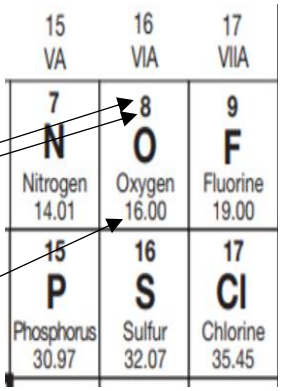
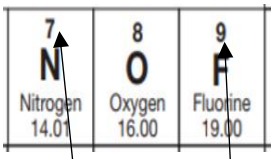
March 17th Learning Target 1 Notes

Introduction: Hey ya'll what up! I will try and keep these lesson as short and to the point as possible. I am not trying to give you busy work, EVERYTHING has a purpose, or I wouldn't waste your time nor mine doing this! I hope you all stay Corona Free, enjoy this learning from home as much as possible, cause you know when we get back we are going to GET AT IT, so learn as much as you can from now till then, Don't be Behind when school starts back!!!!

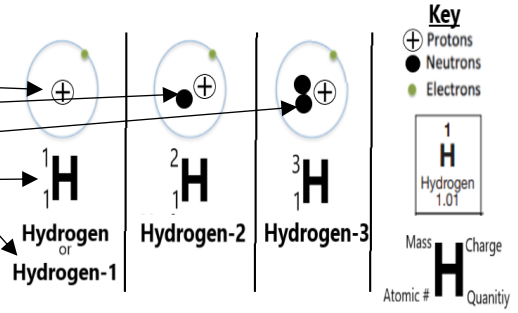
Learning Target 1: Understanding ALL Alternate forms of the atom.



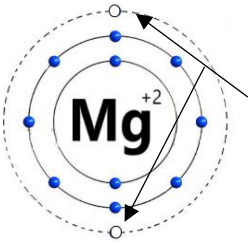
- ➢ It is all based on the amount of 3 subatomic particles: Protons, Neutrons & Electrons.
  - ✓ The basic form of the atom is what you would use the periodic table to figure out, such as….
    - ❖ The Atomic # is the smaller number that tells us the amount of Protons, this is how we identify an element
      - if it has 8 protons then its Oxygen EVERY SINGLE TIME.
    - ❖ The Atomic # also tells us how many electrons there are most of the time
      - Oxygen typically also has 8 electrons
    - ❖ The Atomic Mass # is the larger number that tells us the TOTAL amount of things in the Nucleus. The only things in the Nucleus are Protons & Neutrons, so if you know how many protons there are (atomic #) then you just subtract to find Neutrons.
      - Atomic Mass # - Atomic # = amount of Neutrons
      - Don't forget to round the Atomic Mass #
      - For Oxygen: 16 – 8 = 8 neutrons
  - ✓ **Transmutation: If for some reason the protons are changed to be more or less, transmutation has occurred.**
    - ❖ We Identify the element with protons, so if that is changed then so has its identity and we call this Transmutation which basically means changing from one identity to another.
      - If Oxygen (8 Protons) grains a proton (9 protons) then it will become Fluorine.
      - If Oxygen (8 Protons) loses a proton (7 protons) then it will become Nitrogen.



  - ✓ **Isotopes: This is a version of the atom that is heavier or lighter due to how many Neutrons it has.**
    - ❖ Isotopes are based on mass, look at the isotopes of Hydrogen.
    - ❖ Each time a Neutron is added the Mass increases.
      - Base Hydrogen has a mass of 1 (1 p^+ & 0 n^0).
      - Add 1 neutron the mass becomes 2.
      - Add 2 total neutrons the mass becomes 3.
      - We can write it in 2 different ways.



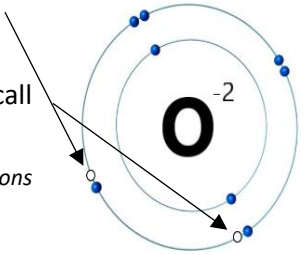
  - ✓ **Ions: This is a version of the atom that has gained or transferred away electrons.** Atoms usually do not have a charge because they have the same amount of positive protons (p^+) and negative electrons (e^-). Ions do NOT so then they have a +/- Charge



❖ If an atom gains an electron (e^-) it will become a negatively charged Ion called an Anion. *More negative (e^-) then positive protons (p^+) = Total Negative Charge*

❖ If an atom loses an electron (e^-) it will become a positively charged ion call a Cation. *Less negative (e^-) then positive protons (p^+) = Total Positive Charge*

- *Metals will Transfer Away all valence Electrons to become stable and will be positive Cations*
- *Non Metals Gain Electrons to get to 8 and become negative Anions.*



Learning Target 1: I know what makes a nucleus Unstable.

- ✓ The focus here is on the Nucleus: Protons & Neutrons ONLY
- ✓ The Strong Nuclear Force is the force that's keeps all protons packed into the nucleus even though they repel.
  - ❖ If there the nucleus is to BIG (a lot of protons and neutrons) then the Strong Nuclear Force can't do its job.
  - ❖ If it is too big for the Strong Nuclear Force to hold together then it is Unstable and will be Radioactive.