

# The Periodic Table

1	1A 1 H Hydrogen 1.0	2A 2 He Helium 4.0	Semi-metals/ Metalloids										3A 3 B Boron 10.8	4A 4 C Carbon 12.0	5A 5 N Nitrogen 14.0	6A 6 O Oxygen 16.0	7A 7 F Fluorine 19.0	8A 8 Ne Neon 20.2														
2	3 Li Lithium 6.9	4 Be Beryllium 9.0	Transition Elements										9 Al Aluminum 27.0	10 Si Silicon 28.1	11 P Phosphorus 31.0	12 S Sulfur 32.1	13 Cl Chlorine 35.5	14 Ar Argon 39.9														
3	11 Na Sodium 22.9	12 Mg Magnesium 24.3	3B 13 Sc Scandium 44.9	4B 14 Ti Titanium 47.9	5B 15 V Vanadium 50.9	6B 16 Cr Chromium 52.0	7B 17 Mn Manganese 54.9	8B 18 Fe Iron 55.8	19 Co Cobalt 58.9	20 Ni Nickel 58.7	21 Cu Copper 63.5	22 Zn Zinc 65.4	23 Ga Gallium 69.7	24 Ge Germanium 72.6	25 As Arsenic 74.9	26 Se Selenium 79.0	27 Br Bromine 79.9	28 Kr Krypton 83.8														
4	19 K Potassium 39.1	20 Ca Calcium 40.1	21 Sc Scandium 44.9	22 Ti Titanium 47.9	23 V Vanadium 50.9	24 Cr Chromium 52.0	25 Mn Manganese 54.9	26 Fe Iron 55.8	27 Co Cobalt 58.9	28 Ni Nickel 58.7	29 Cu Copper 63.5	30 Zn Zinc 65.4	31 Ga Gallium 69.7	32 Ge Germanium 72.6	33 As Arsenic 74.9	34 Se Selenium 79.0	35 Br Bromine 79.9	36 Kr Krypton 83.8														
5	37 Rb Rubidium 85.4	38 Sr Strontium 87.6	39 Y Yttrium 88.9	40 Zr Zirconium 91.2	41 Nb Niobium 92.9	42 Mo Molybdenum 95.9	43 Tc Technetium 98	44 Ru Ruthenium 101.1	45 Rh Rhodium 102.9	46 Pd Palladium 106.4	47 Ag Silver 107.9	48 Cd Cadmium 112.4	49 In Indium 114.8	50 Sn Tin 118.7	51 Sb Antimony 121.8	52 Te Tellurium 127.6	53 I Iodine 126.9	54 Xe Xenon 131.3														
6	55 Cs Cesium 132.9	56 Ba Barium 137.4	57 La Lanthanum 138.9	58 Ce Cerium 140.1	59 Pr Praseodymium 140.9	60 Nd Neodymium 145.0	61 Pm Promethium 145.0	62 Sm Samarium 150.4	63 Eu Europium 152.0	64 Gd Gadolinium 157.3	65 Tb Terbium 158.9	66 Dy Dysprosium 162.5	67 Ho Holmium 164.9	68 Er Erbium 167.3	69 Tm Thulium 168.9	70 Yb Ytterbium 173.0	71 Lu Lutetium 175.0	72 Hf Hafnium 178.5	73 Ta Tantalum 181.0	74 W Tungsten 183.8	75 Re Rhenium 186.2	76 Os Osmium 190.2	77 Ir Iridium 192.2	78 Pt Platinum 195.1	79 Au Gold 197.0	80 Hg Mercury 200.6	81 Tl Thallium 204.4	82 Pb Lead 207.2	83 Bi Bismuth 208.9	84 Po Polonium 209	85 At Astatine 210	86 Rn Radon 222.0
7	87 Fr Francium 223.0	88 Ra Radium 226.0	89 Ac Actinium 227.0	90 Th Thorium 232.0	91 Pa Protactinium 231.0	92 U Uranium 238.0	93 Np Neptunium 237.0	94 Pu Plutonium 242.0	95 Am Americium 243.0	96 Cm Curium 247.0	97 Bk Berkelium 247.0	98 Cf Californium 251.0	99 Es Einsteinium 254.0	100 Fm Fermium 259.0	101 Md Mendelevium 258.0	102 No Nobelium 259.0	103 Lr Lawrencium 260.0	104 Rf Rutherfordium 261	105 Db Dubnium 262	106 Sg Seaborgium 263	107 Bh Bohrium 264	108 Hs Hassium 265	109 Mt Meitnerium 266	110 Uun Ununennium 267	Metals				Non-Metals			

How to Use It...

And Why Would I Ever Use It...

58 Ce Cerium 140.1	59 Pr Praseodymium 140.9	60 Nd Neodymium 145.0	61 Pm Promethium 145.0	62 Sm Samarium 150.4	63 Eu Europium 152.0	64 Gd Gadolinium 157.3	65 Tb Terbium 158.9	66 Dy Dysprosium 162.5	67 Ho Holmium 164.9	68 Er Erbium 167.3	69 Tm Thulium 168.9	70 Yb Ytterbium 173.0	71 Lu Lutetium 175.0
90 Th Thorium 232.0	91 Pa Protactinium 231.0	92 U Uranium 238.0	93 Np Neptunium 237.0	94 Pu Plutonium 242.0	95 Am Americium 243.0	96 Cm Curium 247.0	97 Bk Berkelium 247.0	98 Cf Californium 251.0	99 Es Einsteinium 254.0	100 Fm Fermium 259.0	101 Md Mendelevium 258.0	102 No Nobelium 259.0	103 Lr Lawrencium 260.0

# Who Made This Thing Anyway?

- In 1829, J.W. Dobereiner tried to classify elements into various groups based on some chemical and physical properties.
- He called these groups Triads...since they were in groups of 3.
- When he did this he found that the middle element ended up with an atomic mass that was about the average of the other 2.





## More on Dobereiner

- While Mr. D's triads worked great (and still are accurate) there was a more important discovery...
- His work helped to show that atomic mass was somehow related to the properties of an element.

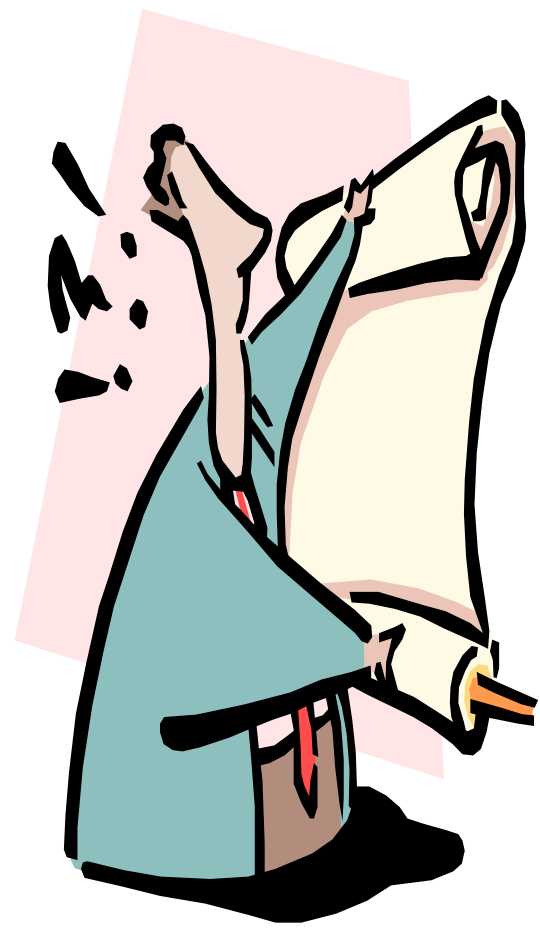


# Enter Another Dead Guy...

- In 1869, while working as a professor in Russia, Dmitri Mendeleev, developed what he called a periodic table of the elements.
- He noticed that when he put the elements in order of increasing atomic mass, that the elements properties repeated in an orderly way.

# So Really How Good Was His Table...

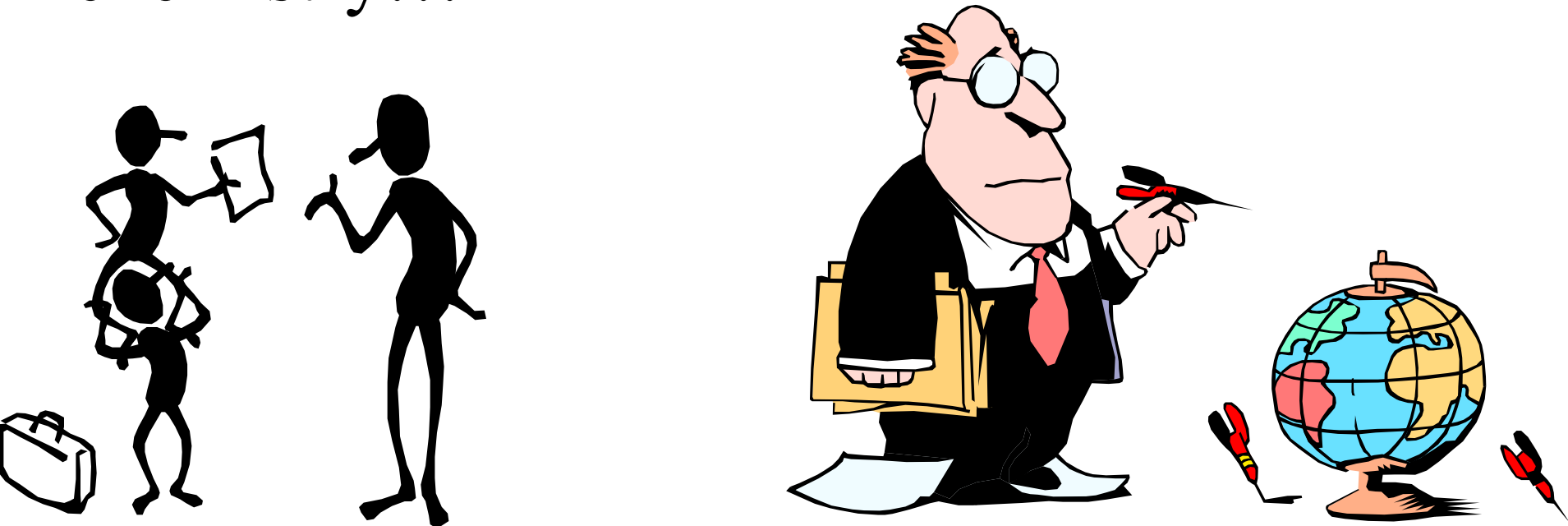
- Mendeleev's table was so good at predicting properties of elements at certain atomic masses...that he left blank spaces in the table where he thought elements should be...
- In later years, those elements were indeed discovered!



# Mendeleev Made a Table...

## So What!

- His insight into the periodicity of the elements was one of the greatest contributions to chemistry...



# His Table Is Similar to Today's

Each vertical column on the table represents elements that have similar properties.

Its kind of similar to a monthly calendar...

Each time you go to the next horizontal row, you know that the elements will have a certain pattern of properties.

# Some Differences Today

The current Table is arranged by atomic number (number of protons), not according to atomic mass.

However, you will note that with only a few exceptions, atomic mass also increases with each element.

Why is that?