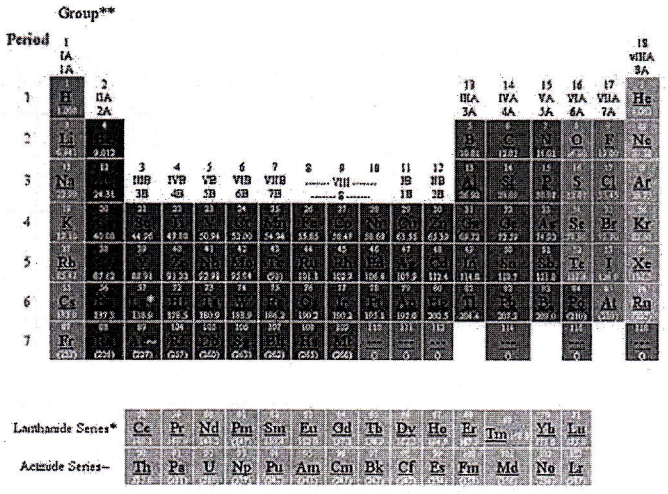
Quick Guide to the Periodic Table



Properties of the Groups/Families:

Hydrogen: This element does not match the properties of any other group so it stands alone. It is placed above group 1 but it is not part of that group. It is a very reactive, colorless, odorless gas at room temperature. (1 outer level electron)

Group 1: **Alkali Metals** – These metals are extremely reactive and are never found in nature in their pure form. They are silver colored and shiny. Their density is extremely low so that they are soft enough to be cut with a knife. (1 outer level electron)

Group 2: **Alkaline-earth Metals** – Slightly less reactive than alkali metals. They are silver colored and more dense than alkali metals. (2 outer level electrons)

Groups 3 – 12: **Transition Metals** – These metals have a moderate range of reactivity and a wide range of properties. In general, they are shiny and good conductors of heat and electricity. They also have higher densities and melting points than groups 1 & 2. (1 or 2 outer level electrons)

Lanthanides and Actinides: These are also transition metals that were taken out and placed at the bottom of the table so the table wouldn't be so wide. The elements in each of these two periods share many properties. The lanthanides are shiny and reactive. The actinides are *all* radioactive and are therefore unstable. Elements 95 through 103 do not exist in nature but have been manufactured in the lab.

Group 13: **Boron Family/Group** –Reactive. Aluminum is in this group. It is also the most abundant metal in the earth's crust. (3 outer level electrons)

Group 14: **Carbon Famly/Group** –Varied reactivity. (4 outer level electrons)

Group 15: **Nitrogen Family/Group** –Varied reactivity. (5 outer level electrons)

Group 16: **Oxygen Family/Group** –Reactive group. (6 outer level electrons)

Group 17: **Halogens** – All nonmetals. Very reactive. Poor conductors of heat and electricity. Tend to form salts with metals. Ex. NaCl: sodium chloride also known as "table salt". (7 outer level electrons)

Group 18: **Noble Gases** – Unreactive nonmetals. All are colorless, odorless gases at room temperature. All found in earth's atmosphere in small amounts. (8 outer level electrons)

Periodic Table of the Elements

1 H 1.00794																1 H 1.00794	2 He 4.002602
3 Li 6.941	4 Be 9.012182											5 B 10.811	6 C 12.0107	7 N 14.00674	8 O 15.9994	9 F 18.9984032	10 Ne 20.1797
11 Na 22.989770	12 Mg 24.3050											13 Al 26.981538	14 Si 28.0855	15 P 30.973761	16 S 32.066	17 Cl 35.4527	18 Ar 39.948
19 K 39.0983	20 Ca 40.078	21 Sc 44.955910	22 Ti 47.867	23 V 50.9415	24 Cr 51.9961	25 Mn 54.938049	26 Fe 55.845	27 Co 58.933200	28 Ni 58.6934	29 Cu 63.546	30 Zn 65.39	31 Ga 69.723	32 Ge 72.61	33 As 74.92160	34 Se 78.96	35 Br 79.904	36 Kr 83.80
37 Rb 85.4678	38 Sr 87.62	39 Y 88.90585	40 Zr 91.224	41 Nb 92.90638	42 Mo 95.94	43 Tc (98)	44 Ru 101.07	45 Rh 102.90550	46 Pd 106.42	47 Ag 107.8682	48 Cd 112.411	49 In 114.818	50 Sn 118.710	51 Sb 121.760	52 Te 127.60	53 I 126.90447	54 Xe 131.29
55 Cs 132.90545	56 Ba 137.327	57 La 138.9055	72 Hf 178.49	73 Ta 180.9479	74 W 183.84	75 Re 186.207	76 Os 190.23	77 Ir 192.217	78 Pt 195.078	79 Au 196.96655	80 Hg 200.59	81 Tl 204.3833	82 Pb 207.2	83 Bi 208.98038	84 Po (209)	85 At (210)	86 Rn (222)
87 Fr (223)	88 Ra (226)	89 Ac (227)	104 Rf (261)	105 Db (262)	106 Sg (263)	107 Bh (262)	108 Hs (265)	109 Mt (266)	110 (269)	111 (272)	112 (277)		114 (289) (287)		116 (289)		118 (293)

58 Ce 140.116	59 Pr 140.90765	60 Nd 144.24	61 Pm (145)	62 Sm 150.36	63 Eu 151.964	64 Gd 157.25	65 Tb 158.92534	66 Dy 162.50	67 Ho 164.93032	68 Er 167.26	69 Tm 168.93421	70 Yb 173.04	71 Lu 174.967
90 Th 232.0381	91 Pa 231.03588	92 U 238.0289	93 Np (237)	94 Pu (244)	95 Am (243)	96 Cm (247)	97 Bk (247)	98 Cf (251)	99 Es (252)	100 Fm (257)	101 Md (258)	102 No (259)	103 Lr (262)

Color-Coded Periodic Table Activity

1. Draw a RED diagonal line through the elements that exist as a GAS at room temperature.
2. Draw a BLUE diagonal line through the elements that exist as a LIQUID at room temperature.
3. Draw a HEAVY BLACK LINE down the staircase that separates the metals from the non-metals.
4. Draw a DIAGONAL BLACK LINE through the element 85 (Astatine).
5. Lightly shade all the metalloids orange, including the lower portion of Astatine (85).
6. Create a color-key by choosing your own colors to identify the various sections of the periodic table. Draw your color-key on the top of your periodic table.
    a. **Alkali Metals** (group 1): Color _____
    b. **Alkaline Earth Metals** (group 2): Color _____
    c. **Transition Metals** (group 3 to 12): Color _____
    d. **Halogens** (group 17): Color _____
    e. **Noble Gases** (group 18): Color _____
    f. **Lanthanide Series** (top row on the bottom of the table): Color _____
    g. **Actinide Series** (bottom row on the bottom of the table): Color _____
7. Draw a CIRCLE around the chemical symbol for the elements that do not naturally occur: 43, 61, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118. (Elements 113-118 do not have names yet).
8. Define the following vocabulary terms:
    a. Period -

    b. Group (family) -

    c. Atomic Number -

    d. Atomic Mass -

    e. Isotope -

9. What are the characteristics of:
    a. Metals -

    b. Non-Metals -

    c. Metalloids -

10. Draw a picture that includes all the information that can be found in every square of the periodic table. (Use the image on page 322 of your textbook.

Use the quick guide to the periodic table (front page), the text book (chp 18), your Unit 3 Notes/Vocab, an online resource, and your teacher to complete the following.....

1. Which category (metal, non-metal, or metalloid) do most elements belong to?
2. Which category do most elements adjacent to the zig-zag line belong to?
3. What is the only non-metal that is not on the upper right side of the periodic table?
4. What state of matter (solid, liquid, gas) are most metals at room temperature?
5. What state of matter are most non-metals at room temperature?
6. One column (vertical) on the periodic table is called a.....(two options)
7. One row (horizontal) on the periodic table is called a.....
8. Where are the most chemically reactive metals located on the periodic table?
9. Where are the most chemically reactive non-metals located on the periodic table?
10. Which metals are usually good conductors of energy?
11. Which group of elements are all radioactive?
12. Where are the unreactive non-metals located on the periodic table?
13. Elements in the first group have one valence electron and are extremely reactive. They are called.....
14. Elements in the second group have two valence electrons and are also very reactive. They are called.....
15. Elements in groups 3 through 12 have many useful properties. They are called.....
16. Elements in group 17 are known as "salt-formers". They are called.....
17. Elements in group 18 are very unreactive. They are said to be "inert". They are called.....
18. Elements at the bottom of the table were pulled out to keep the table from becoming too long.
    a. The first period at the bottom are called the.....
    b. The second period at the bottom are called the.....