



Online Class Supporting Materials

MALAPPURAM EDUCATIONAL DISTRICT

CLASS: 10

CHEMISTRY - 3

Unit: 2-GAS LAWS AND MOLE CONCEPT

Relative Mass

Method to state the mass of minute particles.

Gram Atomic Mass/Gram Molecular Mass

- * Gram value equivalent to atomic mass
- * Gram value equivalent to molecular mass

Mole Concept

Mole

The amount of substance having avogadro number of particles.

Avogadro Number 6.022×10^{23}

The number of atoms present in one gram atomic mass of Any element.

Molar Volume

The volume of one mole gas at STP.
22.4L is the volume of one mol gas at STP.



Robert Boyle
(1627- 1691)



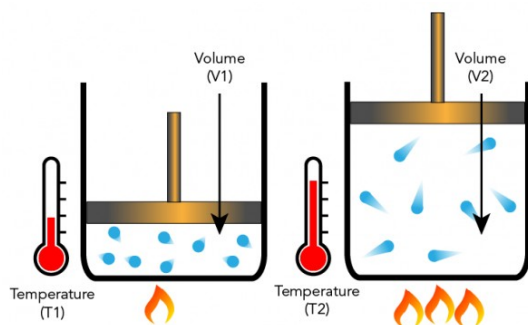
Jacques Charles
(1746 – 1823)



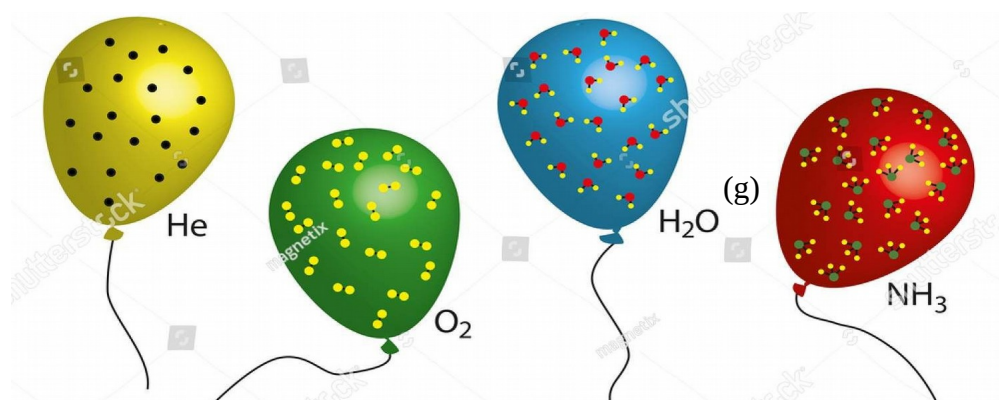
Amedeo Avogadro
(1776-1856)

A. Topic : Gas Laws

1. As air bubble rises from bottom to the top of an aquarium , the size of the bubble increases. What is the reason?
2. Which gas law is based for the picture given below? State the law and write it's mathematical operation.



3. Observe the figure given below (Just imagination)

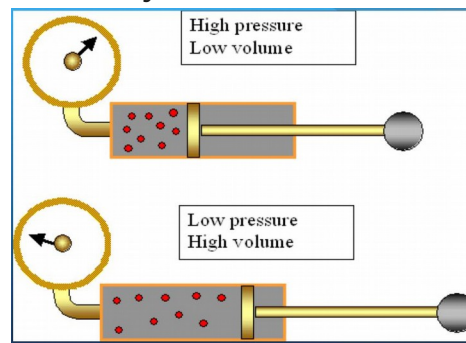


3.a	Is the size (Volume) of different balloons are same in the picture ?
b	Number of He atoms seen in the balloon.
c	Number of O₂ molecules seen in the balloon.
d	Number of H₂O molecules seen in the balloon.
e	Number of NH₃ molecules seen in the balloon.

3. f. Which Gas law is based here ? Write the mathematical operation of law .

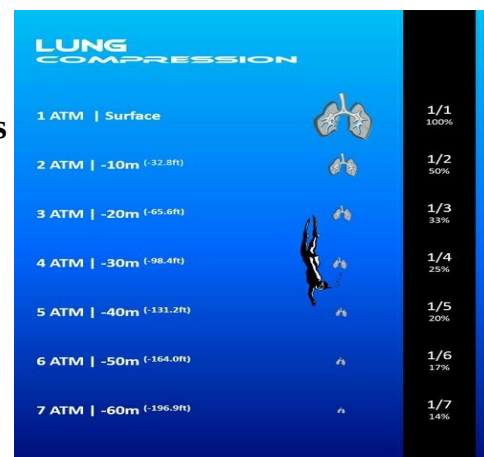
4. Few situations are given here. Explain on the basis of Boyle's law

a. Inflating your Bicycle tyre (Observe the given picture and explain)



b. Working of Lungs of a scuba diver who reaches the bottom of ocean.

(Hint : Observe the given figure, Pressure increases as we move from top to bottom of the Ocean)



B. Topic: Gram Atomic Mass /Gram Molecular Mass

1

	Given substance	Gram Molecular Mass
a	H ₂ O	
b	H ₂ SO ₄	
c	Na ₂ CO ₃	
d	CaO	

GAM of Elements

H – 1g
 O – 16g
 S - 32g
 Na – 23g
 C – 12g
 Ca - 40g



a. Observe the given chemical formula and find the Gram molecular mass / Gram atomic mass of each reactant.

b. Observe the given chemical formula and find the Gram molecular mass / Gram atomic mass of each product.

c. What is the relation between total mass of the reactants and total mass of the products in the given chemical formula ?

C. Topic : Mole Concept , Number of atoms /molecules

Table C.1

Sl.No	Given Sample	Number of atoms
1	5 mole hydrogen atom	
2	112 L Oxygen atom	
3	12g Carbon atom	
4	2.5 mole helium	
5	10 Mole CO ₂	
6	0.5 g H ₂	
7	32g CH ₄	
8	1 mole glucose (C ₆ H ₁₂ O ₆)	

Table C.2

Sl.No	Given Sample	Number of molecules
1	10 Mole CO ₂	
2	0.5g H ₂	
3	32g CH ₄	
4	1 Mole glucose (C ₆ H ₁₂ O ₆)	

C.3. Analyse the given examples of compounds and their atomicity. Write more compounds and their atomicity , You can use the compounds mentioned below .

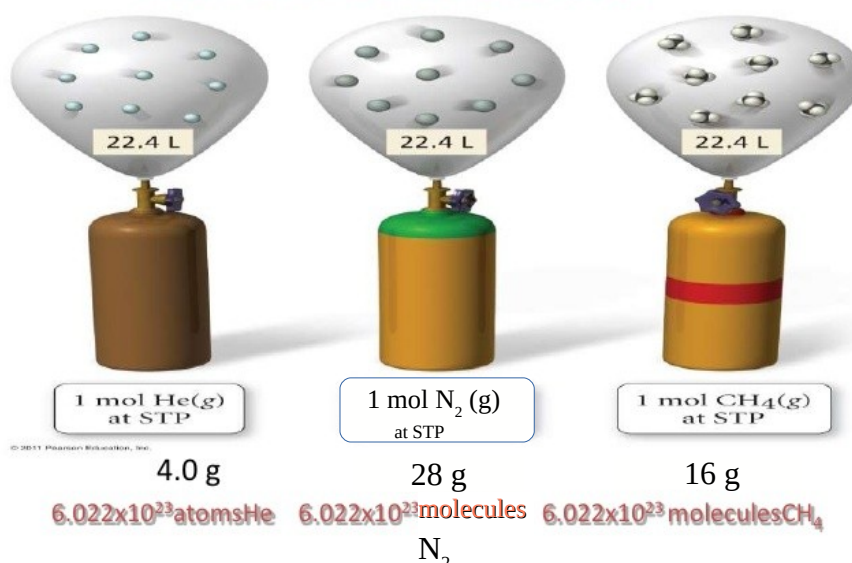
Na₂O 3 atomicity
H₂SO₄ 7 atomicity
KOH 3 atomicity
H₂O 3 atomicity
CaCl₂ 3 atomicity

CO₂
 NH₃
 S₈
 H₂SO₄

Ca(OH)₂
 K₂SO₄
 Al₂(SO₄)₃
 NaCl

D. Molar Volume

Molar volume and Molar mass



Different Molar Masses and Same Molar Volume in STP

Analyse the picture above and fill in the blanks given in D.1 and D.2

D.1

Helium	Oxygen	Carbon Dioxide
1.00 mol	a)mole	1 mole
4.00 g	b)g	c)g
d)L	22.4 L	e)L

D.2

Volume of the gases :

(a) (b) (c)