranged in groups (I through VIII) and rows. The table includes element symbols, names, and atomic weights. Some cells are empty, indicating predicted elements.

I	II	III	IV	V	VI	VII		VIII
H 1.0								
Li 6.9	Be 9.0	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 55.8	Co 58.9
Cu 63.5	Zn 65.4			As 74.9	Se 79.0	Br 79.9		Ni 58.7
Rb 85.5	Sr 87.6	Y 88.9	Zr 91.2	Nb 92.9	Mo 95.9		Ru 101	Rh 102
Ag 108	Cd 112	In 113	Sn 118	Sb 122	Te 127	I 127		Pd 106
Cs 133	Ba 137	La 139		Ta 181	W 184		Ce 140	Pr 140
Au 197	Hg 201	Tl 204	Pb 207	Bi 208				Sm 150
			Th 232		U 238			

# Periods: Horizontal Rows

Increase in Size and Reactivity. Become less metallic



1	2											3	4	5	6	7	8	9	10											11	12	13	14	15	16	17	18																																																																																																																																				
H Hydrogen 1.00794	He Helium 4.002602											Li Lithium 6.941	Be Beryllium 9.012182											B Boron 10.811	C Carbon 12.0107	N Nitrogen 14.0067	O Oxygen 15.9994	F Fluorine 18.9984032	Ne Neon 20.1797											Na Sodium 22.98976928	Mg Magnesium 24.3050											Al Aluminum 26.9815386	Si Silicon 28.0855	P Phosphorus 30.973762	S Sulfur 32.06	Cl Chlorine 35.45	Ar Argon 39.948											K Potassium 39.0983	Ca Calcium 40.078	Sc Scandium 44.955912	Ti Titanium 47.867	V Vanadium 50.9415	Cr Chromium 51.9961	Mn Manganese 54.938045	Fe Iron 55.845	Co Cobalt 58.933195	Ni Nickel 58.9332	Cu Copper 63.546	Zn Zinc 65.38	Ga Gallium 69.723	Ge Germanium 72.64	As Arsenic 74.92160	Se Selenium 78.96	Br Bromine 79.904	Kr Krypton 83.798											Rb Rubidium 85.4678	Sr Strontium 87.62	Y Yttrium 88.90585	Zr Zirconium 91.224	Nb Niobium 92.90638	Mo Molybdenum 95.96	Tc Technetium 97.9072	Ru Ruthenium 101.07	Rh Rhodium 102.90550	Pd Palladium 106.42	Ag Silver 107.8682	Cd Cadmium 112.411	In Indium 114.818	Sn Tin 118.710	Sb Antimony 121.760	Te Tellurium 127.60	I Iodine 126.90447	Xe Xenon 131.29											Cs Cesium 132.9054519	Ba Barium 137.327	La-Lu Lanthanum-Lutetium	Hf Hafnium 178.49	Ta Tantalum 180.94788	W Tungsten 183.84	Re Rhenium 186.207	Os Osmium 190.23	Ir Iridium 192.222	Pt Platinum 195.084	Au Gold 196.966569	Hg Mercury 200.59	Tl Thallium 204.3833	Pb Lead 207.2	Bi Bismuth 208.98040	Po Polonium 209	At Astatine 210	Rn Radon 222.01753											Fr Francium 223	Ra Radium 226	Ac-Lr Actinide-Lanthanide	Rf Rutherfordium 261	Db Dubnium 262	Sg Seaborgium 266	Bh Bohrium 264	Hs Hassium 277	Mt Meitnerium 268	Ds Darmstadtium 271	Rg Roentgenium 272	Cn Copernicium 285	Uut Ununtrium 284	Fl Flerovium 289	Uup Ununpentium 288	Lv Livermorium 293	Uus Ununseptium 294	Uuo Ununoctium 294

57	58	59	60	61	62	63	64	65	66	67	68	69	70	71
La Lanthanum 138.90547	Ce Cerium 140.116	Pr Praseodymium 140.90765	Nd Neodymium 144.242	Pm Promethium 145	Sm Samarium 150.36	Eu Europium 151.964	Gd Gadolinium 157.25	Tb Terbium 158.92535	Dy Dysprosium 162.5	Ho Holmium 164.93032	Er Erbium 167.259	Tm Thulium 168.93402	Yb Ytterbium 173.054	Lu Lutetium 174.967
89	90	91	92	93	94	95	96	97	98	99	100	101	102	103
Ac Actinium 227	Th Thorium 232.03806	Pa Protactinium 231.03689	U Uranium 238.02891	Np Neptunium 237	Pu Plutonium 244	Am Americium 243	Cm Curium 247	Bk Berkelium 247	Cf Californium 251	Es Einsteinium 252	Fm Fermium 257	Md Mendelevium 258	No Nobelium 259	Lr Lawrencium 262

# Groups/Families: Vertical Columns

They become larger and MORE reactive

The image shows a periodic table with red arrows pointing downwards from each of the 18 groups. A long red arrow on the left side points downwards from the top of the first group to the bottom of the table. The text above the table states 'They become larger and MORE reactive'.

1 H Hydrogen 1.00794																		2 He Helium 4.002602
3 Li Lithium 6.941	4 Be Beryllium 9.012182											5 B Boron 10.811	6 C Carbon 12.0107	7 N Nitrogen 14.0067	8 O Oxygen 15.9994	9 F Fluorine 18.9984032	10 Ne Neon 20.1797	
11 Na Sodium 22.98976928	12 Mg Magnesium 24.3050											13 Al Aluminum 26.9815386	14 Si Silicon 28.0855	15 P Phosphorus 30.973762	16 S Sulfur 32.06	17 Cl Chlorine 35.45	18 Ar Argon 39.948	
19 K Potassium 39.0983	20 Ca Calcium 40.078	21 Sc Scandium 44.955912	22 Ti Titanium 47.867	23 V Vanadium 50.9415	24 Cr Chromium 51.9961	25 Mn Manganese 54.938045	26 Fe Iron 55.845	27 Co Cobalt 58.933195	28 Ni Nickel 58.9332	29 Cu Copper 63.546	30 Zn Zinc 65.38	31 Ga Gallium 69.723	32 Ge Germanium 72.64	33 As Arsenic 74.92160	34 Se Selenium 78.96	35 Br Bromine 79.904	36 Kr Krypton 83.798	
37 Rb Rubidium 85.4678	38 Sr Strontium 87.62	39 Y Yttrium 88.90585	40 Zr Zirconium 91.224	41 Nb Niobium 92.90638	42 Mo Molybdenum 95.96	43 Tc Technetium 97.9072	44 Ru Ruthenium 101.07	45 Rh Rhodium 102.90550	46 Pd Palladium 106.42	47 Ag Silver 107.8682	48 Cd Cadmium 112.411	49 In Indium 114.818	50 Sn Tin 118.710	51 Sb Antimony 121.760	52 Te Tellurium 127.60	53 I Iodine 126.90447	54 Xe Xenon 131.29	
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87 Fr Francium 223	88 Ra Radium 226	89-103 Ac-Lr Actinium 227	104 Rf Rutherfordium 261	105 Db Dubnium 262	106 Sg Seaborgium 266	107 Bh Bohrium 264	108 Hs Hassium 277	109 Mt Meitnerium 268	110 Ds Darmstadtium 271	111 Rg Roentgenium 272	112 Cn Copernicium 285	113 Uut Ununtrium 284	114 Fl Flerovium 289	115 Uup Ununpentium 288	116 Lv Livermorium 292	117 Uus Ununseptium 289	118 Uuo Oganeson 294	
57 La Lanthanum 138.90547	58 Ce Cerium 140.116	59 Pr Praseodymium 140.90765	60 Nd Neodymium 144.242	61 Pm Promethium 145	62 Sm Samarium 150.36	63 Eu Europium 151.964	64 Gd Gadolinium 157.25	65 Tb Terbium 158.92535	66 Dy Dysprosium 162.5	67 Ho Holmium 164.93032	68 Er Erbium 167.259	69 Tm Thulium 168.93402	70 Yb Ytterbium 173.054	71 Lu Lutetium 174.967				
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# Three Main divisions

Metals: Shiny, malleable, conducting, usually solid

Non-Metals: solid, liquid, or gas, usually brittle, poor conductors

Metalloids(Semi-conductors): A mix of both

# Let's get a little more specific

Alkali Metals: group 1, Soft and shiny, reacts violently with water

Alkaline-earth Metals: group 2, hard, dense, strong, less reactive

Transition Metals: groups 3-12, much less reactive, harder, denser, higher melting points



# Let's get a little more specific

Noble Gases: Group 18, exist as single atoms, inert (doesn't react)

Halogens: most reactive non-metals, combine easily with alkali metals and form salts