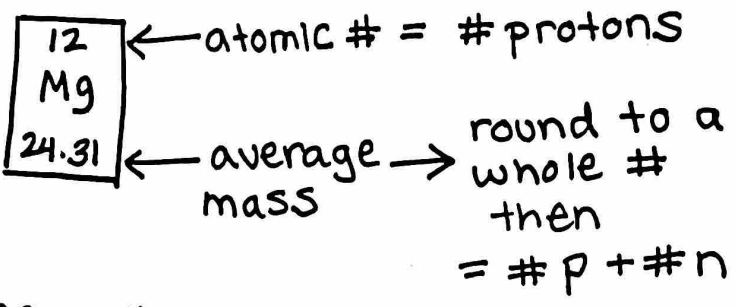
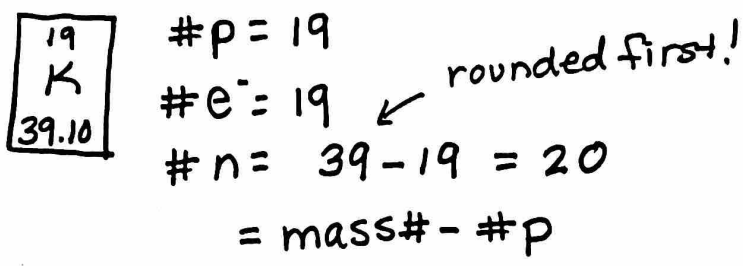


# ① Atomic #'s



normally #p = #e<sup>-</sup>

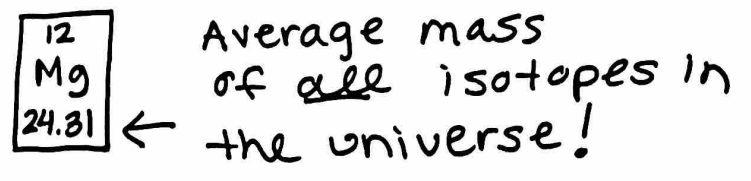
Potassium:



\* The name of the atom is based on the # of protons

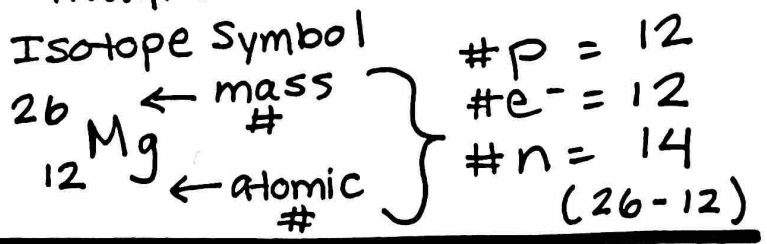
# ② Isotopes

\* Same #p, same #e<sup>-</sup>  
↳ different # of n.  
(same element, but a different "version")



• guess the most common isotope by rounding to the whole #

isotope name - "mass #"  
magnesium-26

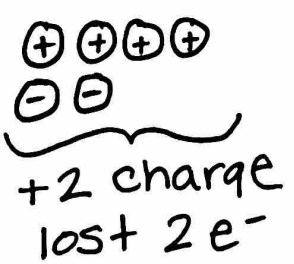
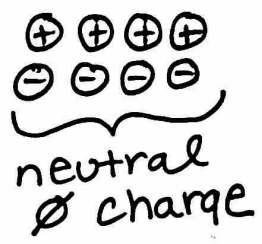


# ③ Ions

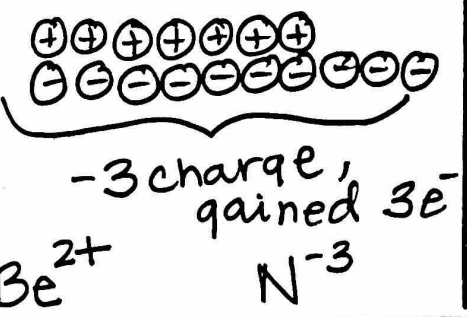
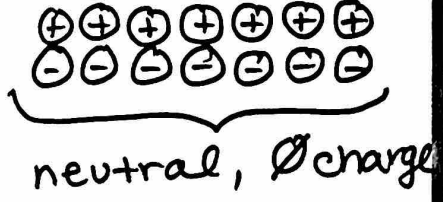
\* same #p, same #n  
↳ different #e<sup>-</sup>

ion symbol: Cations Anions  
X charge lost e<sup>-</sup> gain e<sup>-</sup>  
+ charge - charge

Be: 4p<sup>+</sup> 4e<sup>-</sup>

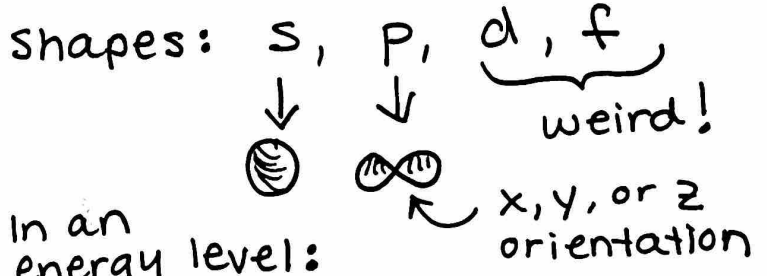


N: 7p<sup>+</sup> 7e<sup>-</sup>



# ④ orbitals

\* area an e<sup>-</sup> is most likely to be found  
↳ "probability cloud"



In an energy level:  
s - 1 orbital - 2e<sup>-</sup>  
p - 3 orbitals - 6e<sup>-</sup>  
d - 5 orbitals - 10e<sup>-</sup>  
f - 7 orbitals - 14e<sup>-</sup>

up to 7 energy levels

## ⑤ Orbital rules

### ① Aufbau

- fill orbitals from lowest energy to highest energy
- fill diagram from bottom to top

"e- are lazy!"

### ② Pauli Exclusion

- every e- needs a unique "address"
- one e- in an orb. spin up ↑
- one e- in an orb. spin down ↓

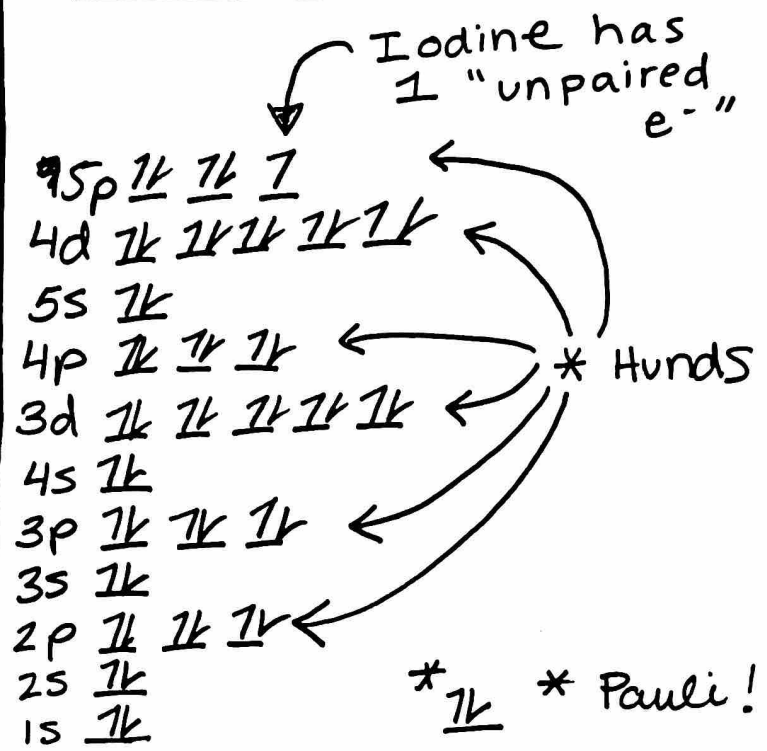
"only fit 2e- per orbital!"

### ③ Hund's

- If you have multiple orbitals @ same energy level - spread them out before pairing them up!

"don't share a room!"

## ⑥ Orbital diagrams



"Iodine 53 e-"

\* Start @ bottom!  
\* Aufbau!

## Practice Problems