



















## Periodic Table Notes Part 1

Def: Is a visual representation which organizes the elements by chemical and physical properties.

Group or Family: \_\_\_\_\_

Valence electrons: \_\_\_\_\_

	1A	2A	3A	4A	5A	6A	7A	8A
n	H 1							He 2
1								
2	Li 3	Be 4	B 5	C 6	N 7	O 8	F 9	Ne 10
								
3	Na 11	Mg 12	Al 13	Si 14	P 15	S 16	Cl 17	Ar 18
								

<p><b>Alkali metals</b></p> $\begin{array}{l} \bullet \left. \begin{array}{l} 1 \\ 2 \end{array} \right\} 2e^- \left. \begin{array}{l} 1 \\ 2 \\ 3 \end{array} \right\} 1e^- - \\ \bullet \left. \begin{array}{l} 1 \\ 2 \\ 3 \\ 4 \end{array} \right\} 2e^- \left. \begin{array}{l} 1 \\ 2 \\ 3 \\ 4 \end{array} \right\} 8e^- \left. \begin{array}{l} 1 \\ 2 \\ 3 \\ 4 \end{array} \right\} 1e^- - \end{array}$	<p><b>Alkaline-earth metals</b></p> $\begin{array}{l} \bullet \left. \begin{array}{l} 1 \\ 2 \end{array} \right\} 2e^- \left. \begin{array}{l} 1 \\ 2 \\ 3 \end{array} \right\} 2e^- - \\ \bullet \left. \begin{array}{l} 1 \\ 2 \\ 3 \\ 4 \end{array} \right\} 2e^- \left. \begin{array}{l} 1 \\ 2 \\ 3 \\ 4 \end{array} \right\} 8e^- \left. \begin{array}{l} 1 \\ 2 \\ 3 \\ 4 \end{array} \right\} 2e^- - \end{array}$
<p><b>Halogens</b></p> $\begin{array}{l} \bullet \left. \begin{array}{l} 1 \\ 2 \end{array} \right\} 2e^- \left. \begin{array}{l} 1 \\ 2 \\ 3 \end{array} \right\} 7e^- - \\ \bullet \left. \begin{array}{l} 1 \\ 2 \\ 3 \\ 4 \end{array} \right\} 2e^- \left. \begin{array}{l} 1 \\ 2 \\ 3 \\ 4 \end{array} \right\} 8e^- \left. \begin{array}{l} 1 \\ 2 \\ 3 \\ 4 \end{array} \right\} 7e^- - \end{array}$	<p><b>Inert or noble gases</b></p> $\begin{array}{l} \bullet \left. \begin{array}{l} 1 \\ 2 \end{array} \right\} 2e^- \left. \begin{array}{l} 1 \\ 2 \\ 3 \end{array} \right\} 8e^- - \\ \bullet \left. \begin{array}{l} 1 \\ 2 \\ 3 \\ 4 \end{array} \right\} 2e^- \left. \begin{array}{l} 1 \\ 2 \\ 3 \\ 4 \end{array} \right\} 8e^- \left. \begin{array}{l} 1 \\ 2 \\ 3 \\ 4 \end{array} \right\} 8e^- - \end{array}$

Periods, orbits, energy shells and energy levels: \_\_\_\_\_

Metals, non-metals and metalloids: Elements are also divided by a staircase on the periodic table.

Representative elements

Metals  
Semimetals  
Nonmetals

Transition metals

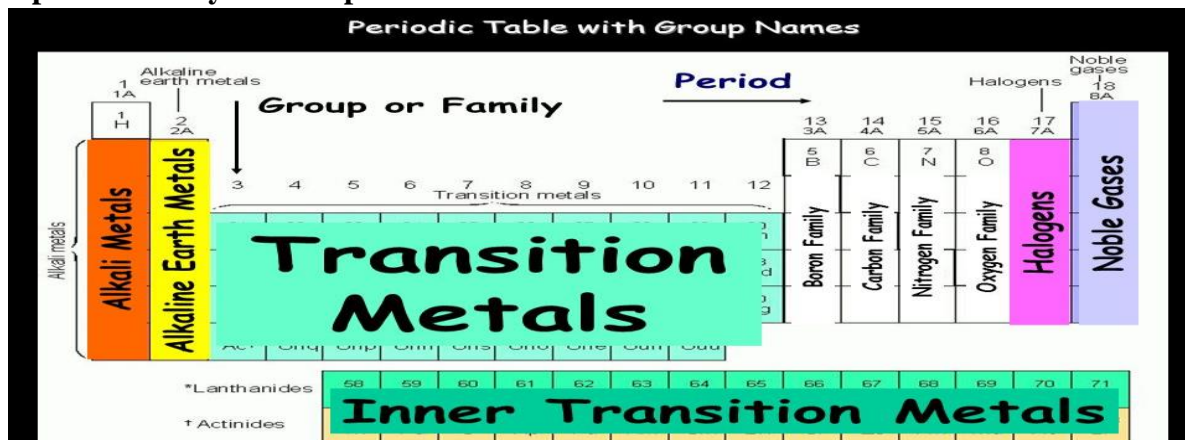
Representative elements

1 H 1.00794																	2 He 4.00260																	
3 Li 6.941	4 Be 9.012182	Transition metals										5 B 10.811	6 C 12.0107	7 N 14.0067	8 O 15.9994	9 F 18.99840	10 Ne 20.1797																	
11 Na 22.98977	12 Mg 24.3050	13 Al 26.98154	14 Si 28.0855	15 P 30.97376	16 S 32.065	17 Cl 35.453	18 Ar 39.948	19 K 39.0983	20 Ca 40.078	21 Sc 44.95591	22 Ti 47.867	23 V 50.9415	24 Cr 51.9961	25 Mn 54.93805	26 Fe 55.845	27 Co 58.9332	28 Ni 58.6934	29 Cu 63.546	30 Zn 65.39	31 Ga 69.723	32 Ge 72.64	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 88.9058	40 Zr 91.224	41 Nb 92.9063	42 Mo 95.94	43 Tc [98]	44 Ru 101.07	45 Rh 102.9055	46 Pd 106.42	47 Ag 107.868	48 Cd 112.411	49 In 114.818	50 Sn 118.710	51 Sb 121.760	52 Te 127.60	53 I 126.9045	54 Xe 131.293	55 Cs 132.9054	56 Ba 137.327	57 *La 138.9055	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 167.259	69 Tm 168.93421	70 Yb 173.04	71 Lu 174.967
87 Fr [223]	88 Ra [226]	89 †Ac [227]	104 Rf [261]	105 Db [262]	106 Sg [266]	107 Bh [264]	108 Hs [269]	109 Mt [268]	110 Ds [281]	111 Rg [272]	112 Uub [285]	113 Nh [288]	114 Uuq [289]	115 Mc [288]	116 Lv [293]	117 Ts [294]	118 Og [294]	89 *La [227]	90 Th 232.0381	91 Pa 231.0359	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]		
*Lanthanide elements		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 167.259	69 Tm 168.93421	70 Yb 173.04	71 Lu 174.967																			
†Actinide series		90 Th 232.0381	91 Pa 231.0359	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]																			

For elements that do not have stable isotopes, the mass of the most stable isotope is given in parentheses.  
Elements 112 and 114 have been reported but have not been given official names.

Metals	Non-metals	Metalloids
<ul style="list-style-type: none"> <li>-left of the stair case</li> <li>- metallic luster</li> <li>- conducts heat</li> <li>- conducts electricity</li> <li>- malleable</li> <li>- ductile</li> <li>- soft</li> <li>- very reactive when placed in water and acid</li> <li>- high melting point</li> <li>- all solids except for mercury</li> </ul>	<ul style="list-style-type: none"> <li>- Right of stair case</li> <li>- Found in 3 states of matter</li> <li>- Opposite properties of metals</li> </ul>	<ul style="list-style-type: none"> <li>- almost surrounds the stair case</li> <li>- characteristics of both metals and non-metals</li> <li>- ex: might be malleable, but does not conduct</li> </ul>

## Specific Family or Group Names



Alkali metals	Alkaline earth metals	Halogen	Noble or inert gas
<ul style="list-style-type: none"> <li>- has all characteristics of metals</li> <li>- most reactive family because has only 1 ve</li> <li>- as you go down the family element becomes more reactive</li> <li>- <b>H, is not part of the family, put there because has 1 ve</b></li> </ul>	<ul style="list-style-type: none"> <li>- same as alkali metals</li> <li>- less reactive than alkali metals because has 2 ve</li> </ul>	<ul style="list-style-type: none"> <li>- same characteristics as non-metals</li> <li>- becomes more reactive as you go up the family</li> <li>- accepts 1 ve from metals</li> <li>-halogen + metal = salt</li> <li>- used as antiseptics</li> </ul>	<ul style="list-style-type: none"> <li>-if electricity is passed through them a bright light is produced</li> <li>- He, placed there even though does not have 8 ve because its orbit is full at 2 ve</li> <li>- Has full and stable orbits and therefore completely stable</li> </ul>

Families 3-6 group names are named after the first element in the group. Ex: Group 3 is called the boron group.

## Elements vs compounds

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## Past Exam Questions

1. Fill in the table below.

Element	Number of Valence Electrons	Chemical Family Name
Br		
Ca		
Na		
Ne		

2. Four elements from the periodic table are described below.

Element 1	This element from Period 2 has two more electrons than helium.
Element 2	This soft metal from Period 3 has one valence electron.
Element 3	This element from Period 4 is found in bones and teeth.
Element 4	This element from Period 3 has some of the properties of metals and non-metals.

Which of these elements belong to the same group or chemical family?

- A) 1 and 2                      B) 1 and 3                      C) 2 and 4                      D) 3 and 4

3. The table below provides certain information about the symbol, the electron configuration, the name of the chemical family and the period number of four elements in the periodic table.

Symbol	Electron configuration	Name of the chemical family	Period number
<b>Mg</b>			
		Alkali metals	2
	$2s^2 3s^2$		
	$2s^2$		

Fill in the table above.