The tutorial serie

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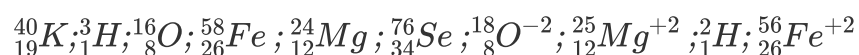
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1. Exercise 1

1 . Give, in table form, the mass, proton, neutron and electron numbers of the following nuclides and ions:

$$^{40}_{19}K ; ^{3}_{1}H ; ^{16}_{8}O ; ^{58}_{26}Fe ; ^{24}_{12}Mg ; ^{76}_{34}Se ; ^{18}_{8}O^{-2} ; ^{25}_{12}Mg^{+2} ; ^{2}_{1}H ; ^{56}_{26}Fe^{+2}$$

2 . List the different families of isotopes.

2. Exercise 2

Exercise 3

We assume that the mass of the phosphorus atom is equal to the sum of the masses of the particles that make it up.

1. What is the mass of the nucleus of a phosphorus atom?
2. What is the mass of the electron cloud of a phosphorus atom?
3. What is the mass of a phosphorus atom?

3. Exercise 3

The mass of all the electrons in the iron atom is $2,366.10^{-29}$ kg.

1. Knowing that one electron has a mass of $9,1.10^{-31}$ kg, how many electrons does an iron atom have?
2. What is the number of positive charges carried by the nucleus of the iron atom?
3. Deduce the atomic number of the iron atom. The mass of an iron atom is $9,3.10^{-26}$ kg.
4. Calculate the number of iron atoms that make up an iron nail of 2,5 g.

4. Exercise 4 :

Naturally occurring iron $_{26}Fe$ consists of four stable isotopes (N°1 to N°4) whose natural abundances are shown below:

Isotope	N°1	N°2	N°3	N°4
Atomic mass (u)	53,9399	55,9349	56,935	57,933
Abundance (%)	5,84	91,75	2,12	0,28

1. Give the composition of each of these isotopes.
2. Find the natural average mass of iron.
3. Calculate the mass defect in (u) of the nucleus :

$$^{56}_{26}Fe$$