SCIENCE (CHEMISTRY)

Chemical Calculations Using Mole (VI) - Calculating number of mole of Element

Name:_____( ) Class:_____ Date:_____

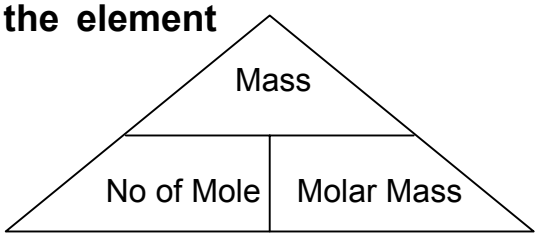
Exercise

1. Write down the Atomic mass and Molar mass of element.

Element	Relative atomic mass, $\mathbf{A_r}$	Molar Mass of element (g/mol)
e.g hygrogen, H	1	1g
a) Lithium, Li		
b) Carbon, C		
c) Magnesium, Mg		
d) Silver, Ag		
e) Aluminium, Al		
f) Silicon, Si		
g) Phosphorus, P		
h) Nitrogen, N		
i) Oxygen, O		
j) Sulphur, S		
k) Chlorine, Cl		
l) Bromine, Br		
m) Neon, Ne		
n) Iron, Fe		
o) Copper, Cu		
p) Zinc, Zn		
q) Lead, Pb		

2. Work out the number of moles of atoms in a known sample of the element.

$$\textbf{Number of moles of atoms in a sample of the element} = \frac{\textbf{mass of the sample in grams}}{\textbf{molar mass of the element}}$$



How many moles of atoms are there in

(a) 8g of sulphur;

(b) 28g of helium;

(c) 20g of calcium;

(d) 69g of sodium;

(e) 270g of aluminium;

(f) 27g of silver;

(g) 20.7g of lead;

(h) 1.75g of silicon;

(i) 128g of copper;

(j) 32g of oxygen;

(k) 400g of bromine;

(l) 28g of iron;

(m) 35g of nitrogen;

(n) 120g of diamond?

3) Calculate the mass of the following:

e.g. 0.4 mol of iron atoms;

mass of iron in grams = number of moles x A_r of iron in grams

= 0.4 x 56g

= 22.4g

a) 3 mol of carbon atoms;

b) 0.5 mol of nitrogen atoms;

c) 4 mol of magnesium atoms;

d) 0.7 mol of lead atoms;

e) 1.5 mol of calcium atoms;

f) 2 mol of silver atoms;

g) 1.8 mol of oxygen atom;

h) 2.5 mol of hydrogen atom?

4) Work out the relative molecular mass of each of the following compounds.

Compound	Relative molecular mass, $\mathbf{M_r}$	Molar mass of substance (g/mol)
e.g	A_r of Ca = 40, A_r of O = 16, A_r of H = 1 M_r of $Ca(OH)_2$ = 40 + 2 x (16 +1) = **74**	74g
a) H_2O		
b) CO_2		
c) NaCl		
d) HCl		

e) $NaOH$		
f) $FeSO_4$		
g) $CuCO_3$		
h) O_2		
i) Br_2		
k) N_2		
l) C_4H_{10}		
m) Al_2O_3		
n) $Zn(OH)_2$		
o) $Al(OH)_3$		
p) $Ca(NO_3)_2$		
q) C_2H_5OH		
r) $Fe_2(SO_4)_3$		
s) Na_2CO_3		
t) SO_2		
u) NH_4Cl		
v) NH_3		
w) CH_3COOH		