Elements and atoms

- different properties in different materials
  - melting temp
  - reflectivity
  - density

- is there something that if you keep breaking down something that still has the same properties, yes.

- we call them elements (all listed on PT)

- Smallest part is an atom
  - one million carbon atoms across the width of a human hair.

- Atoms are related to eachother by other fundamental particals

- the number of protons in the nuclies of an atom is the atomic #

⊕Protons⊕ define an element
"in the nucli

⊖Electron⊖ - orbits the nucli

Neutron - In the NUCli

Carbon 12 has 6 protons and 6 neutrons
while carbon 14 has 6 protons and 8 neutrons

- what about MUON and TAU / NUTRINOS

Introduction to The Atom

Atom

If you keep cutting something over and over you will end up with an atom

Neutrons ← some of the particals
⊕Protons ← Nucleus
⊖Electron

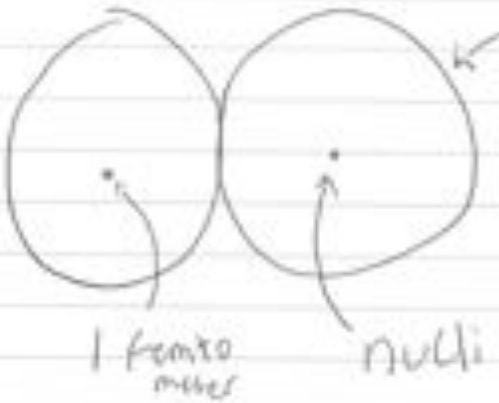
- You may not (the) define an electrons movements as an orbit because of Heisenberg effect (not really the same time)
- all you can know is the probability of its location
- orbital is a math function of the probability of the location of the electron

e⁻
p⁺
n

- If you know the # of protons you know the # @Element.
- If an element is electrically neutral it has the same # of electrons and protons
- 1 proton (mass) = 1836 electrons (mass) mass wise

# of protons
Symbol
name
atomic weight

Carbon - 12.01oz
mass



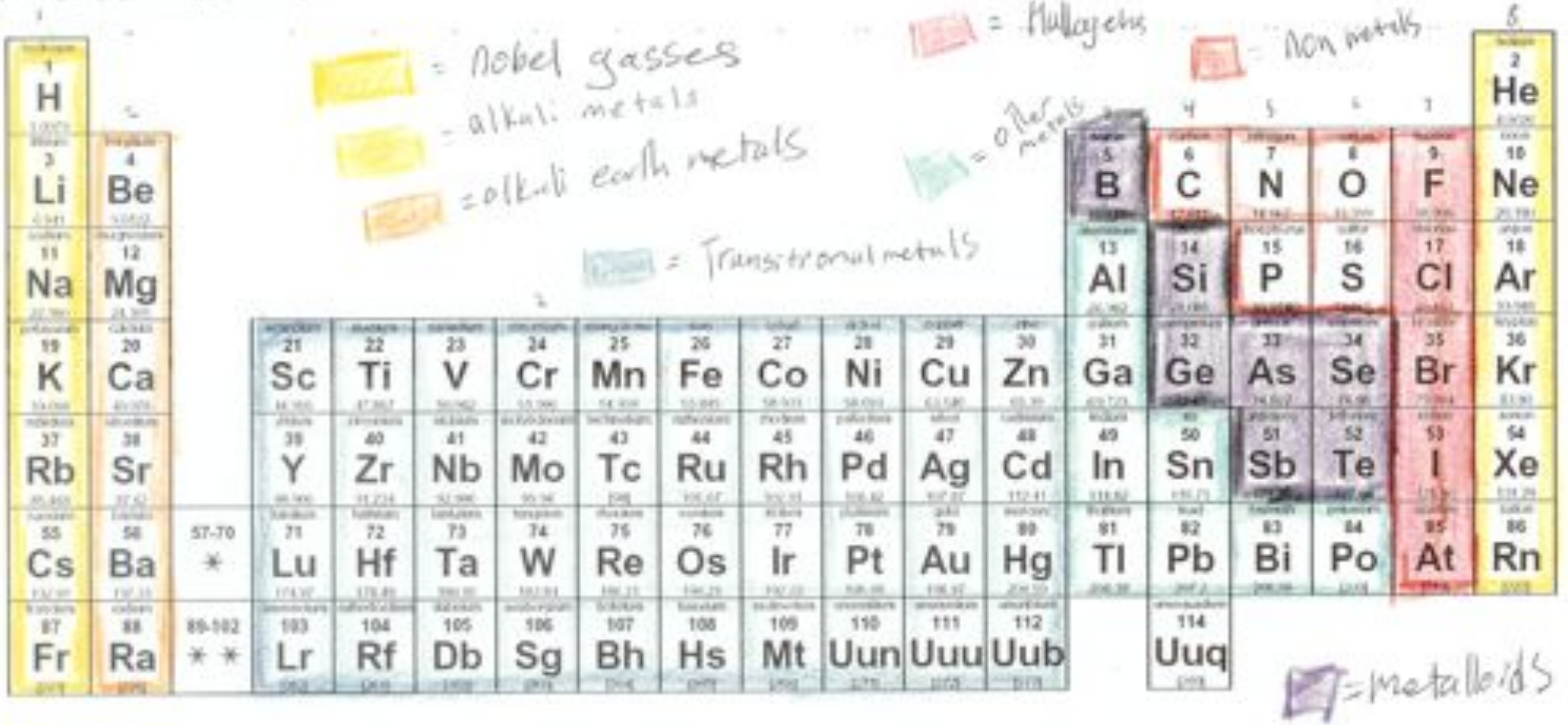
nulli $\frac{1}{10000}$ volume of the volume

- 99.999% is a vacuume of everything

Groups Of The Periodic table

- The most stable electron amount is 8
- Each collom has the same # of valance electrons in outer most shell
- alkali metal does not like to give away electrons
- as you add more electrons they back fill the outer most shell
- metals are very giddy with electrons
- Silver is the best conductor
- Nobel gasses highly unreactive

(look at periodic table)



*Lanthanide series	57 La	58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb
**Actinide series	89 Ac	90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No