Matter & Atom

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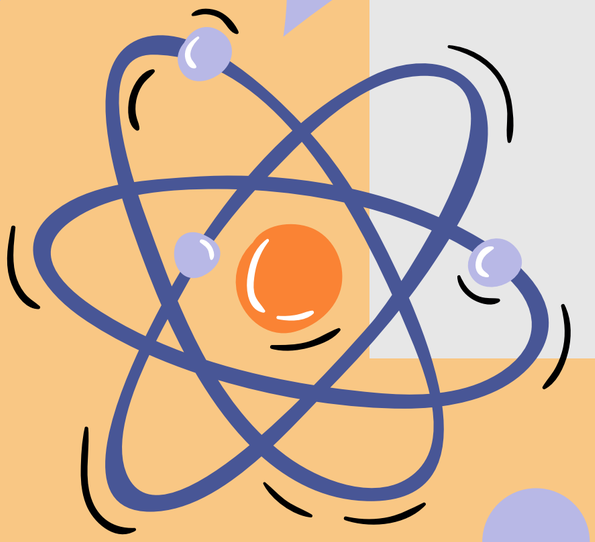
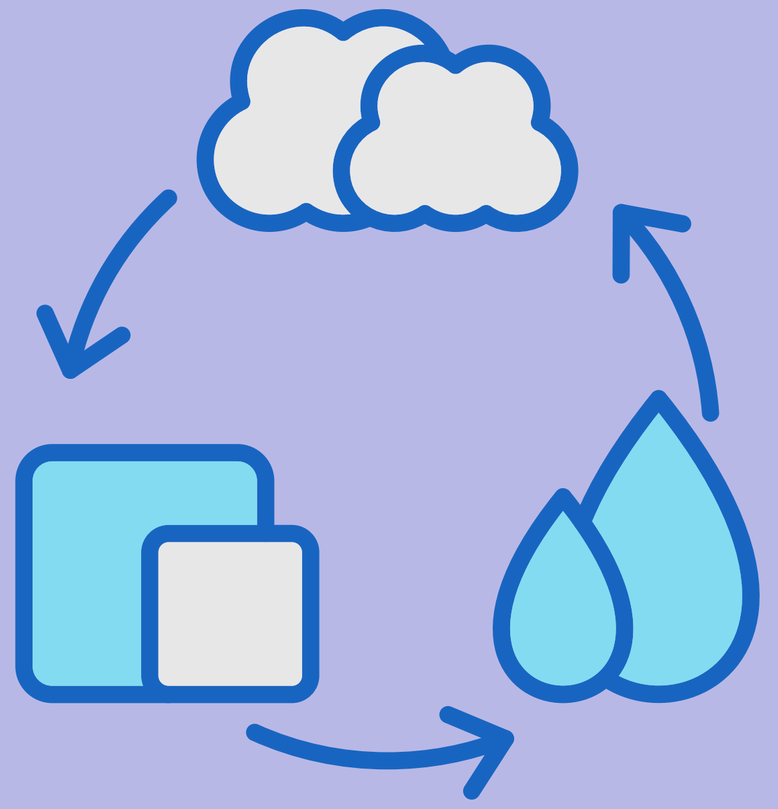


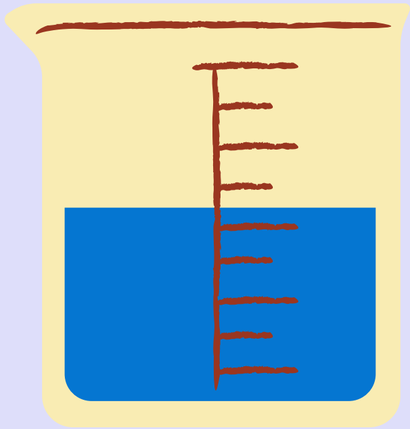
What is Matter?

It is something that has mass and volume.



MATTER

(something that has mass and volume)



pure substance
(can't divide physically ex. water)

- **element**
- **compound**

mixture

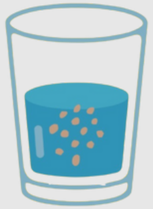
- **homogenus**
  (can't be seen with the naked eye)
  - **solution**
    (liquid version)
  - **alloy**
    (solid version)
- **heterogenus**
  (can be seen)
  - **colloid**
  - **suspension**
    - **tyndall effect**

3 types of mixture

Solution

- Particles are small, molecules are dissolved

Suspension



- Particles are large, molecules aren’t dissolved, you can still see

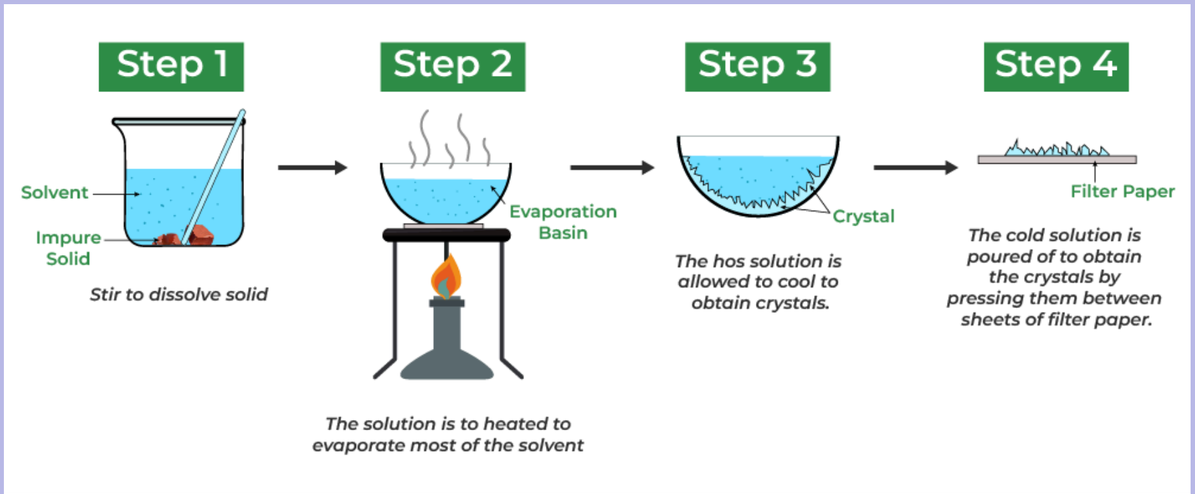
Colloid

- In between solution and suspension

How to unmix?

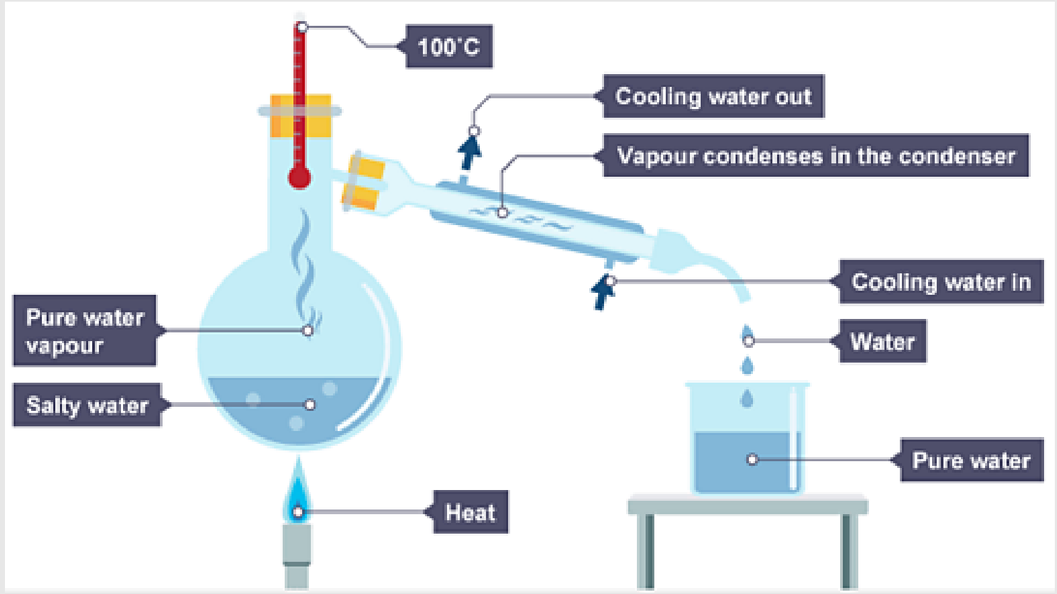
- Evaporation
- Filtration
- Centrifugation
- Distillation
- Crystalization

Crystalization



Crystallization is seperation technique specially for salt. So let's say we want to unmix salt and sand. First, heat up the mixture, then since the salt will dissolve, filter the sand out. After filtering the sand, freeze the salt and water mixture so that the salt will evaporate.

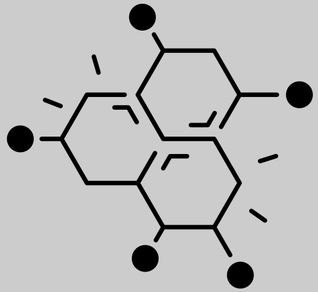
Distillation



Distillation is a separation technique used to separate liquids that have different boiling points and still wan to keep the liquid part. For instance, you want to seperate an alcohol and water mixture. First, heat up the mixture (not until 100°C), the alcohol will evaporat since it has a djfferent boiling point. Then, the gas of the alcohol will get condensed once it goes through the cooler. Now, you still have the liquids but seperated.

Chemical Change

Molecules are made of atoms. Atoms are smaller than molecules



Change in molecule structure

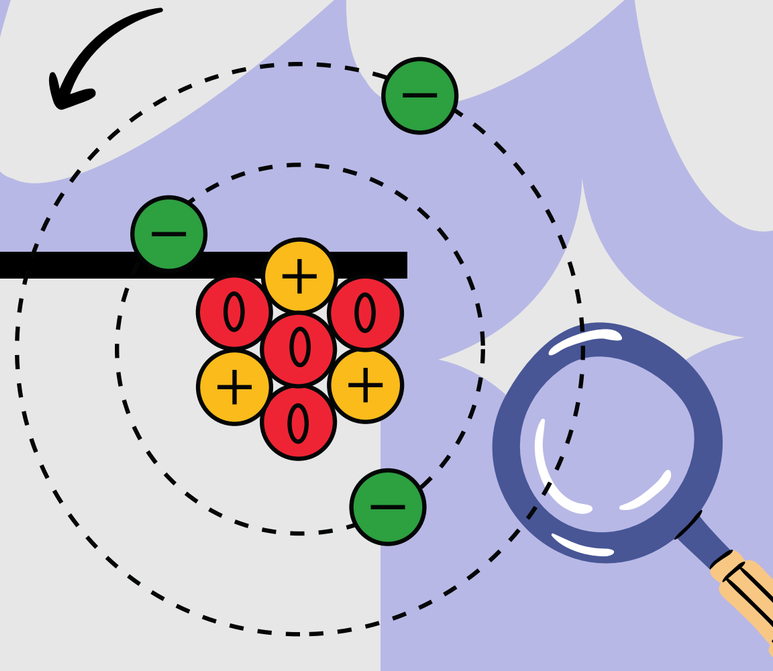
using **chemical reaction**

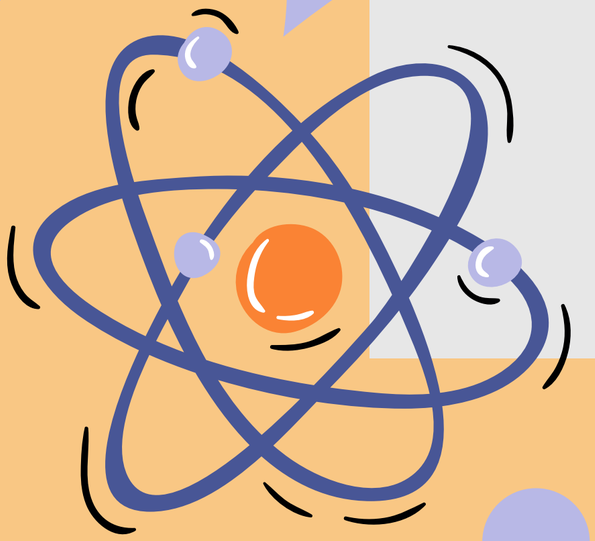
digestion

combustion

oxulation

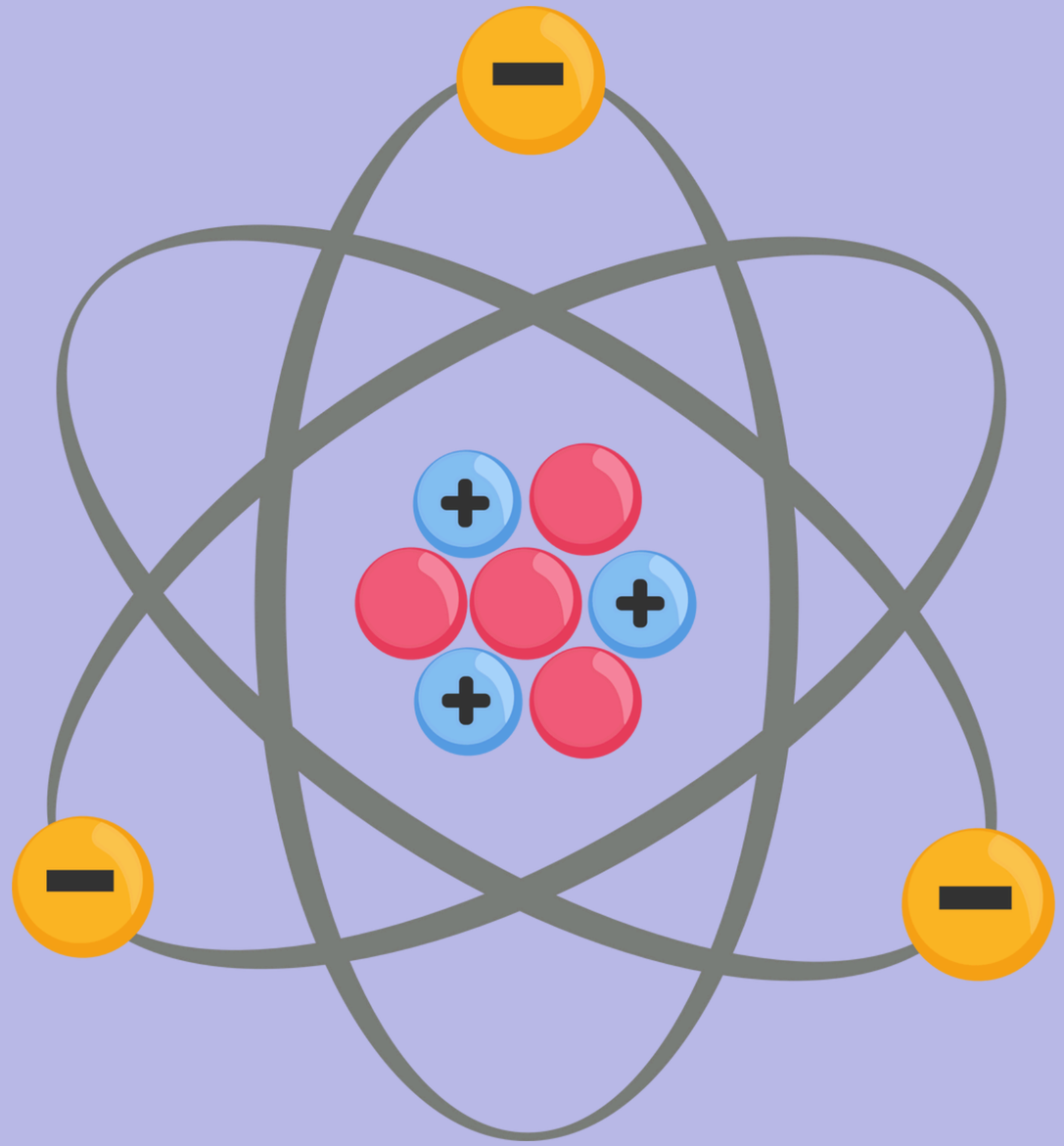
Atom



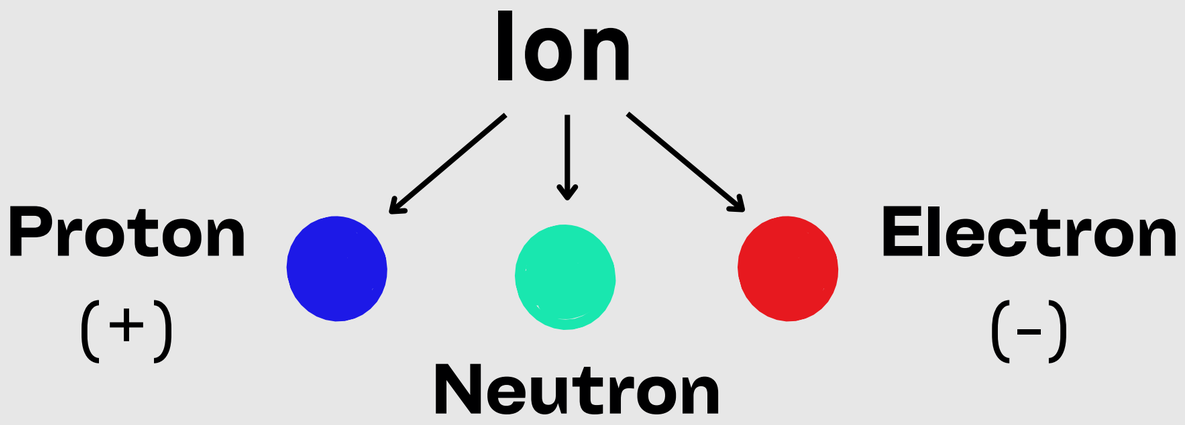


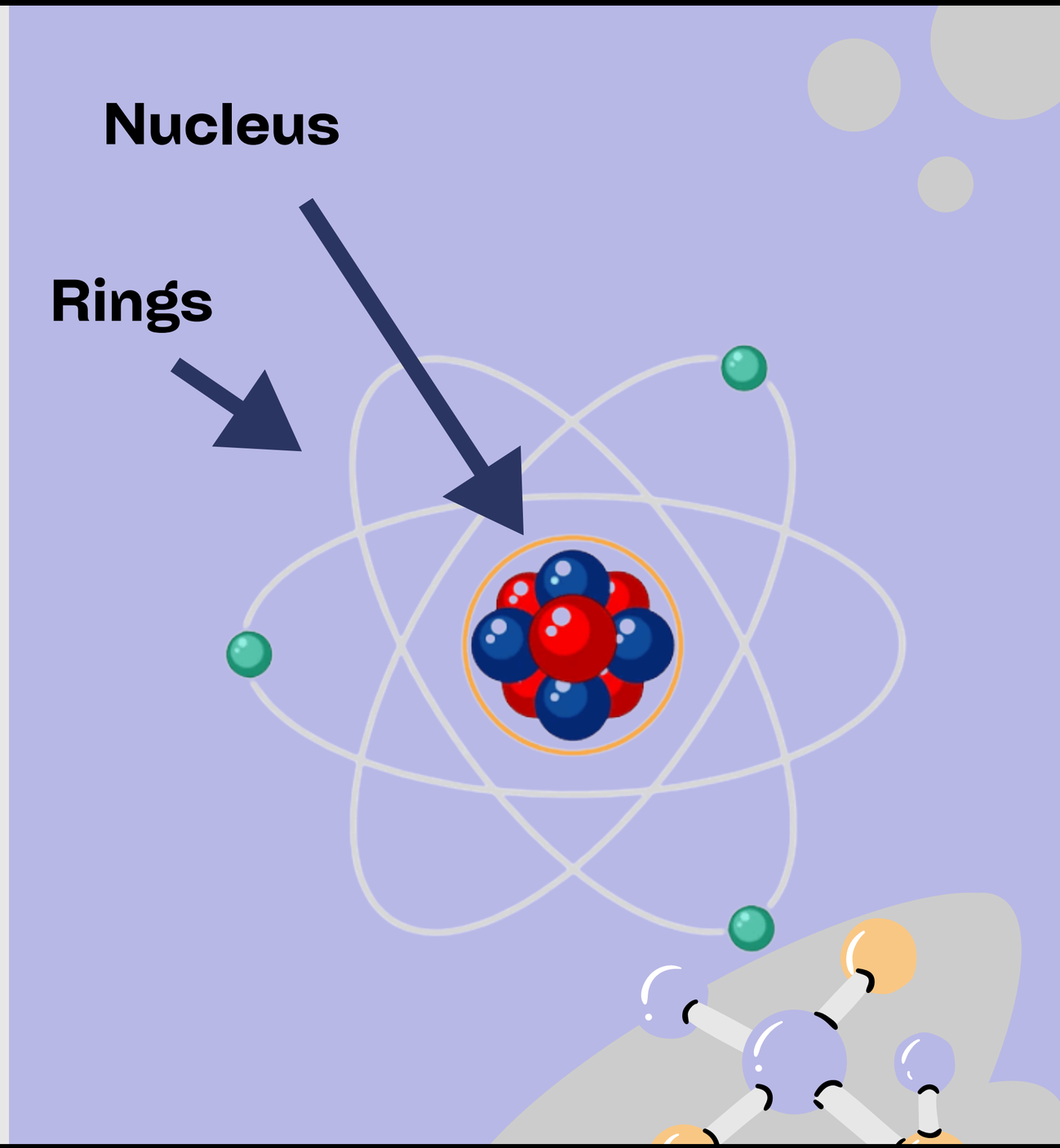
What is Atom?

- the basic unit of a chemical element.
- The smallest part of a substance that cannot be broken down chemically

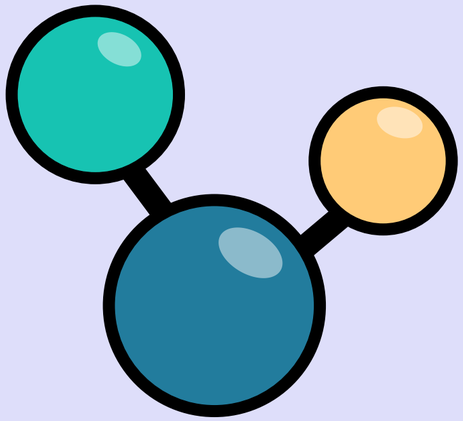


Structure of Atom

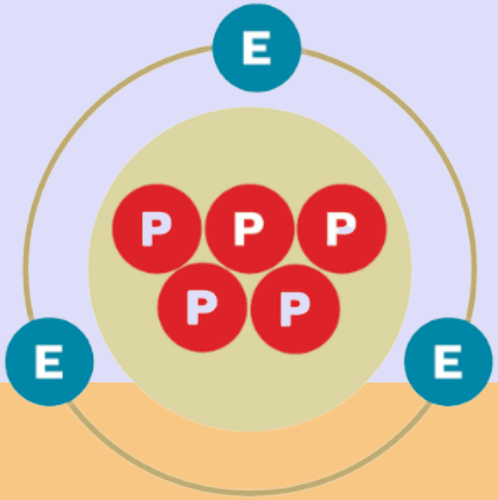




Ion

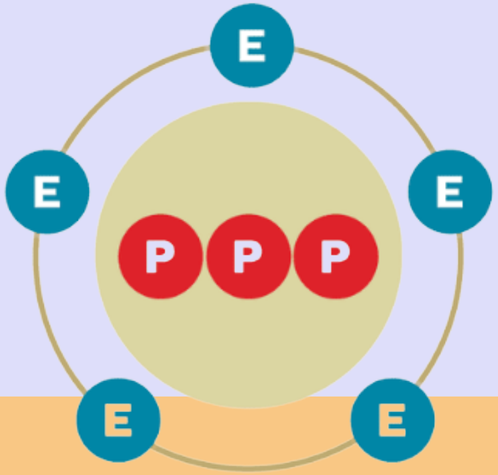


Ion: Atoms that has charge



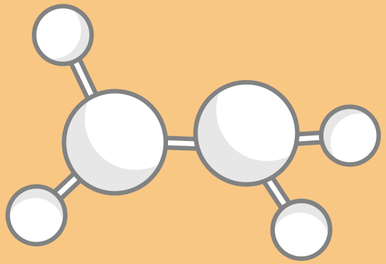
Cation

Proton > Electron



Anion

Proton < Electron

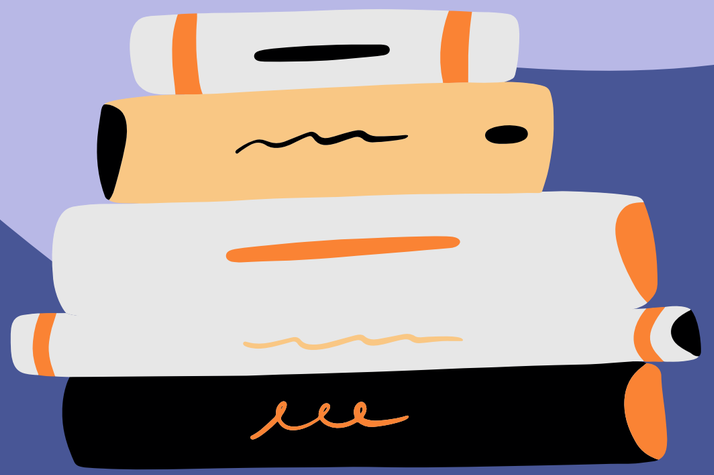


Atom Structure in Periodic Table

A = atomic number (amount of protons)
Z = atomic mass (protons + electrons)
– = net charge (protons - electrons)
X = atom

***Atomic mass is bigger than atomic number**

Examples



27 0

P

15

Protons: 15
Neutrons: 27 - 15 = 12
Electrons: 15

21 2-

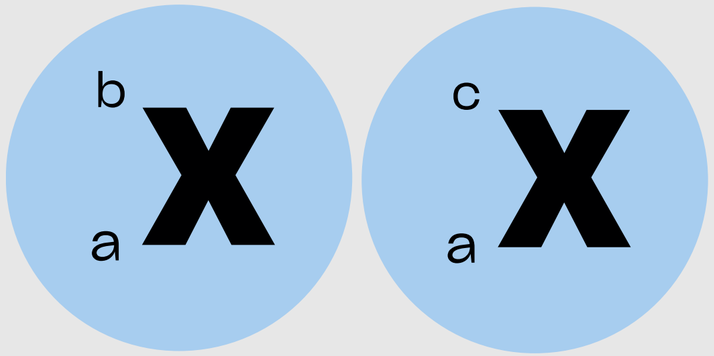
N

10

Protons: 10
Neutrons: 21 - 10 = 11
Electrons: 10+2 = 12

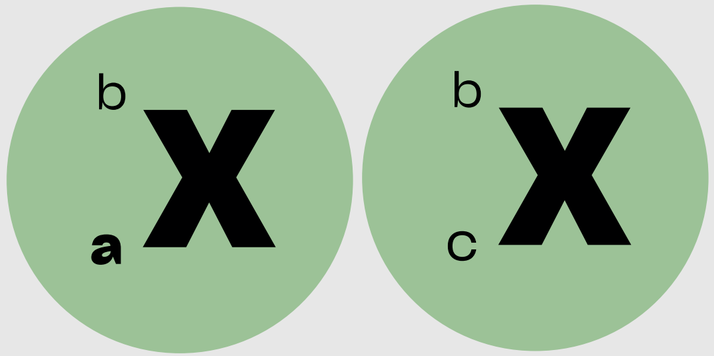
(2- means it gained electrons since the charge is (-))

Isotope



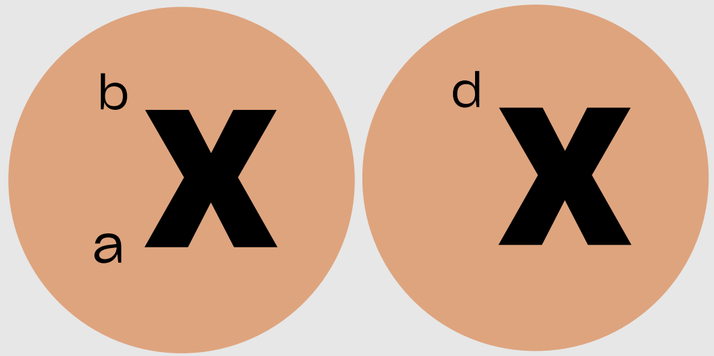
same protons

Isobar



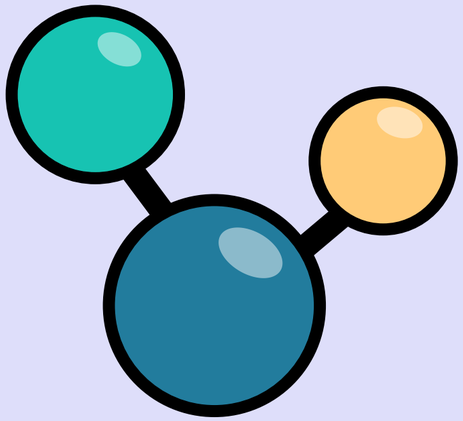
same atomic mass

Isotone



same neutrons

b - a = d - c



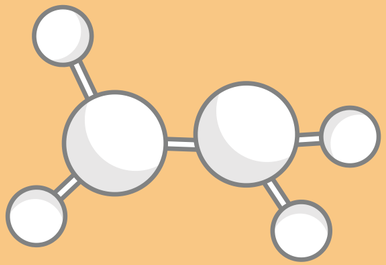
atom + atom = molecule

element

same types of atom combined

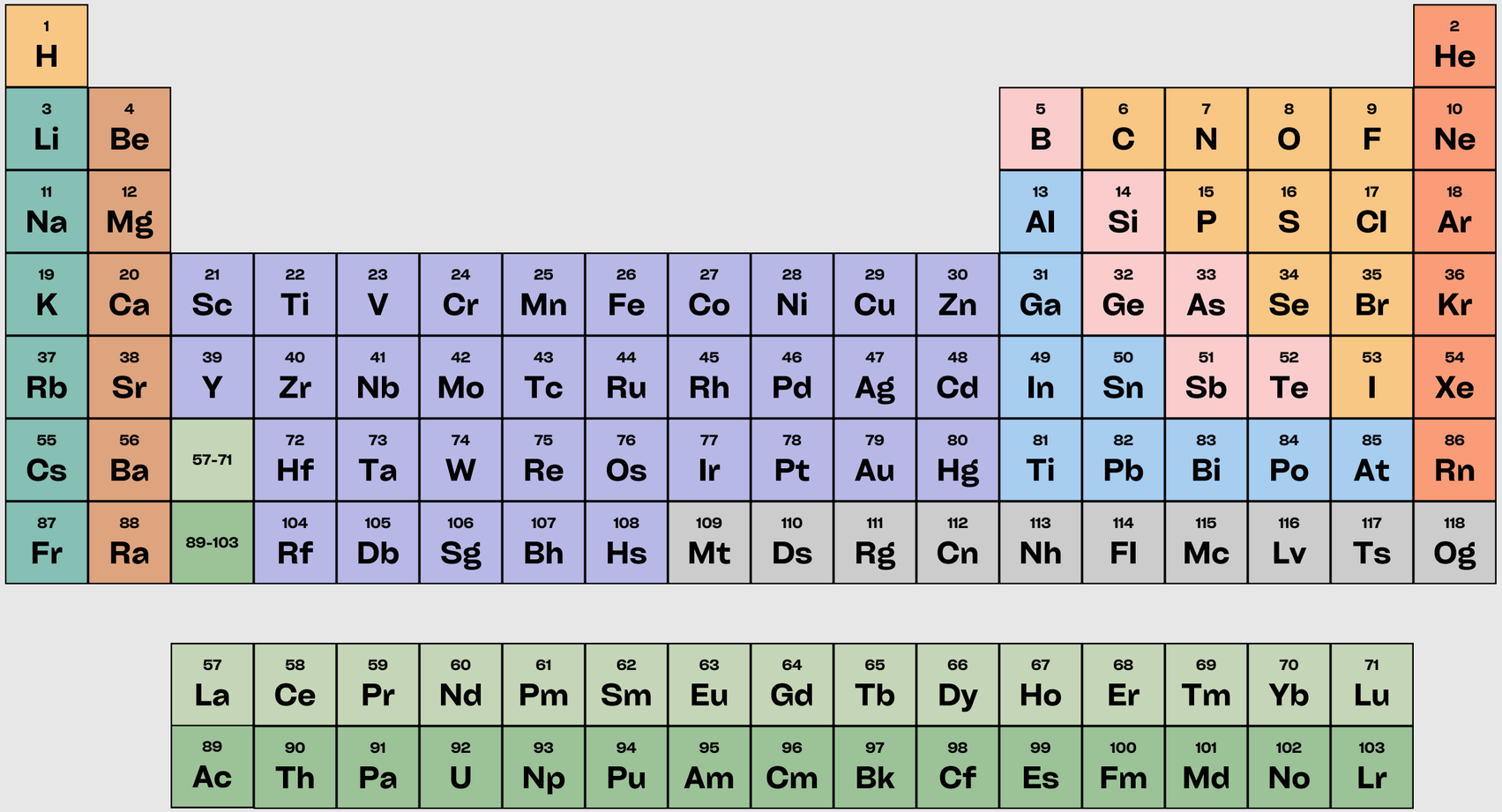
compound

different types of atom combined



Periodic Table

- **Row**: amount of rings/ electron orbit (horizontal)
- **Column**: amount of outer electrons (vertical)



Thank you!