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Revision: Atomic Mass, the Mole

Atomic Mass: Complete the following definitions.

Relative Atomic Mass (A_r): the _____ mass of 1 _____ of atoms relative to 1/12 the mass of 1 mole carbon-12 _____.

Relative Isotopic Mass: the mass of 1 _____ of an _____ relative to 1/12 the mass of 1 mole carbon-12 atom.

Relative Molecular Mass (M_r): the _____ mass of 1 mole of compound relative to 1/12 the mass of 1 mole of _____-12 atoms. It is the sum of all the Relative _____ Masses of its constituent _____.

The term **Relative Formula Mass (M_r)** is used for Ionic Compounds.

Molar Mass: is the _____ of one mole of the substance ($gmol^{-1}$)

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The Mole:

This is the number of particles in 12g of Carbon-12. (**Avogadro's number**)

The number of particles is _____ and is called _____ Number.

The number of particles in any given substance can be calculated by:

No of Particles = No. of Moles x _____ Number

Calculate the number of particles in the following:

1) 0.5 moles of magnesium

2) 0.1 moles of sulphur

3) 0.125 moles of oxygen

Ideal Gas Equation:

An ideal gas is one in which the particles are considered to be perfect _____.

$pV = nRT$

p = Pressure (Pa)

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V = Volume (m^3)

n = number of moles

R = Gas Constant (given in the question)

T = Temperature (K)

First you must convert your units if required.

p: Often given in kPa therefore multiply by 1000

V: if given in cm^3 then divide by 1000000

V: if given in dm^3 then divide by 1000

T: if given in ^oC then add 273

Calculate the following:

1) Calculate the volume of 1 mole of an ideal gas at 0 ^oC and 101325 Pa?

2) Calculate the number of moles in 20 cm^3 of O2 at a pressure of 101 kPa and 25^oC?