Introduction to Chemistry II

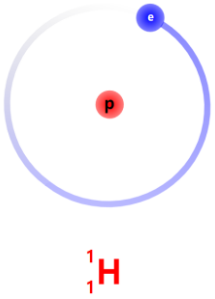
Atoms and Its Structure

Atom are made up of these three subatomic particles: Protons, Neutrons and Electrons

	Relative Mass	Relative Electric Charge
Proton	1	+1
Electron	Negligible	-1
Neutron	1	0

<u>An Atom is electrically neutral because the number of protons is equal to the number of electrons</u>

Important: Not all atom have neutron, as 1-H Only have one proton and one electron



Important: All atom are electrically neutral

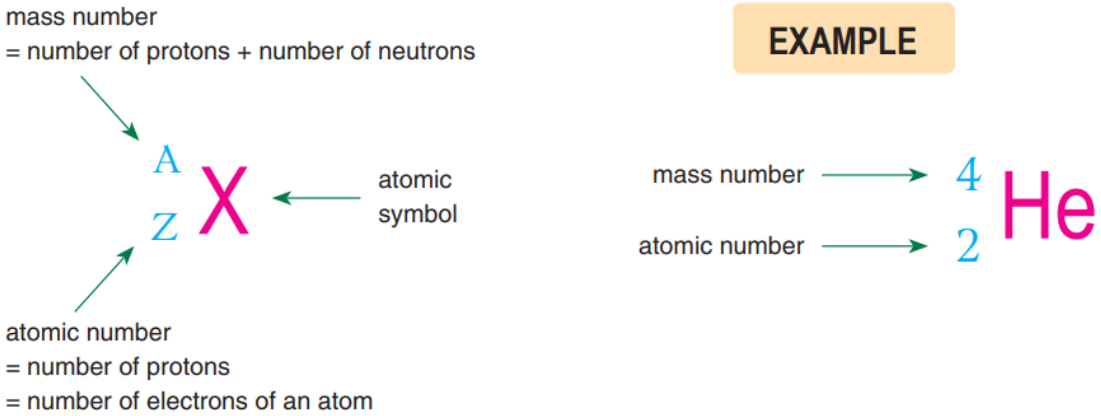
Atomic Number and Mass Number

Atomic Number of an atom = Number of Protons

Atomic Number is unique for each atom/element in the periodic table

Mass number of an atom = Number of protons + Number of Neutron

Full Atomic Symbol



Full Atomic Symbol Ex.

Element	Number of Protons	Number of Neutron	Number of Electron	Full Atomic Symbol
Ca		26		
K			19	
Al				$^{29}_{13}Al$
H			1	
C		7		

#: The Number of Proton is not necessary to be equal to the Number of Neutron

Introduction to the Periodic Table and Elements

The Element in Periods N (指第 N 行) = That Element has N electrons shells

The Element in Group X (指第 X 列) = That Element has X number of electrons in the outermost electron shell

Remark: Group 0 has 8 Electrons in the Outermost Electron Shell

Important: The Element has same number of electrons in the outermost electron shell have similar chemical property.

Isotopes, Relative Isotopic Mass and Relative Atomic Mass

Isotopes are different atoms of the same element, with the same number of protons but different number of neutrons

Relative Isotopic Mass = Mass Number

The Relative atomic mass of an element is the weighted average of the relative isotopic masses of the naturally occurring isotopes of the element on the 12-C scale

Arrangement of electrons in atoms

Each Shell can hold up to a certain **maximum** number of electrons, where n^{th} shell can hold up to $2n^2$

n^{th} Shell	Maximum Number of Electrons can be hold
1^{st}	
2^{nd}	
3^{rd}	
4^{th}	

Electronic Arrangement:

The way in which electrons are arranged in different electron shells

Electronic arrangement of sodium atom:

2, 8, 1

Number of electrons in: 1st shell, 2nd shell, 3rd shell

Element	Atomic Number	Number of e^-	Group	Number of Electronic Arrangement
K	19		I	
Li		3		
Al		13		
Ca	20		II	
Ba	56		II	___, ___, ___, ___, ___
Te	52		VI	
Kr	36		0	

Electron Diagram

Mg	P