

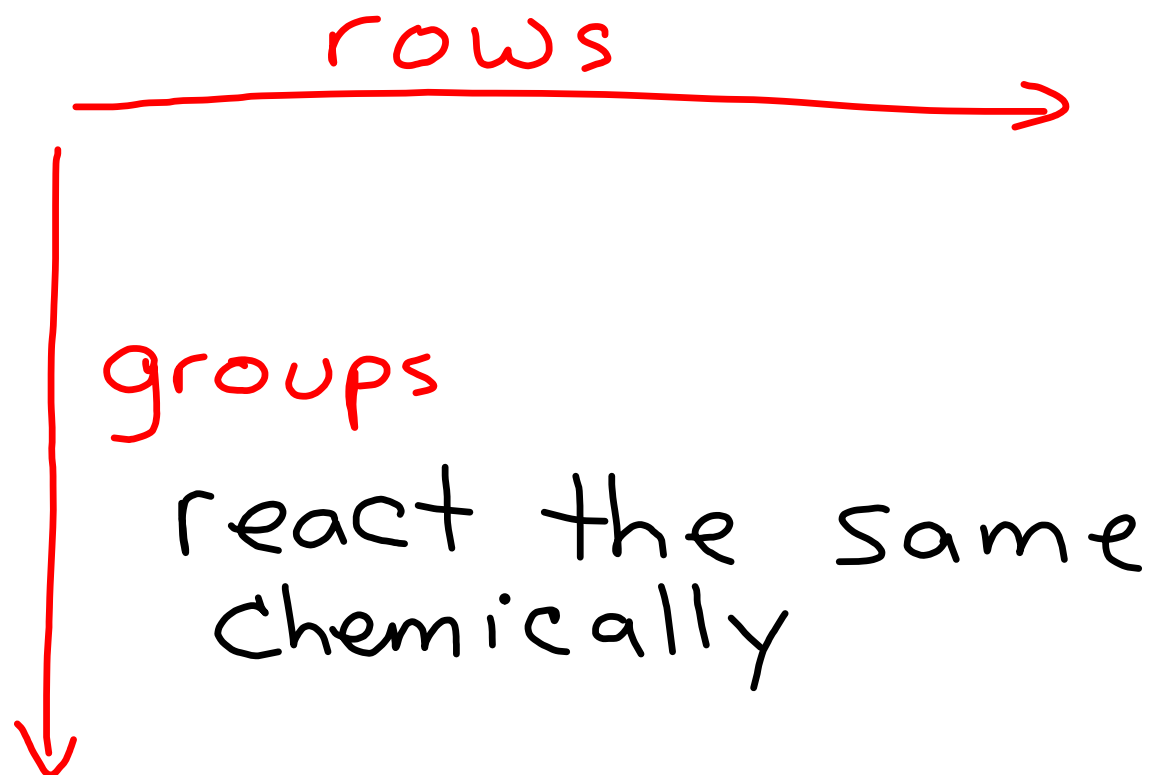
O Oxygen
C Carbon
N Nitrogen
Co Cobalt
Ca Calcium
H Hydrogen
S Sulfur
Zn Zinc
P Phosphorus
Na Sodium
K Potassium
Mg Magnesium
B Boron
Ag Silver
Au Gold
Kr Krypton
Sr Strontium
Fe Iron
Ne Neon
F Fluorine
Cl Chlorine
Br Bromine (l)
I Iodine (s)
Ar Argon
He Helium
Li Lithium
Hg Mercury (l)
Xe Xenon
Pb Lead
U Uranium
Tc Technetium

Ni Nickel
Rn Radon

rows

groups

react the same
chemically

A diagram illustrating the periodic table's structure. A horizontal red arrow points to the right, labeled 'rows' in red. A vertical red arrow points downwards, labeled 'groups' in red. To the right of the vertical arrow, the text 'react the same chemically' is written in black.

group 1 1A

Li

Na

K

Rb Rubidium

Cs Cesium

Fr Francium

alkali
metals



group 2 or 2A

Be

Mg

Ca

Sr

Ba

Ra - Radium

alkaline
earth
metals

group 13 or 3A

Boron group

B

Al

group 14 or 4A
carbon group

C

Si

Sn - Tin

Pb - lead

group 15 or 5A
nitrogen group

N

P

As - Arsenic

Sb - Antimony

Bi - Bismuth

group 16 or 6A

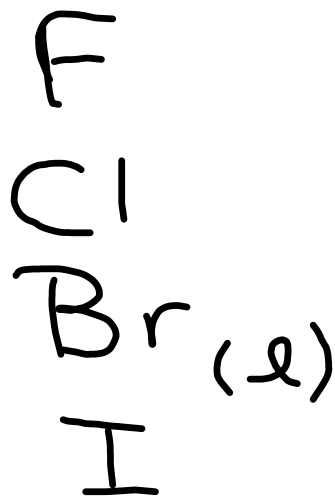
Oxygen group

O

S

Po - Polonium

group 17 or 7A
halogen group



group 18 or 8A
Noble gases

He Xe

Ne Rn

Ar

Kr

group 3 to 11
transition metals
W - Tungsten

58 71

rare-earths
lanthanide series

90 103

actinide series

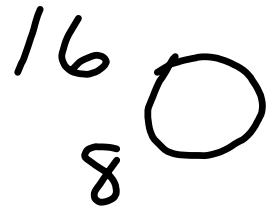
8 ← atomic # = # protons

O ← symbol

16.00 ← atomic mass =
protons + # neutrons

$$\begin{array}{r} \text{atomic mass (integer)} \\ - \text{atomic \#} \\ \hline \text{\# neutrons} \end{array}$$

Oxygen-16



Periodic Table is
periodic in the atomic#.

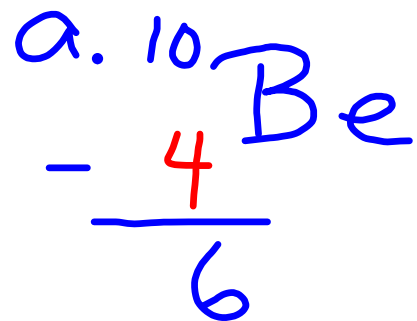
58.93
27 Co

58.69
28 Ni

40
18 Ar

39
19 K

3.



+

p

4

-

e

4

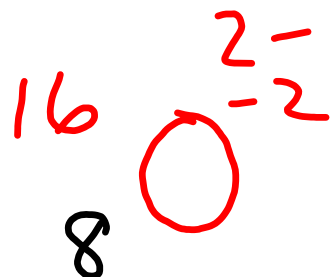
$\emptyset$

n

6

3

b.



atomic # = +8

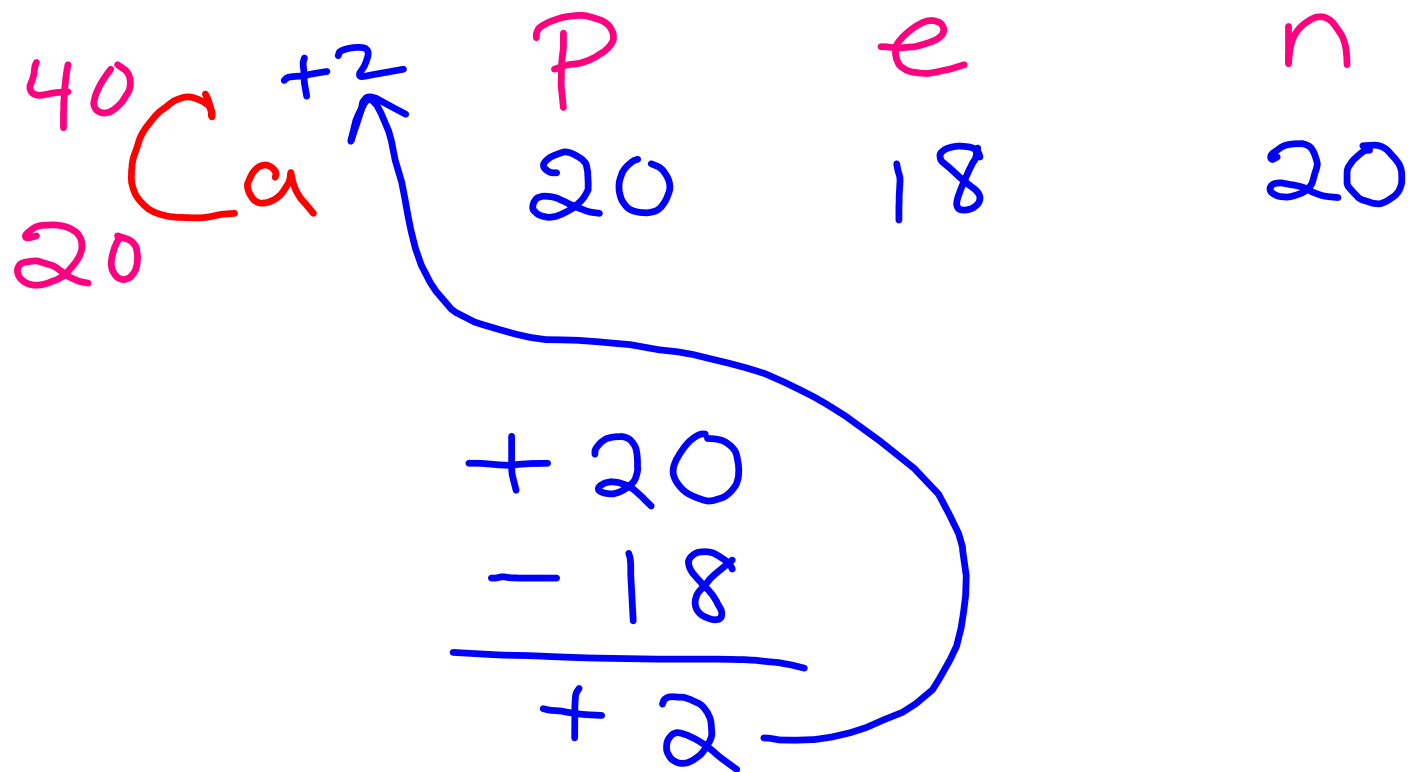
of electrons = - 8

charge = -2

g.



$$\begin{array}{r} + 82 \\ - \quad X \\ \hline + 4 \end{array}$$

metal

luster

mainly(s)
except for
 $\text{Hg}_{(l)}$

valuable
ductile

conducts
heat and
electricity

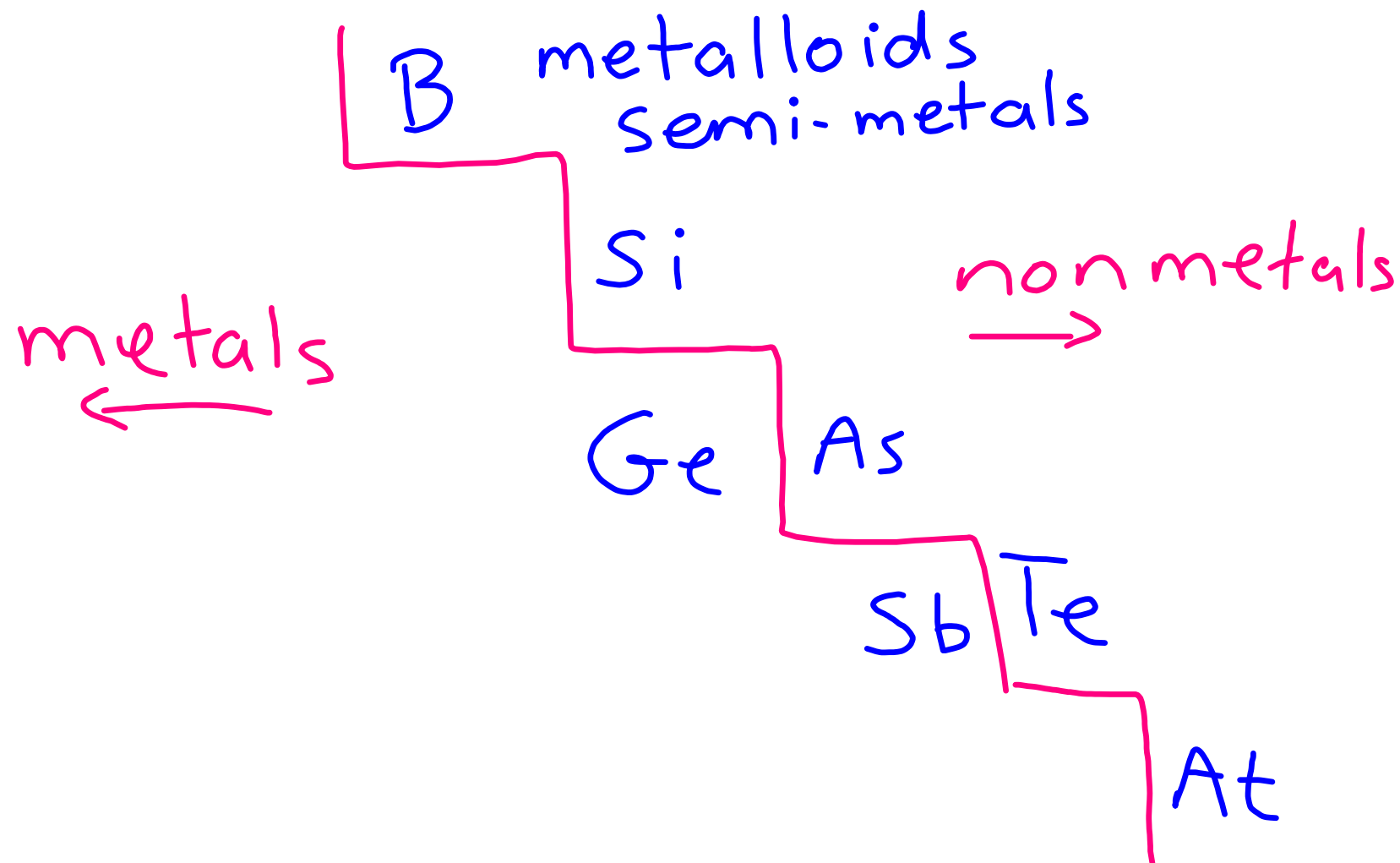
nonmetal

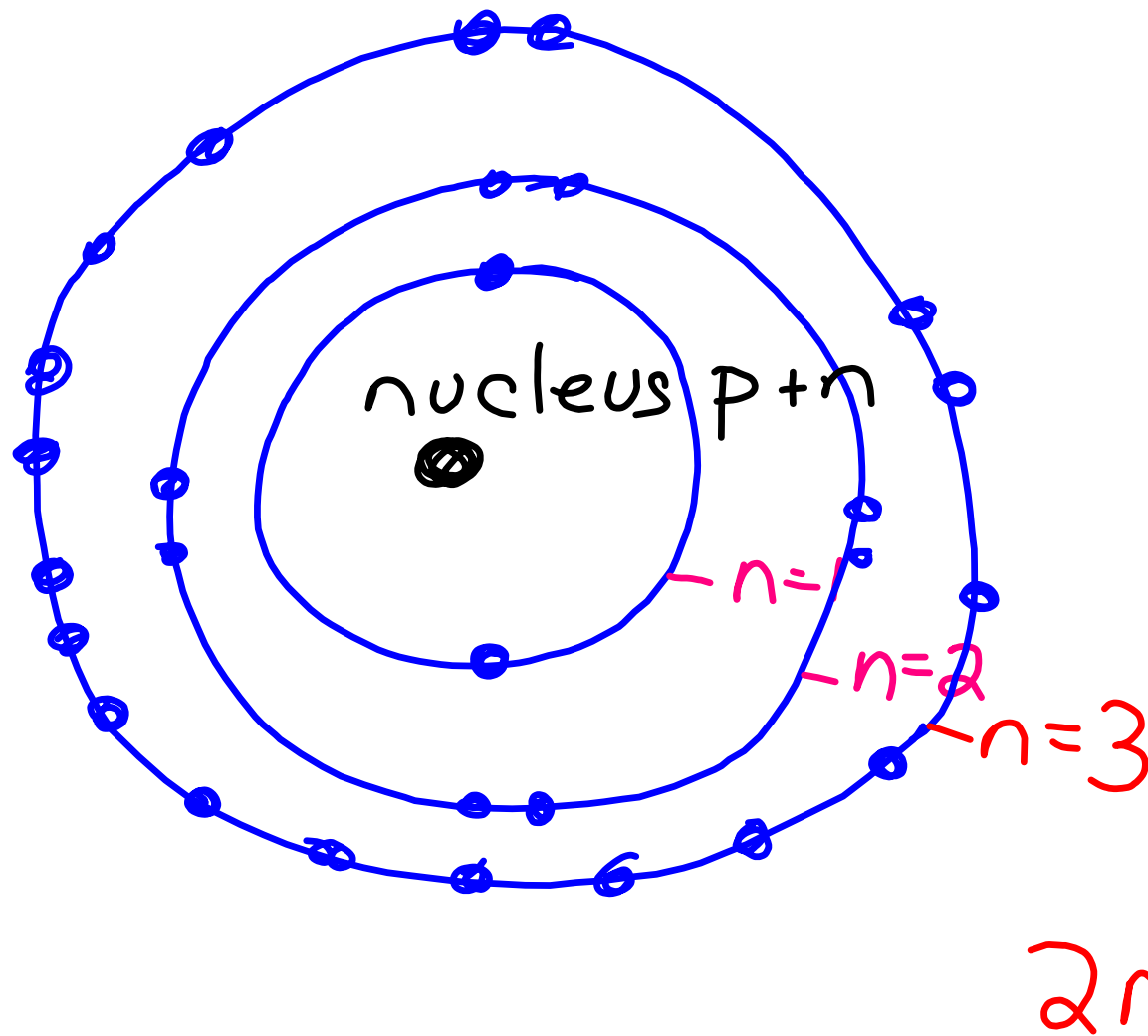
dull

gas, $\text{Br}_{(l)}$,
Some solids

brittle

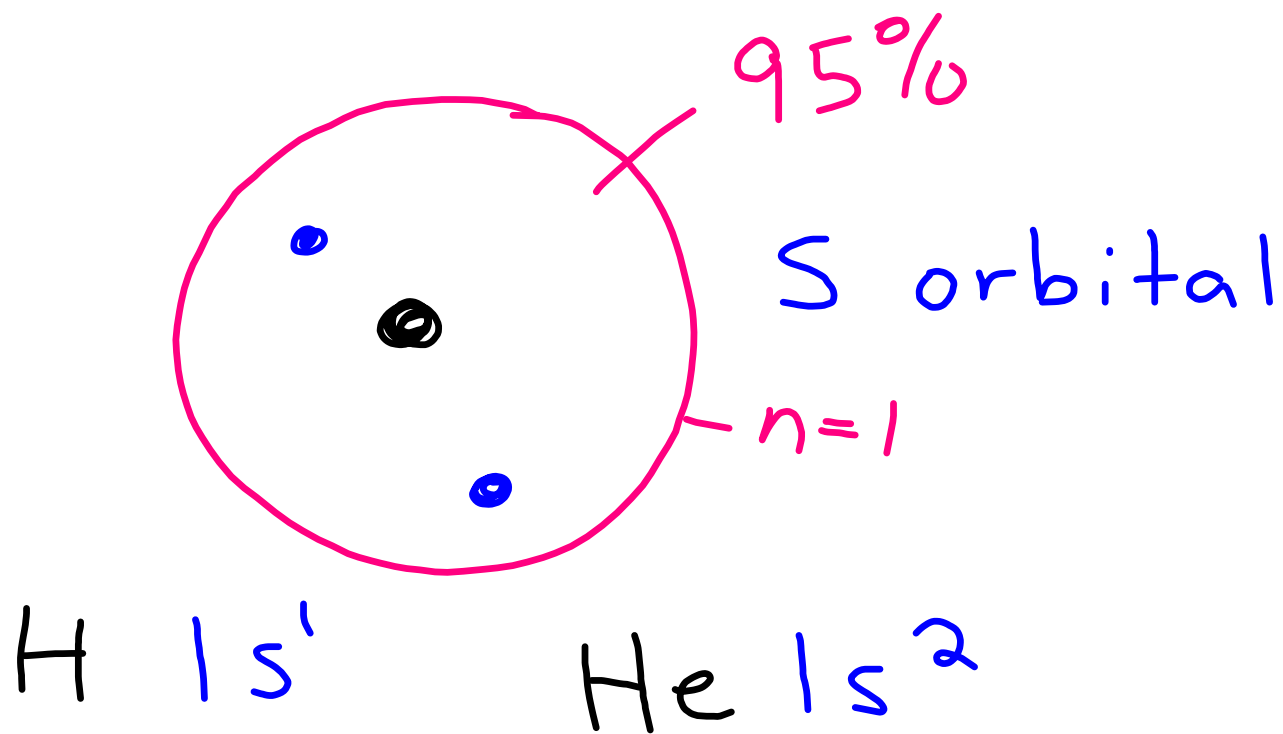
poor conductor
of heat and
electricity

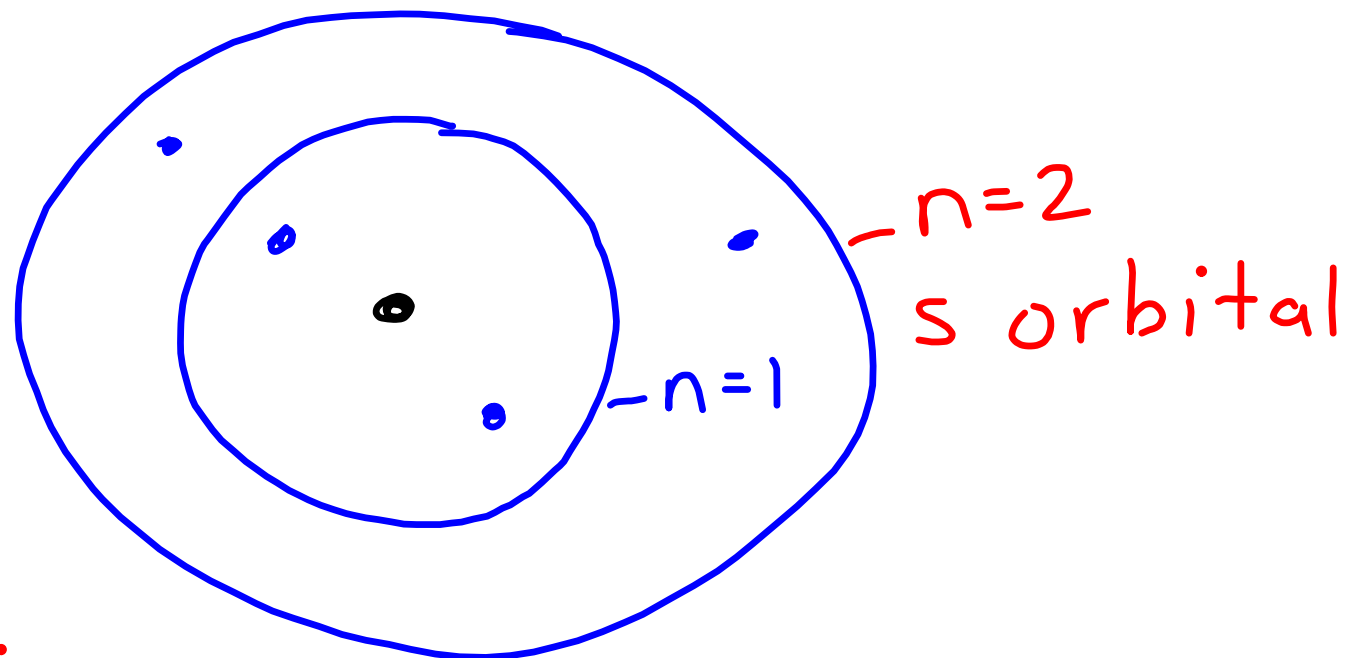




nucleus = atomic mass =
#p + #neutron

e^- s have a mass close
to zero.



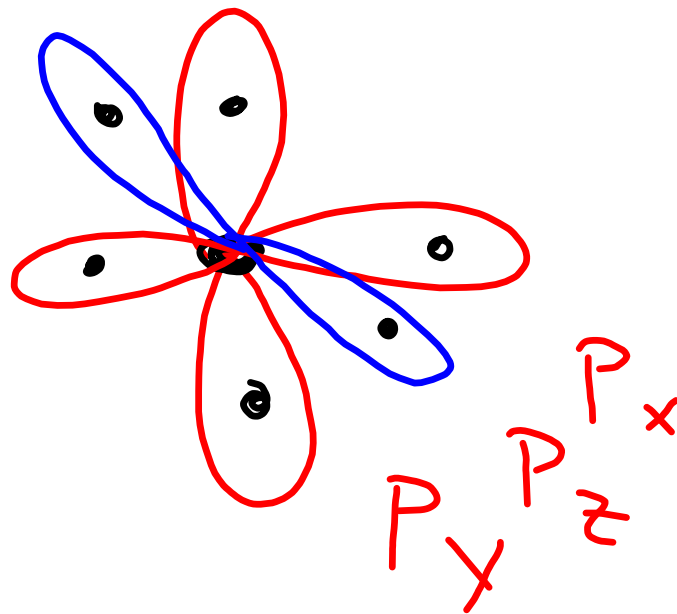


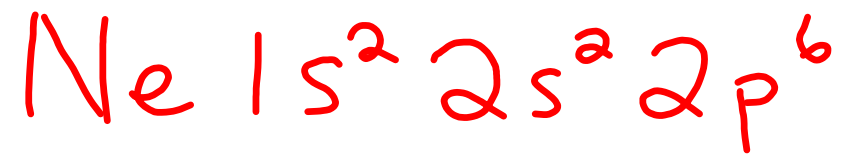
Li $1s^2 2s^1$
Be $1s^2 2s^2$

s block
Li Be

p-block
B Ne

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



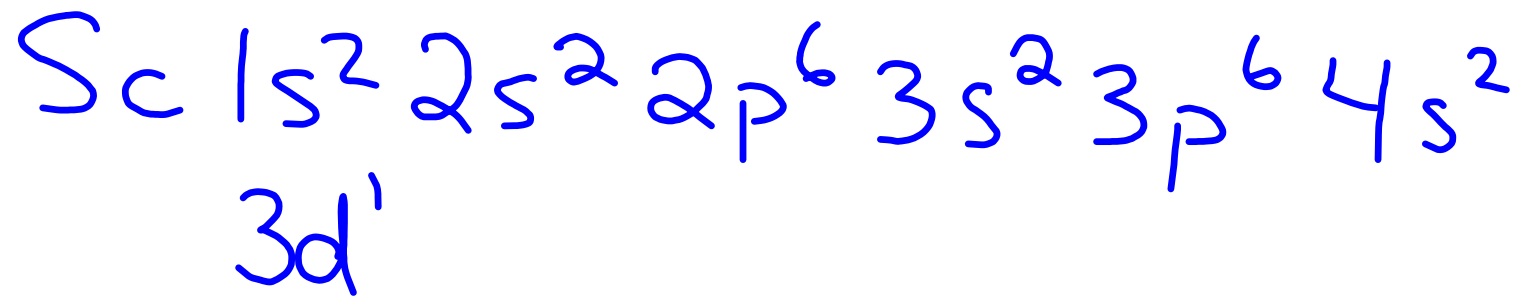
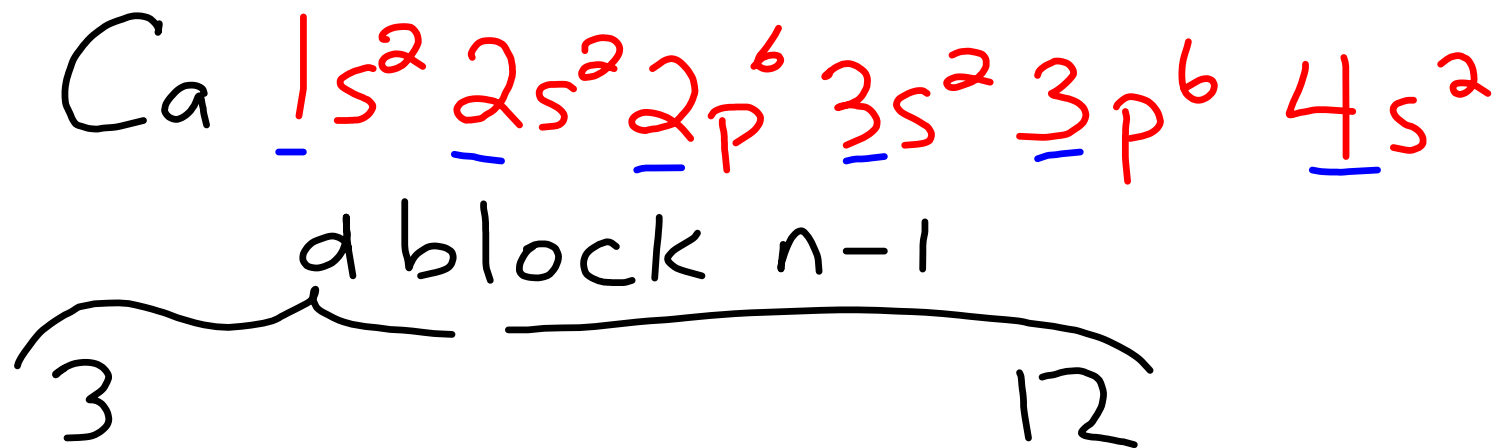


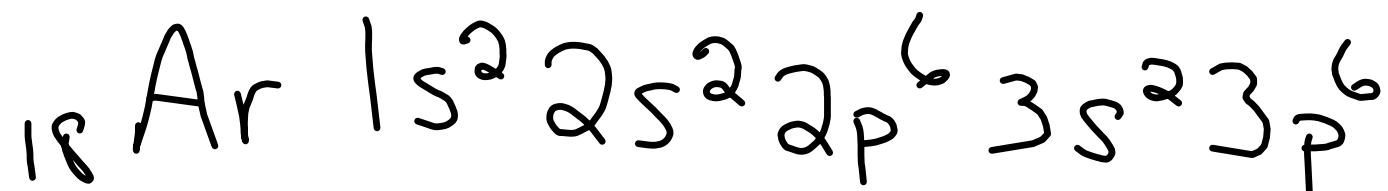
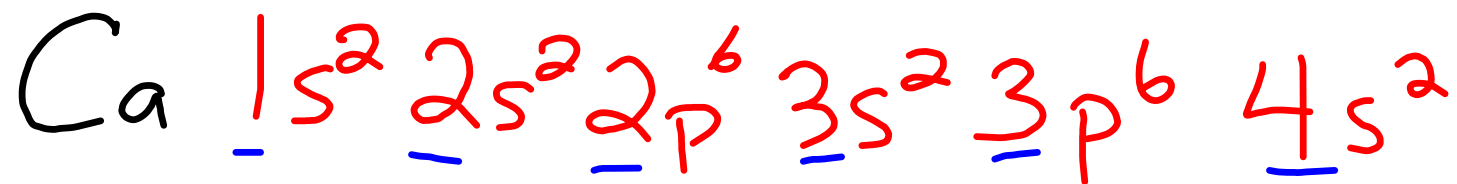
Mg $1s^2 2s^2 2p^6 3s^2$

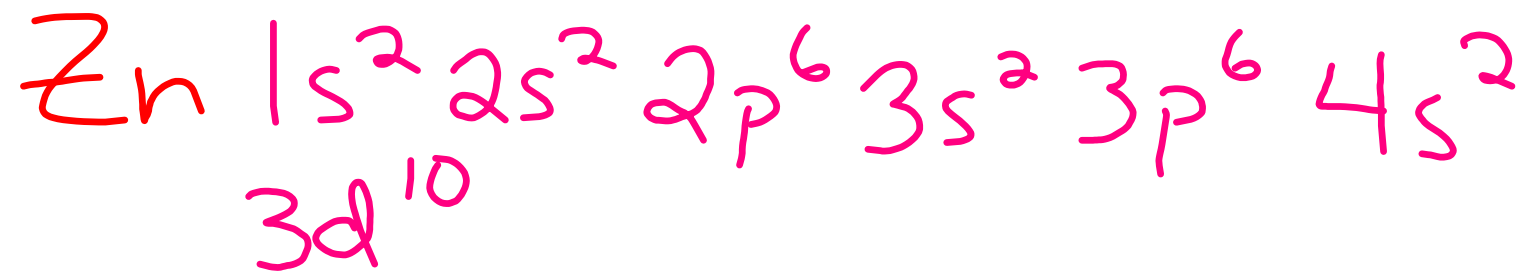
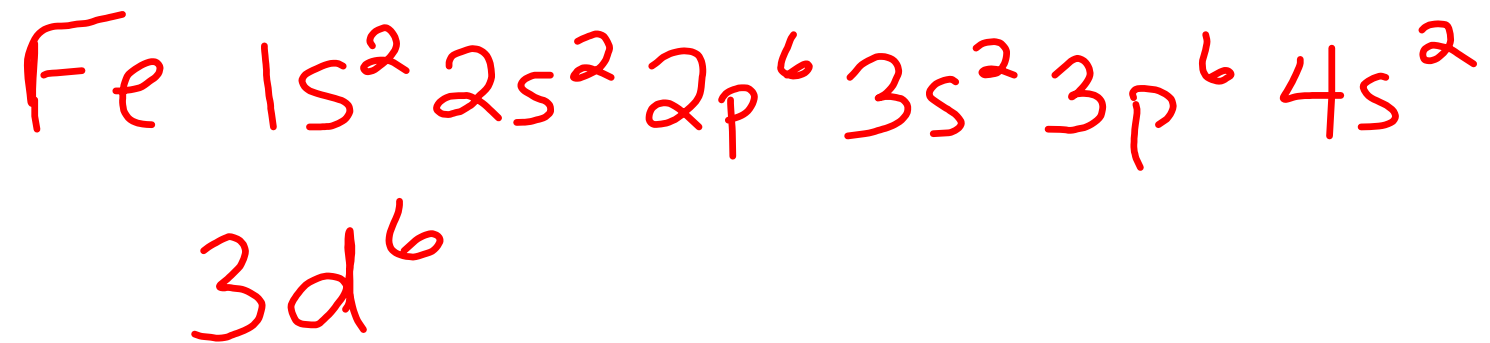
P $1s^2 2s^2 2p^6 3s^2 3p^3$

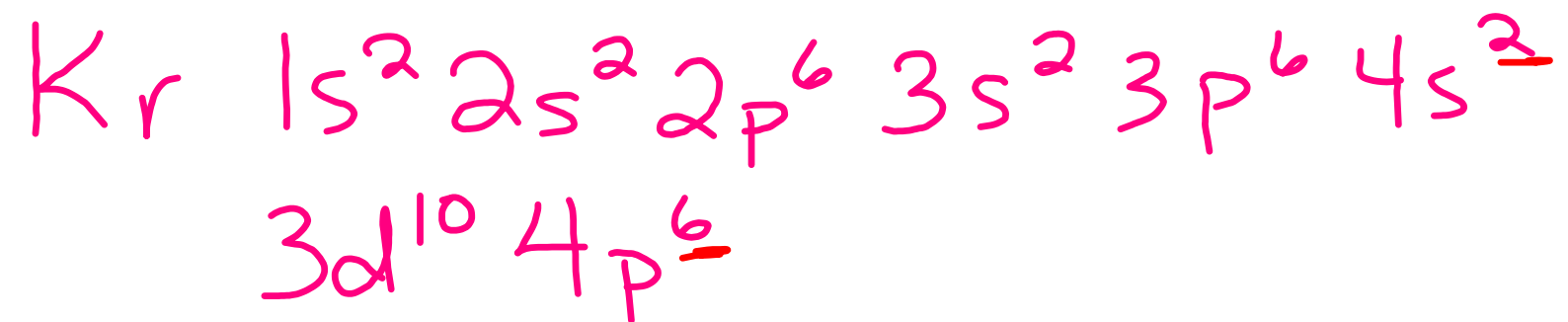
Ar $1s^2 2s^2 2p^6 3s^2 3p^6$

Noble gases have 8
valance e^- s (outer e^- s)
S and p orbitals only





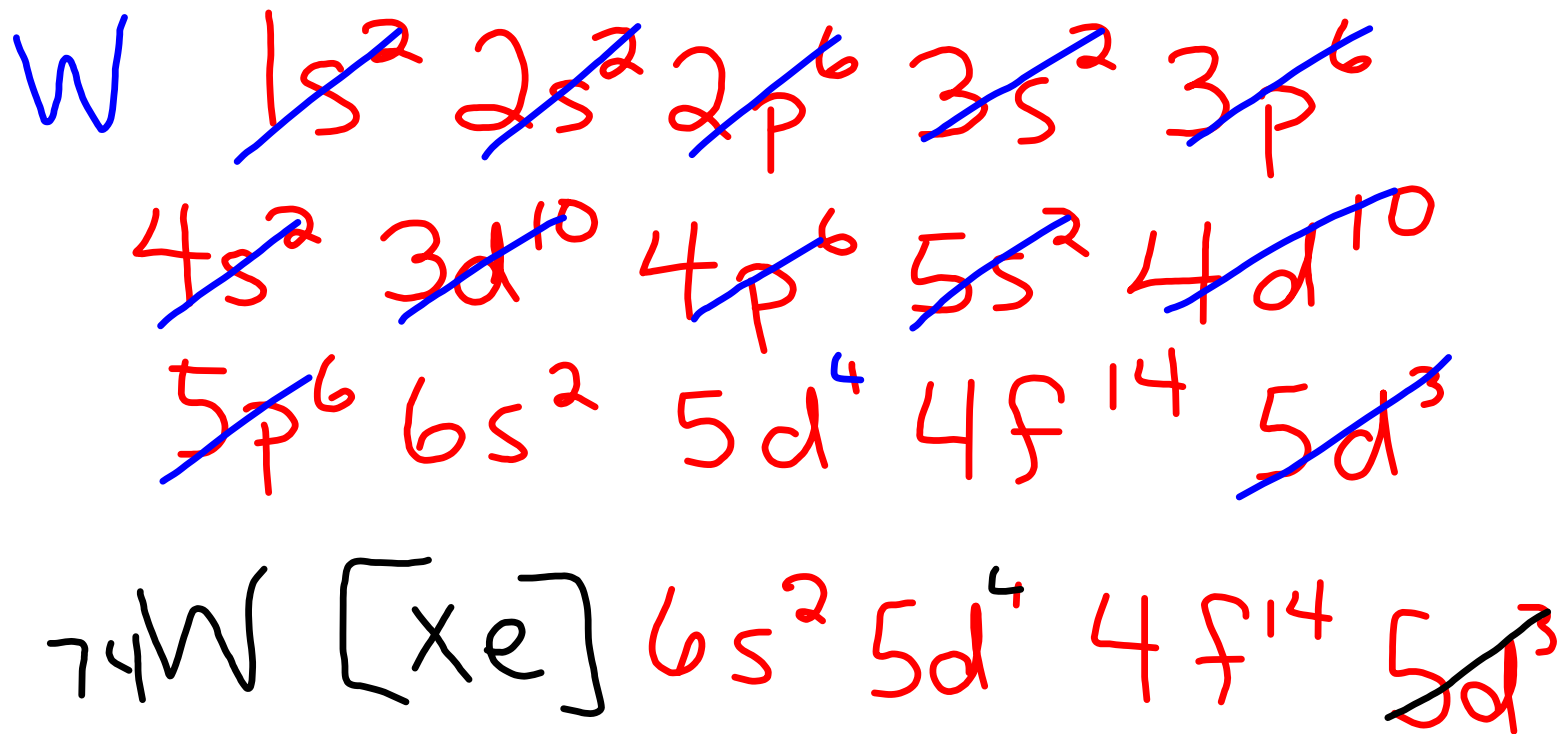




f-block $n-2$

58	71
----	----

90	103
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1A 2A

1 2

+1 +2

#p +4

#e -2

Charge +2

3A 4A 5A 6A 7A 8A

3 4 5 6 7 8

+3 ±4 -3 -2 -1 0

+4

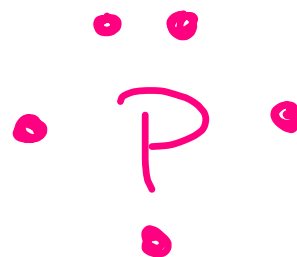
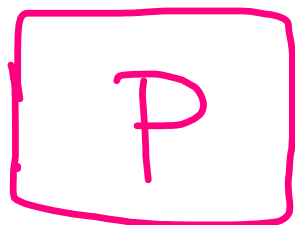
-4

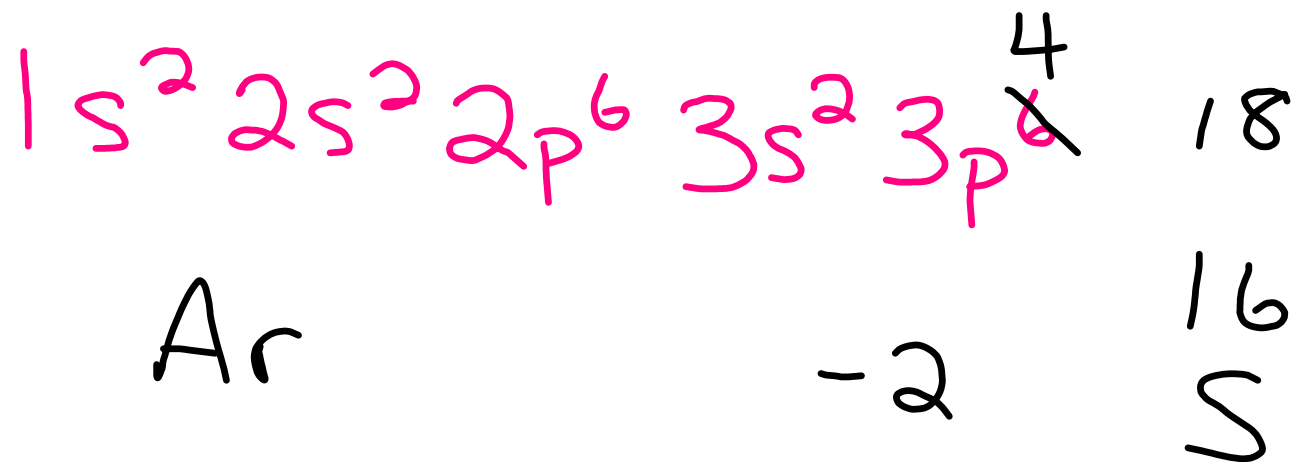
0

61Pm $4f^4$

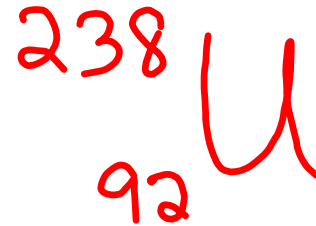
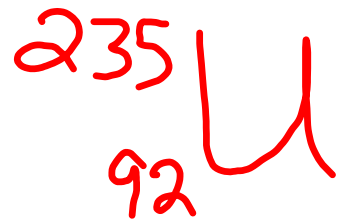
22Ti $3d^2$

Lewis Dot Structures:
Show the valance e's





Elements are defined
by their atomic #.



Same element but diff.
masses are called isotopes.
Isotopes have diff. #
of neutrons.

5. Weighted Avg. of each of
the % isotopes.

^{35}Cl 75.53 34.96885

^{37}Cl 24.47 36.9658

$(0.7553)(34.96885) = 26.41197241$

$(0.2447)(36.9658) = 9.04553126$

35.45750367
35.46 amu

Metals usually have positive charges. (losing e^- s)

NonMetals usually have negative charges. (gain e^- s)