



Stack 'Em Up



Metals



Metalloids



Nonmetals

Lettering

Color Codes:



Solids



Liquids



Gases

1 1.01 H Hydrogen																	
3 6.94 Li Lithium	4 9.01 Be Beryllium																
11 22.99 Na Sodium	12 24.31 Mg Magnesium																
19 39.10 K Potassium	20 40.08 Ca Calcium	21 44.96 Sc Scandium	22 47.90 Ti Titanium	23 50.94 V Vanadium	24 51.996 Cr Chromium	25 54.94 Mn Manganese	26 55.85 Fe Iron										
37 39.10 Rb Rubidium	38 87.62 Sr Strontium	39 88.91 Y Yttrium	40 91.22 Zr Zirconium	41 92.91 Nb Niobium	42 95.94 Mo Molybdenum	43 98 Tc Technetium	44 101.07 Ru Ruthenium										
55 132.91 Cs Cesium	56 137.33 Ba Barium	57 138.91 La Lanthanum	72 178.49 Hf Hafnium	73 180.95 Ta Tantalum	74 183.85 W Tungsten	75 186.21 Re Rhenium	76 190.20 Os Osmium										
87 223 Fr Francium	88 226.03 Ra Radium	89 227.03 Ac Actinium	104 261 Rf Rutherfordium	105 262 Ha Hahnium	106 266 Sg Seaborgium	107 264 Bh Bohrium	108 269 Hs Hassium										

The chemist's most useful tool probably isn't the test tube or the bunsen burner. It's the periodic table of elements. It lists all the elements known in an order that tells us quite a few things about them. How did this table come to be?

Atomic Number

26 55.85

FE

Iron

Atomic Weight

Symbol

Name

58 140.12 Ce Cerium	59 140.91 Pr Praseodymium	60 144.24 Nd Neodymium	61 145 Pm Promethium	62 150.35 Sm Samarium
90 232.04 Th Thorium	91 231.04 Pa Protactinium	92 238.03 U Uranium	93 237.05 Np Neptunium	94 244 Pu Plutonium

Siberia, Russia, 1869

Chemist Dmitri Mendeleev arranges the elements. This table had been in the works for a thousand years. Mendeleev refines it by arranging the elements by atomic number: the number of protons in an element's nucleus. Elements that have the same number of electrons in their outer shells are arranged in vertical columns.

Why are the electron shells so important? Elements combine with other elements by sharing, losing, or gaining electrons with one another. So the number of electrons in the outer shell determines how the element will behave with others. A helium atom, for example, has an outer shell of two electrons. It doesn't want to combine with any other atoms. It won't explode or

react in some other dangerous way, which makes it a safe filler for a child's balloon. Lithium, on the other hand, has an outer shell with just one electron. It always wants to lose that electron, or to pick up a few more from somewhere else. It is a very reactive metal. Lithium is never found in nature on its own but rather always as a compound.

										2	4.003								
										He	Helium								
		5	10.81	6	12.01	7	14.01	8	15.999	9	18.998	10	20.18						
		B	C	N	O	F	Ne												
		Boron	Carbon	Nitrogen	Oxygen	Fluorine	Neon												
		13	26.98	14	28.09	15	30.97	16	32.06	17	35.45	18	39.95						
		Al	Si	P	S	Cl	Ar												
		Aluminum	Silicon	Phosphorus	Sulfur	Chlorine	Argon												
27	58.93	28	58.70	29	63.55	30	65.37	31	69.72	32	72.59	33	74.92	34	78.96	35	79.90	36	83.80
Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr										
Cobalt	Nickel	Copper	Zinc	Gallium	Germanium	Arsenic	Selenium	Bromine	Krypton										
45	102.91	46	106.40	47	107.87	48	112.41	49	114.82	50	118.69	51	121.75	52	127.60	53	126.90	54	131.30
Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe										
Rhodium	Palladium	Silver	Cadmium	Indium	Tin	Antimony	Tellurium	Iodine	Xenon										
77	192.22	78	195.09	79	196.09	80	200.59	81	204.37	82	207.19	83	208.98	84	209	85	210	86	222
Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn										
Iridium	Platinum	Gold	Mercury	Thallium	Lead	Bismuth	Polonium	Astatine	Radon										
109	268	110	269	111	272	112	277	113		114	285	115		116	289	117		118	293
Mt	Uum	Uuu	Uub	Not yet synthesized	Uuq	Not yet synthesized	Uuh	Not yet synthesized	Uuo										
Meitnerium	Ununilium	Ununium	Ununbium		Ununquadium		Ununhexium		Ununoctium										

63	151.96	64	157.25	65	158.93	66	162.50	67	164.93	68	167.26	69	168.93	70	173.04	71	174.97
Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu									
Europium	Gadolinium	Terbium	Dysprosium	Holmium	Erbium	Thulium	Ytterbium	Lutetium									
95	243	96	247	97	247	98	251	99	252	100	257	101	258	102	259	103	262
Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr									
Americium	Curium	Berkelium	Californium	Einsteinium	Fermium	Mendelevium	Nobelium	Lawrencium									