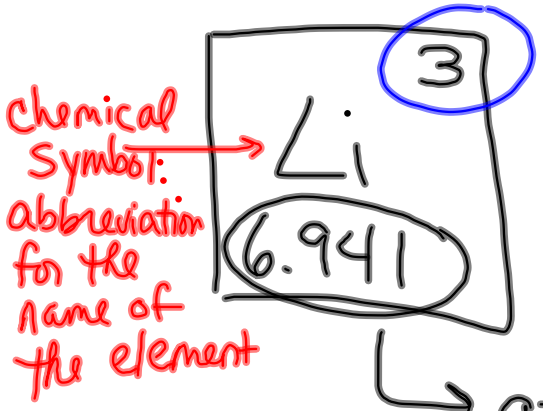
Periodic Table Math



chemical symbol: abbreviation for the name of the element

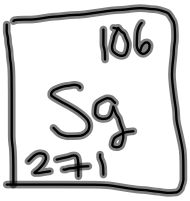
atomic number: number of protons in the nucleus of one atom of this element (= to the # of electrons)

atomic mass - mass of one atom of this element

*If we round the atomic mass it is equal to the total number of particles in the nucleus of one atom of this element.

This is helpful because: if we know the # of total particles (ex: 7) and we know how many of them are protons (3) then

7 - 3 = 4 the difference is the number of neutrons



# of P: 106

# of e: 106

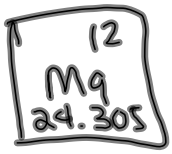
# of N: 271 − 106 = 165

# of P = 83
e = 83
# of N = 209 - 83 = 126 N

≈209

Total # of particles in the nucleus

# of P = 5
e = 5
N = 11 - 5 = 6 N



P = 12
e = 12
N = 24 - 12 = 12 N

P = 113
e = 113
N = 286 - 113 = 173 N

286 - total particles

# of P = 1
e = 1
N = 1 - 1 = 0

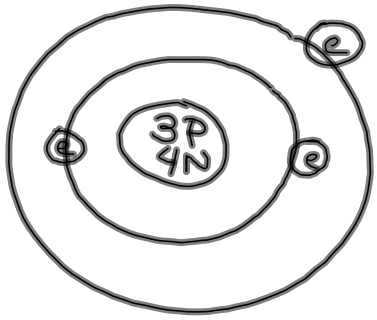
Using this info to draw atoms of different elements:

ex)

① do the math + find the # of P, N, + e...

ex) 3P
4N
3e

② Draw a circle representing the nucleus + write in the # of P and the # of N



③ Now we need to figure out where the electrons go....

We know there are 7 possible energy levels in the electron cloud.

The rules for filling the first three are:

1st - up to 2 e⁻
2nd - up to 8 e⁻
* 3rd - up to 8 e⁻
(but can hold more under certain conditions)

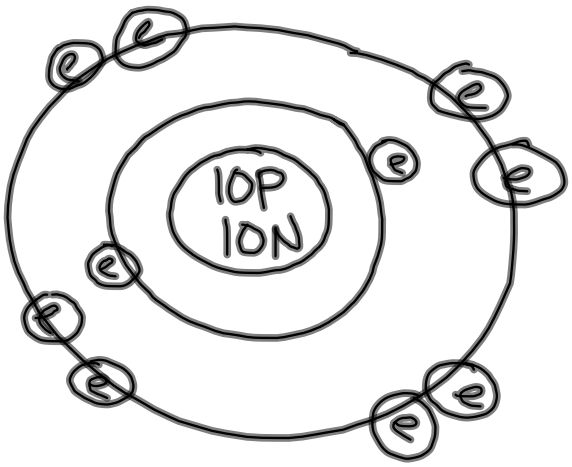
Li

So, this atom will have 2 e⁻ on the first energy level and 1 on the second.

ex) Neon

10
Ne
20.179

# P = 10
e = 10
N = 10



Ne