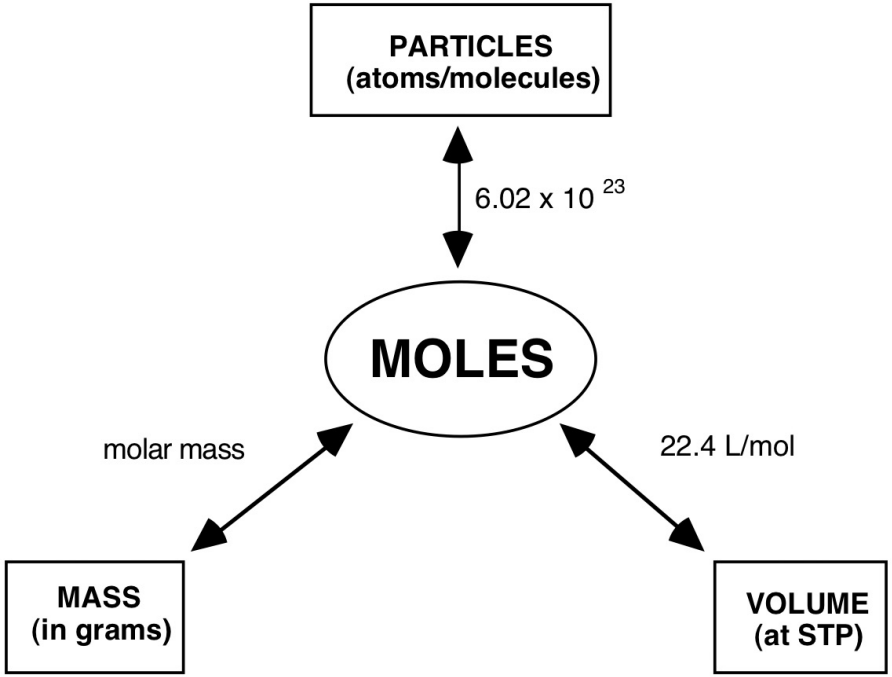
EXAMPLE V.2	RELATING MASS AND MOLES
Problem:	(a) What is the mass of 3.25 mol of CO_2? (b) What is the mass of 1.36×10^{-3} mol of SO_3? (c) How many moles of N_2 are there in 50.0 g of N_2? (d) How many moles of CH_3OH are there in 0.250 g of CH_3OH?

SAMPLE PROBLEMS V.2	RELATING MASS AND MOLES
Problem:	(a) What is the mass of 0.834 mol of $FeSO_4$? (b) What is the mass of 2.84×10^{-2} mol of Na_3N? (c) How many moles of CH_4 are there in 27.5 g of CH_4? (d) How many moles of $Ca(NO_3)_2$ are there in 35.0 g of $Ca(NO_3)_2$?

EXAMPLE V.3	RELATING VOLUME OF A GAS AND MOLES
Problem:	(a) How many moles of gas are contained in a balloon with a volume of 10.0 L at STP? (b) What volume will 0.250 mol of CO_2 occupy at STP?

EXAMPLE V.4	RELATING NUMBER OF PARTICLES AND MOLES
Problem:	(a) How many molecules are there in 0.125 mol of molecules? (b) How many moles of N are there in 5.00×10^{17} N atoms? (c) How many atoms are in 5 molecules of $CuSO_4 \cdot 5H_2O$?

SAMPLE PROBLEMS V.3	RELATING VOLUME OF GAS / NUMBER OF PARTICLES AND MOLES
Problem:	(a) How many moles of gas are contained in a balloon with a volume of 17.5 L at STP? (b) What volume of gas will 0.074 mol of gas occupy at STP? (c) How many atoms are there in 0.0185 mol of atoms? (d) How many moles of Fe_2O_3 are there in 8.75×10^{20} Fe_2O_3 molecules? (e) How many atoms of H are in 30 molecules of $Ca(H_2PO_4)_2$?


PARTICLES
(atoms/molecules)
6.02 x 10 23
MOLES
molar mass
22.4 L/mol
MASS
(in grams)
VOLUME
(at STP)

EXAMPLE V.5	MOLE CALCULATIONS INVOLVING MULTIPLE CONVERSIONS
Problem:	(a) What is the volume occupied by 50.0 g of $NH_{3(g)}$ at STP? (b) What is the mass of 1.00×10^{12} atoms of Cl? (c) How many oxygen atoms are contained in 75.0 L of $SO_{3(g)}$ at STP?

EXAMPLE V.6	DENSITY AND MOLE CALCULATIONS
Problem:	(a) What is the volume occupied by 3.00 mol of ethanol, C_2H_5OH? (d = 0.790 g/mL) (b) How many moles of $Hg_{(l)}$ are contained in 100 mL of $Hg_{(l)}$? (d = 13.6 g/mL) (c) What is the density of $O_{2(g)}$ at STP?

EXAMPLE V.7	MORE DENSITY CALCULATIONS
Problem:	(a) A 2.50 L bulb contains 4.91 g of a gas at STP. What is the molar mass of the gas? (b) $Al_2O_{3(s)}$ has a density of 3.97 g/mL. How many atoms of Al are in 100 mL of Al_2O_3?

Ex. For 50g $CaCO_3$ find ?

I. Moles of oxygen atom
II. No of calcium atom
III. Total number of atom
IV. Number of oxygen atom
V. Number Of protons
VI. Number Of neutrons
VII. Number of electrons

Ex. In a container 2.24L of Ozone kept at NTP then find ?

I.Number of moles of ozone

II.number of moles of oxygen atom

III.Number of oxygen atom

IV.Number of protons, neutrons,electrons

Ex. In a container 3×10^{23} Molecules of CO_2 and 5600ml of SO_2 is kept find ?

I. Total number of molecules
II.total number of moles
III. Total volume of container
IV. Total mass of container
V. Number of moles of oxygen atom
IV. Number atoms of Sulphur
V. Number of moles of carbon atom

Ex. In 2.4 moles of $(NH_4)_2Cr_2O_7$ Find

I. Number of nitrogen atom
II. Number of hydrogen atom
III. Number of chromium atom
IV. Number of oxygen atom
V. Number of moles of oxygen molecules
VI. Number Of moles of hydrogen molecules

Ex. Two elements A and Bform two compounds AB_2 and A_2B' 0.1 mole of AB_2 has mass 5g and 0.1 mole of A_2B has mass 5.5g find the atomic masses of A and B?