

Chemistry II (I) Unit 8 Notes

Note Title

5/20/2008

Tues May 20/08

Finding (average) atomic mass using isotope abundances.

Assumption: Assume

mass of neutron = mass proton = 1 u

(actually proton = 1.007276 u
neutron = 1.008665 u)

atomic mass unit

example: Chlorine in nature is 75.77% ^{35}Cl
and 24.23% ^{37}Cl

Using these: Find the average atomic mass of Cl

-change % to decimals:

$$(0.7577)35 + (0.2423)37 = 35.4846$$

rounding to
3 dec. places ↓

35.485

Do ex. 23 a, b, c p.150

/o

-due Thurs May 22
show me

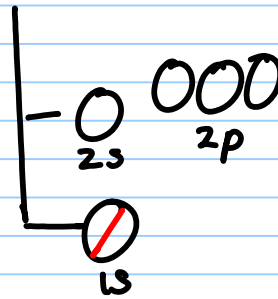
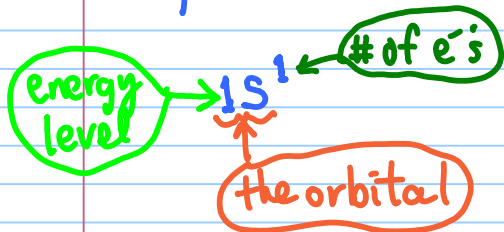
Thurs May 22/08

Electron Configurations

- show which orbitals e^- 's are in
and how many are in each.

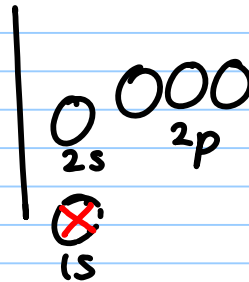
Hydrogen ($1e^-$)

configuration:



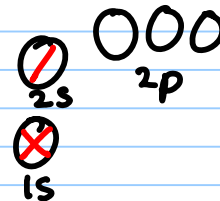
Helium ($2e^-$)

$1s^2$



Lithium ($3e^-$)

$1s^2 2s^1$

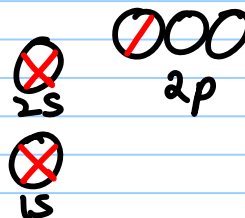


Rules: Electrons fill lowest energy levels first

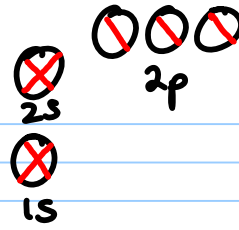
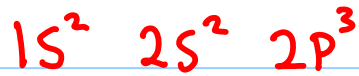
Each orbital (little circles) holds a maximum of 2 electrons

Boron ($5e^-$)

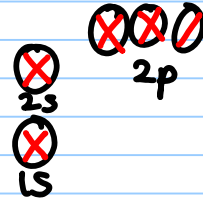
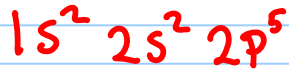
$1s^2 2s^2 2p^1$



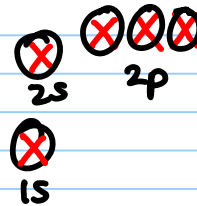
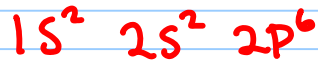
Nitrogen ($7e^-$)



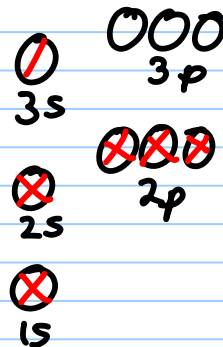
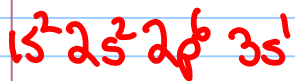
Fluorine ($9e^-$)



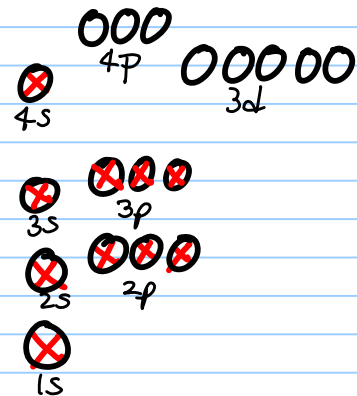
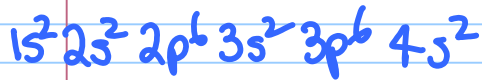
Neon ($10e^-$)



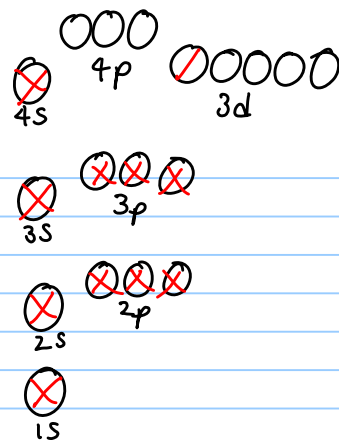
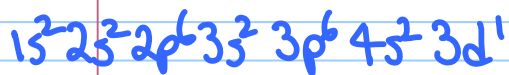
Sodium ($11e^-$)



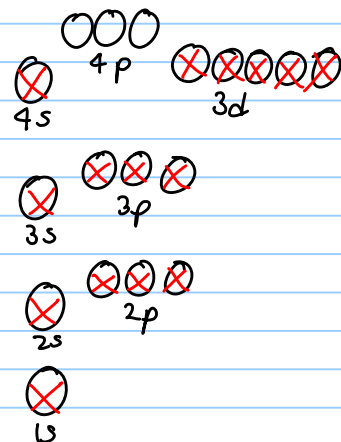
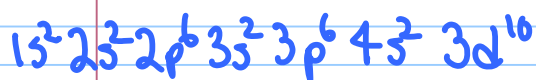
Calcium ($20e^-$)



scandium (21e⁻)

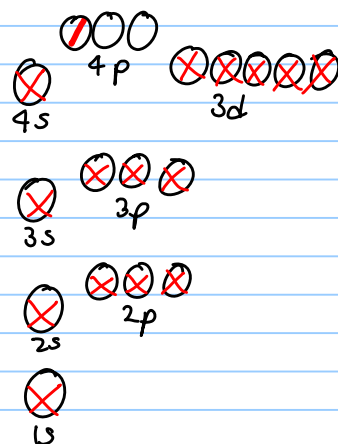
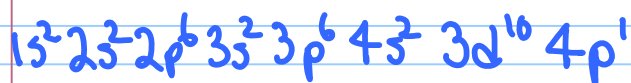


Zinc (30e⁻)



Fri May 23/08

gallium (31e⁻)

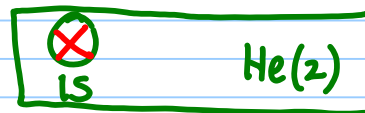
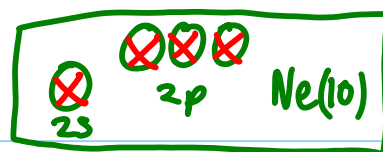


The Noble Gases

He (2e⁻)



Ne (10e⁻)



Mon May 26/08

Core Notation

1. Find the noble gas just below the atomic # of the element
2. Put it in square brackets (include # of e⁻)
3. Add the rest

eg) Ca(20)

(long way) $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2$

(core notation) Ca(20): $[Ar_{18}] 4s^2$

Write the core notation for the following:

(Co 27) $[Ar_{18}] 4s^2 3d^7$

(Rb 37) $[Kr_{36}] 5s^1$

(Br 35) $[Ar_{18}] 4s^2 3d^{10} 4p^5$

(N 7) $[He_2] 2s^2 2p^3$

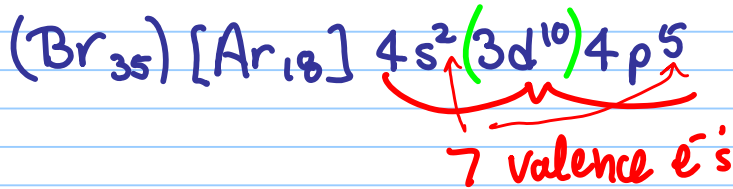
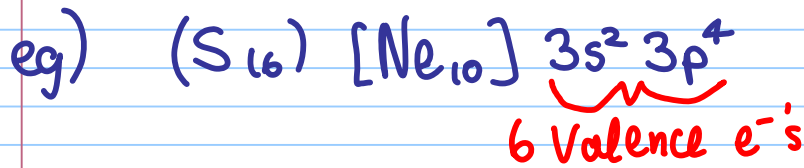
(Ar 18) $[Ne_{10}] 3s^2 3p^6$

Valence Electrons

(Vay-lence)

- the electrons in s & p orbital above the noble gas core.

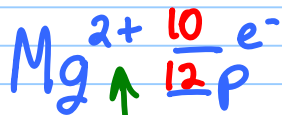
Note: d & f electrons are NOT counted as valence e⁻s



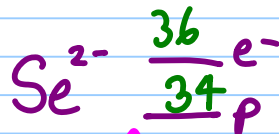
Configurations of Ions Tues May 27/08

Ion - Atom that has a charge

In an ion # of e⁻ ≠ # of p's

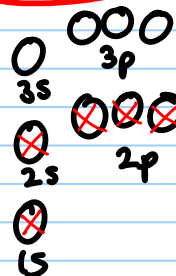
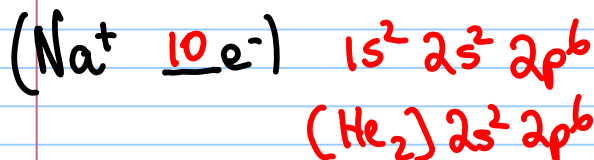


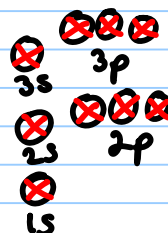
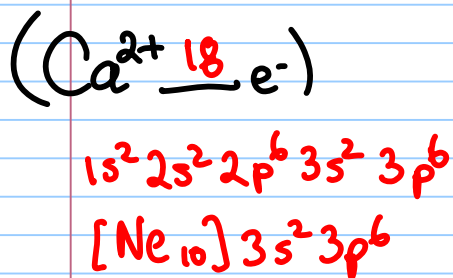
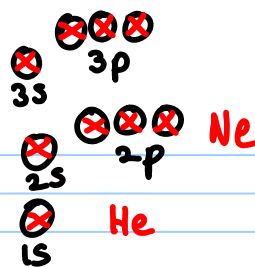
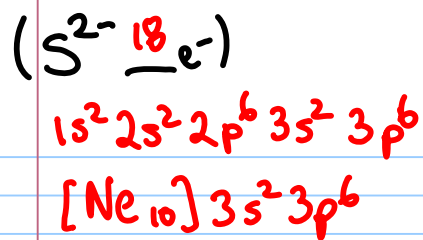
In a (+) ion
less e⁻ than p's



In (-) ion
more e⁻ than p's

Configurations

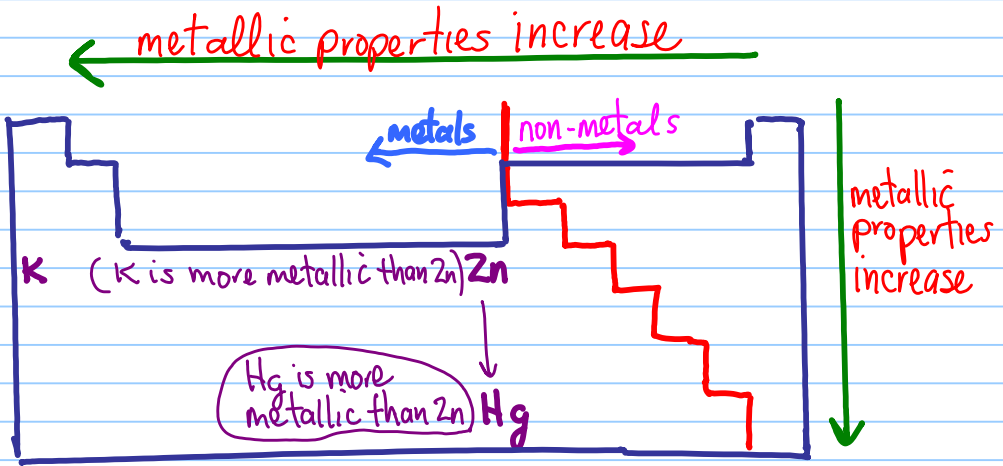




Ca^{2+}	Ar	S^{2-}	all have the same electron arrangement -different nuclei
$18e^-$	$18e^-$	$18e^-$	
20p	18p	16p	
charged	neutral	charged	

Tues. Jun 3/08

Trends in Metallic Properties



METALLOIDS

- Have some properties of metals and some properties of non-metal

Metalloids

B, Si, Ge, As, Sb, Te, Po

- found along the staircase

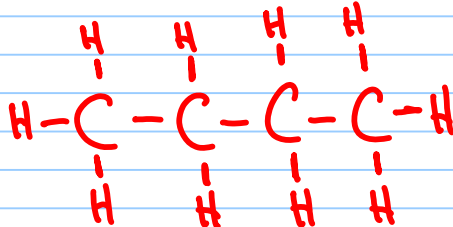
eg) Si is a semiconductor
(poor)

- brittle like a non-metal
- shiny like a metal

Wed Jun 4/08

Shapes of Hydrocarbons

eg) $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_3$ (C_4H_{10})



$\text{CH}_3\text{CH}_2\text{CH}_2\text{Cl}$

