Série 01

Exercise 01:

1. How many atoms are there in each of following:
(a)52 moles of Ar, **(b)** 3.75 moles of silver, **(c)** 48g of Mg, **(d)** 158 kg of phosphorus.
2. What is the amount, in moles, of each of the following?
(a) 449 g of potassium, **(b)** 11.8 g of Ar, **(c)** 2.16×10^{24} atoms of Fe **(d)** $10.2 \ 10^{30}$ molecuels of O_2
3. What is the mass of each of the following?
(a) 1.9×10^{24} atoms of Pb (in g), **(b)** 4.87×10^{25} atoms of Zn (in kg), **(c)** 2.33×10^{20} atoms of oxygen (in mg)

Data: **Molare mass**: **(Ar= 39.95g/mol;Ag =107.87g/mol;Mg= 24.31g/mol;K= 39.09g/mol;**

P= 30.97g/mol; Fe= 55.84g/mol; Pb =207.2g/mol; Zn= 65.38g/mol;O= 16g/mol).

Exercise 02:

1. A bottle containing a solution of sulfuric acid H_2SO_4 with a mass of 72% and a volumetric mass $\rho= 1.64$ g/cm^3. Calculate for this solution:
a- molarity (C)
b- molality (m)
c- normality (N)
2. What is the volume of water that should be added to 100 mL of previous acid to obtain a solution of sulfuric acid with $\rho = 1.18$ g/cm^3 volumetric mass and 20% mass.

Data: **Molare mass: (H= 1g/mol; O= 16g/mol; S= 32.06g/mol)**

Exercise 03:

We have a sodium hydroxide solution with a concentration of 80% and a density of 1.46,
-Calculate the volume needed to prepare 200 mL of this solution with a concentration of 8M?

Exercise 04:

Calculate the mass percent of oxygen, hydrogen, and carbon in the following compounds:
H_2O_2, H_2O, H_2CO_3

Exercise 05:

The mass of a proton, neutron, and electron is given as follows: $m_p = 1{,}6723842 \times 10^{-24}$ g ; $m_n = 1{,}6746887 \times 10^{-24}$ g ; $m_e = 9{,}109534 \times 10^{-28}$ g

1. What is an atomic mass unit?
2. Find the numerical value of **a.m.u** in grams in the same way as the mass of atomic objects.
3. Calculate the mass of the proton, neutron, and electron in a.m.u. rounded up 10^{-4}

Exercise 06:

Numerical indications can be applied to the X symbol of an element in the three positions A, Z and q. $^A_Z X q$ What does each of them mean?

Complete the table:

Nucléide	Numéro atomique	Nombre de masse	Nombre de protons	Nombre de neutrons	Nombre des électrons
$^{121}_{51}Sb$					
Ga	31	69			
W		184	74		
$_{16}S$				16	
$^{24}_{12}Mg^{2+}$					
$^{35}_{17}Cl^-$					