

- Error in key for the dimensional analysis Quiz
- I'll look at dimensional analysis quiz tonight
- Exam 1 is live
 - work on paper while taking the exam
 - 2 attempts
 - Shows the incorrect answers
 - Due date Tuesday night 12:00am

3 keys (memorize)

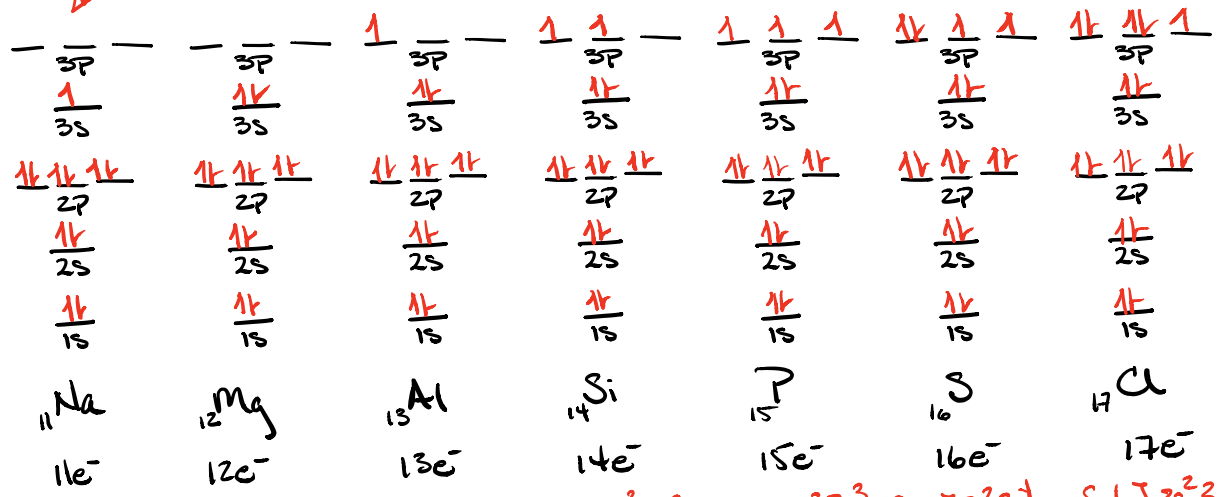
length 1 in = 2.54 cm

Vol 1 gal = 3.785 L

mass 1 lb = 453.6 g

- Lab Electronic Configurations
- Lecture Electronic Configuration
 - Ion formation
 - ⇒ Ionic Compound

Electronic Diagram



$1s^2 2s^2 2p^6 3s^1$ $[Ne] 3s^2$ $[Ne] 3s^2 3p^1$ $[Ne] 3s^2 3p^2$ $[Ne] 3s^2 3p^3$ $[Ne] 3s^2 3p^4$ $[Ne] 3s^2 3p^5$

Electronic Configuration

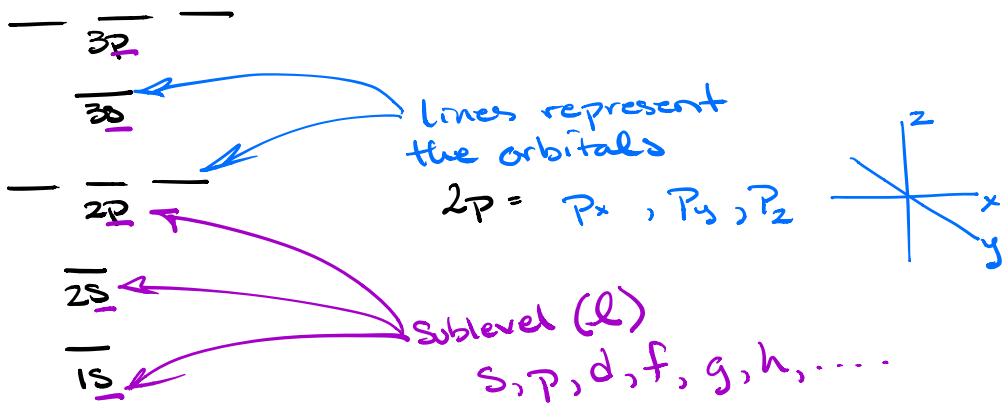
Short hand

Nobel Gas Core

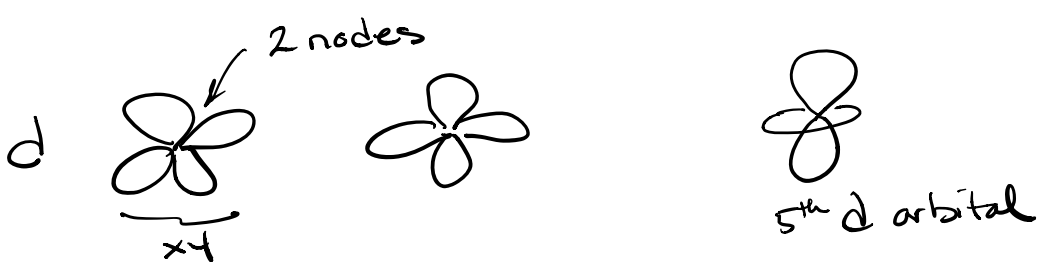
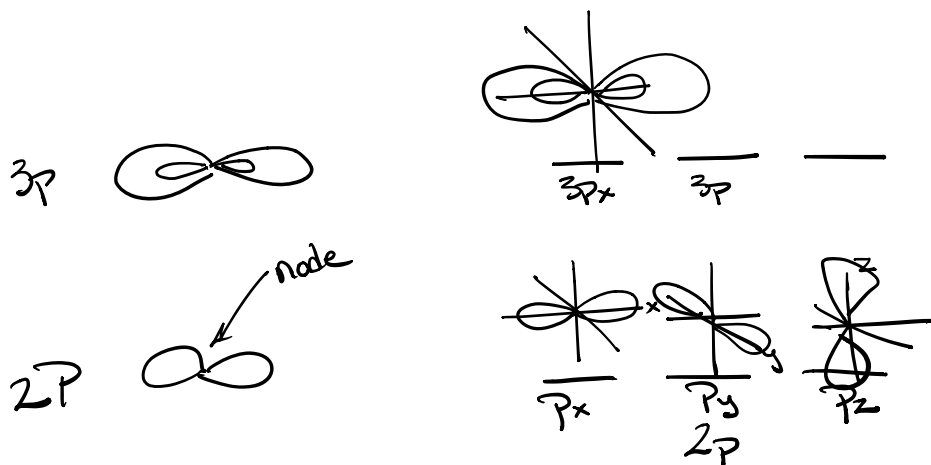
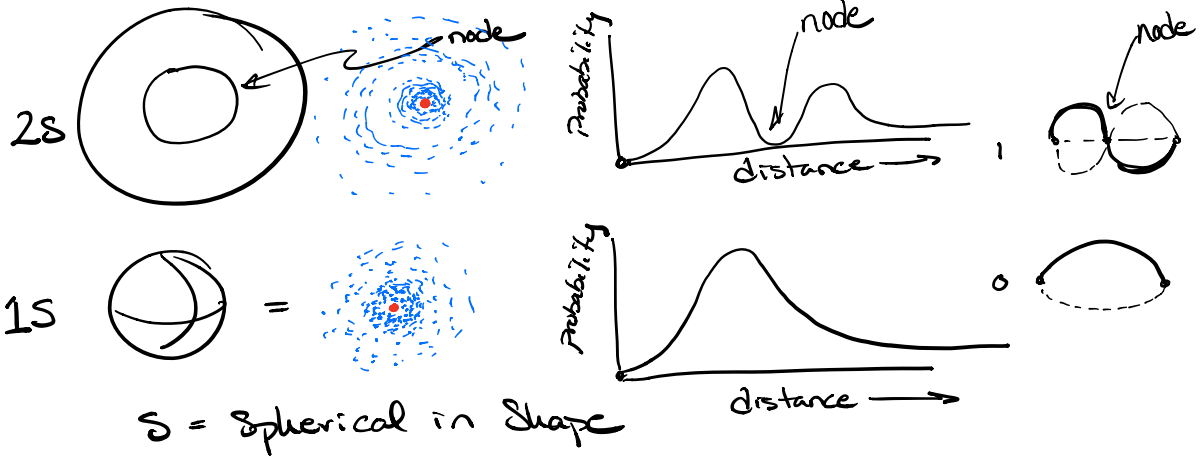
$1s^2 2s^2 2p^6 3s^1$

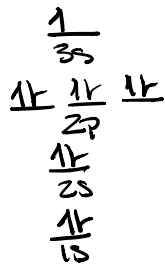
$[Ne] 3s^1$

Closer look at Sub-levels

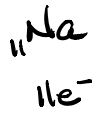


The orbitals ^(m_l) are standing waves that have a specific geometry. The sublevel (s, p, d... (l)) can be thought of as a geometry class

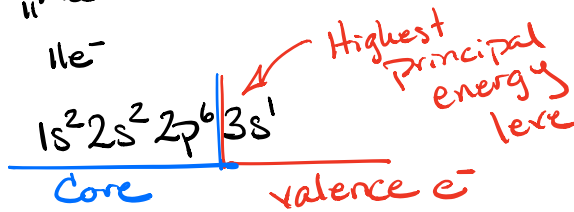




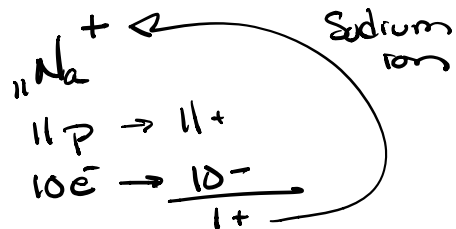
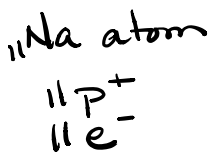
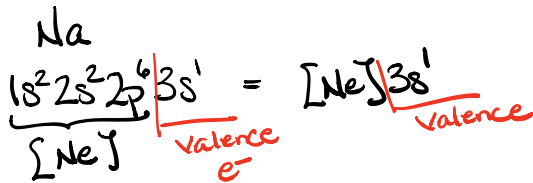
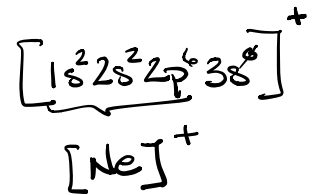
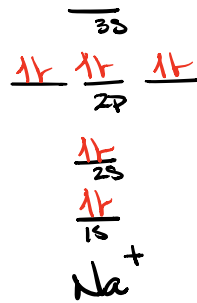
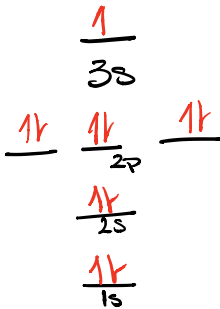
Valence e^- - Highest principal energy level e^-
Highest energy e^- .



Core e^- - All e^- below valence e^- . Electrons closest to nucleus.



Valence e^- are used in chemical reactions.
Traded (lost a game), shared in order to achieve a more stable configuration.



1A *+1* *- ion*

2A *+2*

3A *+3* *share*

4A *+4*

5A *-3*

6A *-2*

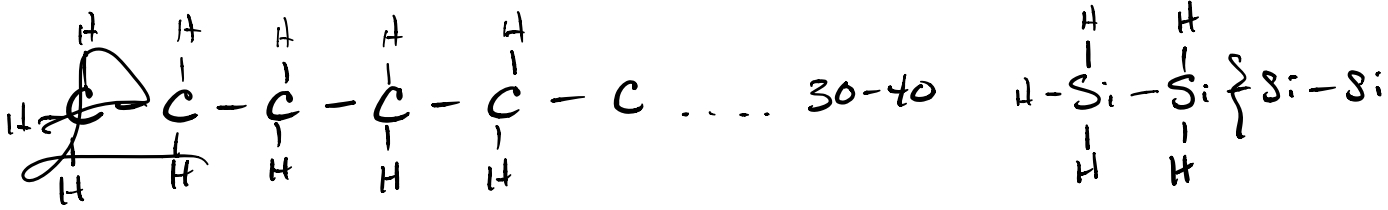
7A *-1* *ide*

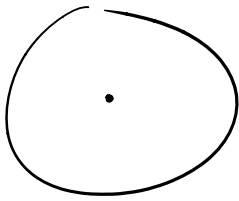
18 *0* *Noble Gases*

A value = # of valence e⁻ for all element in the group (or family)

1 H Hydrogen 1.008	2 He Helium 4.003											13 Al Aluminum 26.98	14 Si Silicon 28.09	15 P Phosphorus 30.97	16 S Sulfur 32.07	17 Cl Chlorine 35.45	18 Ar Argon 39.95
3 Li Lithium 6.941	4 Be Beryllium 9.012	3 B Boron 10.81	4 C Carbon 12.01	5 N Nitrogen 14.01	6 O Oxygen 16.00	7 F Fluorine 19.00	8 Ne Neon 20.18	9 Na Sodium 22.99	10 Mg Magnesium 24.30	11 Al Aluminum 26.98	12 Si Silicon 28.09	13 P Phosphorus 30.97	14 S Sulfur 32.07	15 Cl Chlorine 35.45	16 Ar Argon 39.95		
19 K Potassium 39.10	20 Ca Calcium 40.08	21 Sc Scandium 44.96	22 Ti Titanium 47.87	23 V Vanadium 50.94	24 Cr Chromium 52.00	25 Mn Manganese 54.94	26 Fe Iron 55.84	27 Co Cobalt 58.93	28 Ni Nickel 58.69	29 Cu Copper 63.55	30 Zn Zinc 65.39	31 Ga Gallium 69.72	32 Ge Germanium 72.61	33 As Arsenic 74.92	34 Se Selenium 78.96	35 Br Bromine 79.90	36 Kr Krypton 83.80
37 Rb Rubidium 85.47	38 Sr Strontium 87.62	39 Y Yttrium 88.91	40 Zr Zirconium 91.22	41 Nb Niobium 92.91	42 Mo Molybdenum 95.95	43 Tc Technetium 97.91	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
55 Cs Cesium 132.9	56 Ba Barium 137.3	72 Hf Hafnium 178.5	73 Ta Tantalum 180.9	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 209.0	84 Po Polonium 209	85 At Astatine 210	86 Rn Radon 222	
87 Fr Francium 223	88 Ra Radium 226	104 Rf Rutherfordium 261	105 Db Dubnium 262	106 Sg Seaborgium 263	107 Bh Bohrium 262	108 Hs Hassium 265	109 Mt Meitnerium 266	110 Ds Darmstadtium 269	111 Rg Roentgenium 272	112 Cn Copernicium 277	113 Nh Nihonium 289	114 Fl Flerovium 289	115 Mc Moscovium 289	116 Lv Livermorium 289	117 Ts Tennessee 289	118 Og Oganesson	
Lanthanides		57 La Lanthanum 138.9	58 Ce Cerium 140.1	59 Pr Praseodymium 140.9	60 Nd Neodymium 144.2	61 Pm Promethium 145	62 Sm Samarium 150.4	63 Eu Europium 152.0	64 Gd Gadolinium 157.2	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	
Actinides		89 Ac Actinium 227	90 Th Thorium 232.0	91 Pa Protactinium 231.0	92 U Uranium 238.0	93 Np Neptunium 237	94 Pu Plutonium 244	95 Am Americium 243	96 Cm Curium 247	97 Bk Berkelium 247	98 Cf Californium 251	99 Es Einsteinium 252	100 Fm Fermium 257	101 Md Mendelevium 258	102 No Nobelium 259	103 Lr Lawrencium 262	

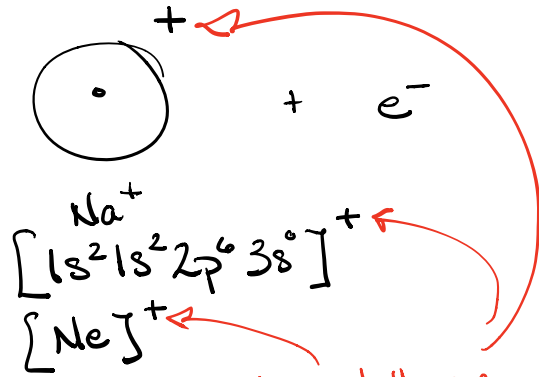
Very stable





Na
 $1s^2 2s^2 2p^6 3s^1$
 element
 neutral
 $p^+ = 11$
 $e^- = 11$
 Charge = 0

Sodium

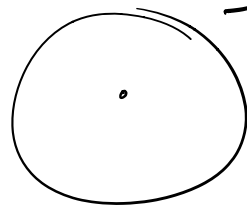
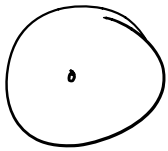


Charge tells me
 I have lost an
 e^-

$p^+ = 11^+$
 $e^- = 10^-$
 Charge = +1

Sodium ion

⇒ A Cation



-ide denotes
 an atomic anion

F^-
 fluoride

$9p^+ = 9^+$
 $10e^- = 10^-$
 -

$[1s^2 2s^2 2p^6]$

$[Ne]^-$

F

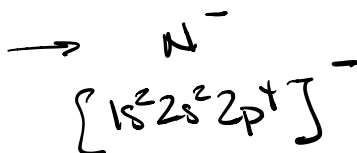
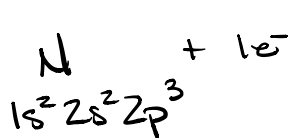
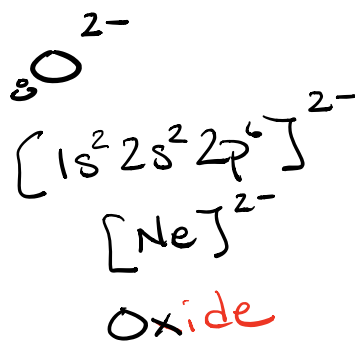
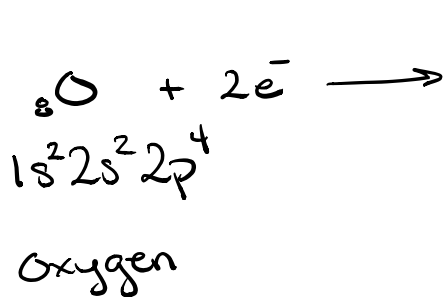
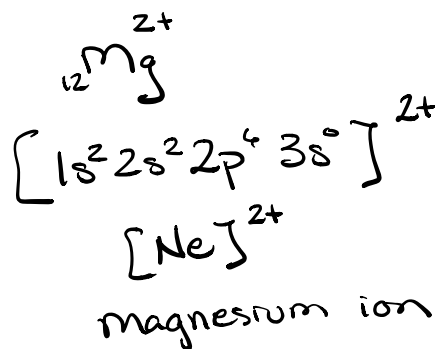
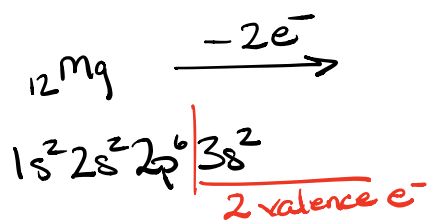
fluorine

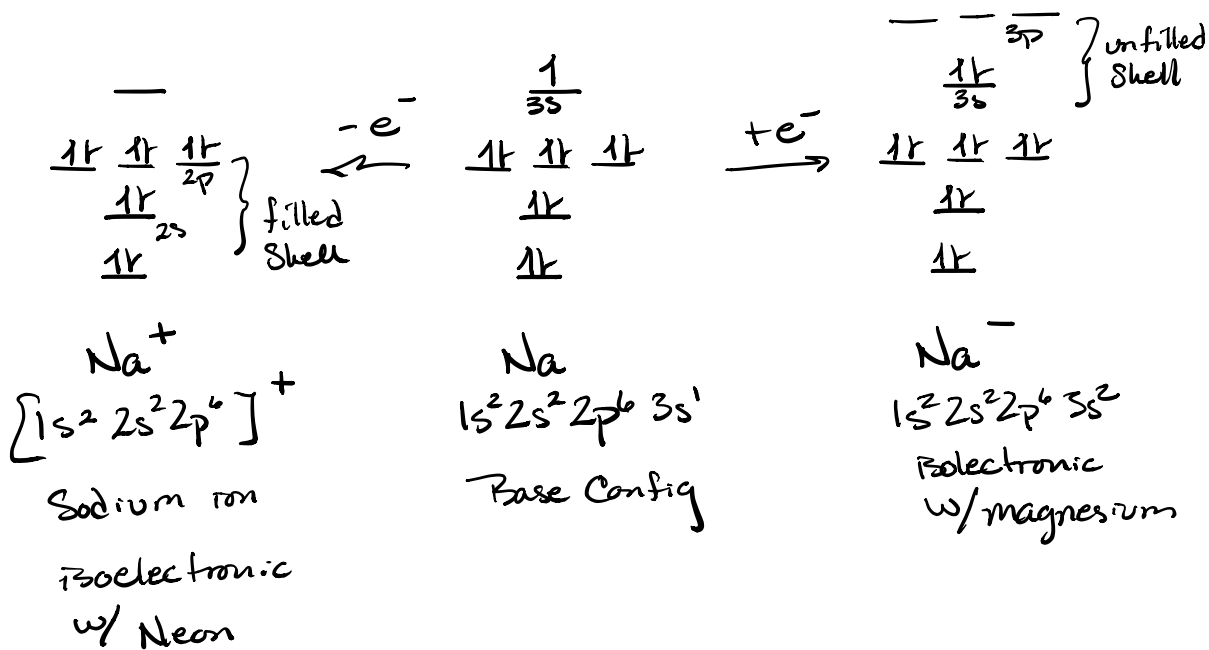
$9p^+ = 9^+$

$9e^- = 9^-$

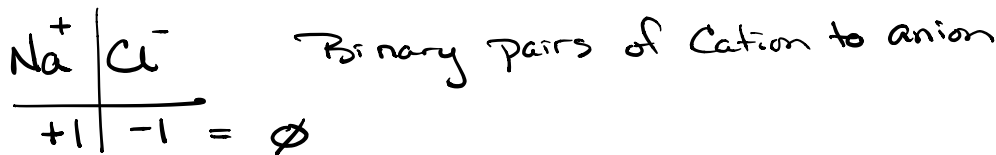
neutral
 net = 0

$1s^2 2s^2 2p^5$

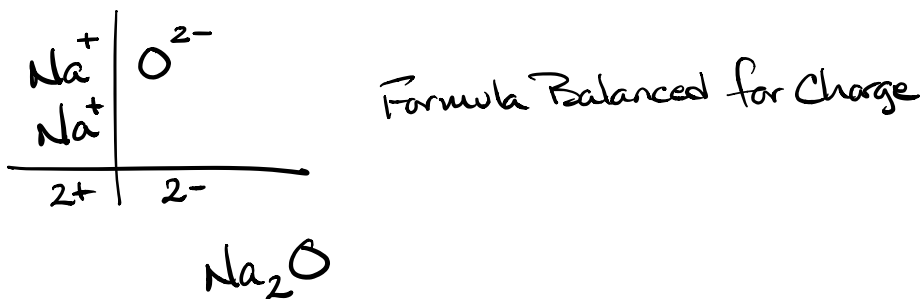


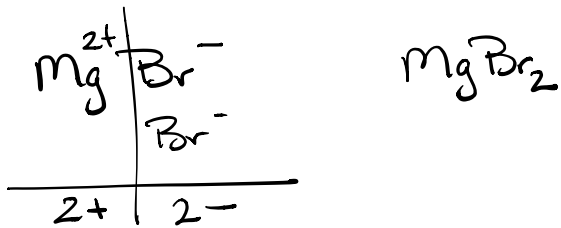


Ionic Compounds

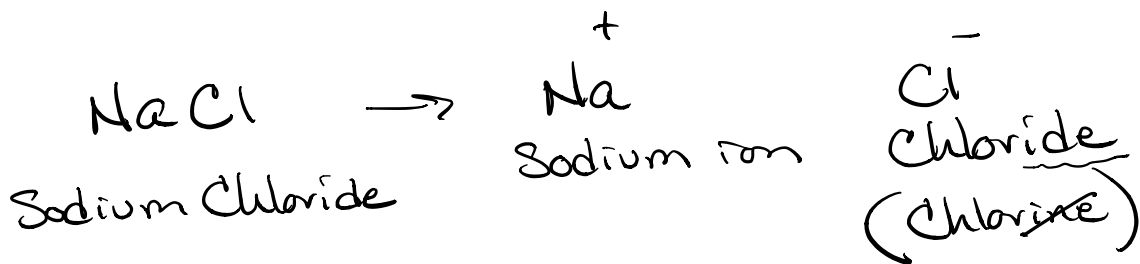


NaCl written as ionic compound they do not show the charges \Rightarrow implied & known by position in periodic table

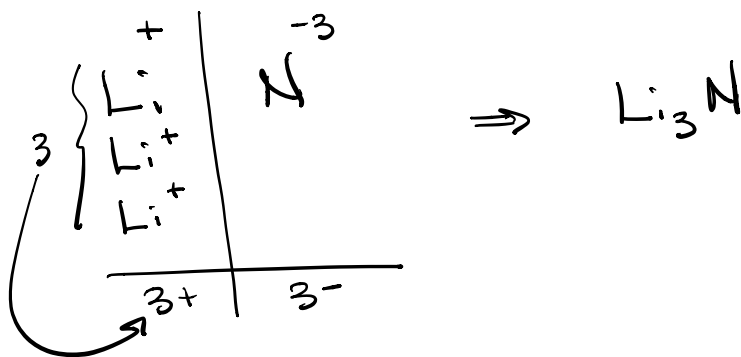




- ① Cation first Anion second
- ② Multiple number of an anion are denoted by Subscripts
- ③ Charges are not written, but understood by position in PT

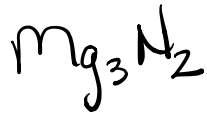
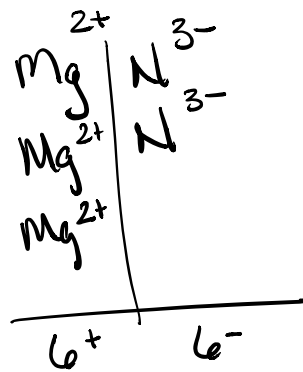


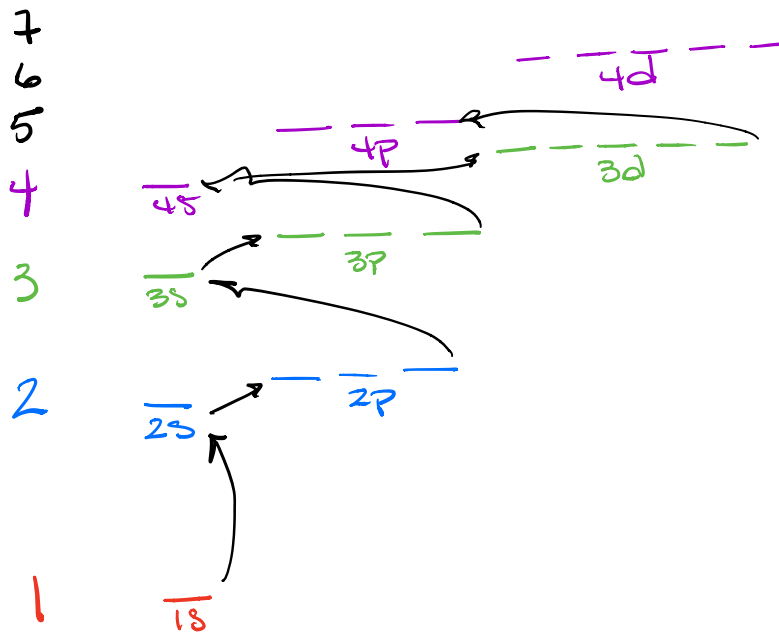
ex write the formula for Lithium nitride



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write the formula for magnesium nitride





1s						
2s	2p					
3s	3p	3d				
4s	4p	4d	4f			
5s	5p	5d	5f	5g		
6s	6p	6d	6f	6g	6h	
7s	7p	7d	7f	7g	7h	

1s 2s 2p 3s 3p 4s 3d 4p 5s

→ filling order