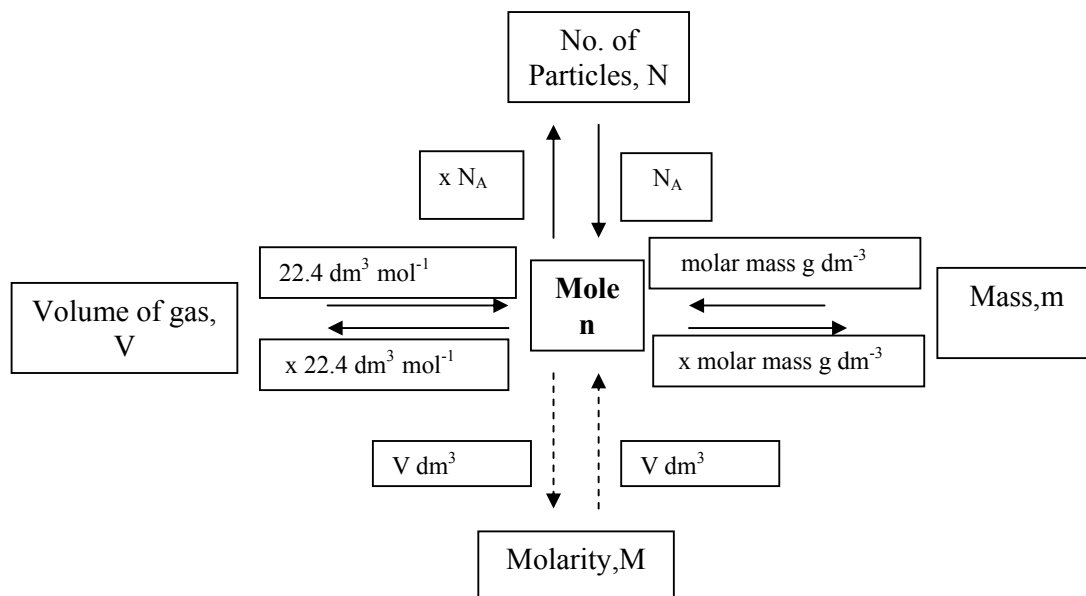


Chemistry Workshop
Form 5
Sekolah Menengah Raja Perempuan, Ipoh
21-4-2007
Calculations in Chemistry

1. Remember the following definitions and formulae
 - a) Relative Atomic Mass
 - b) Relative Molecular Mass
 - c) Mole
 - d) Empirical Formula
 - e) Chemical Formula



Refer to pg 177 of the form 4 textbook for relative atomic mass

1. How many times is an atom of nitrogen, N, heavier than an atom of iron Fe?

2. How many times is 2 atoms of oxygen heavier than 3 atoms of sulphur, S?

3. If 2 atoms of, boron, B, has the same mass as 3 atoms of X, what is the Relative atomic mass of X?

4. Calculate the relative atomic mass of

a) $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ b) $\text{Al}_2(\text{SO}_4)_3$

5. Write down the names of chemical compounds that are formed by the following cations and anions

i) K^+ and CrO_4^{2-} ii) Na^+ and CO_3^{2-} iii) Zn^{2+} and OH^- iv) Al^{3+} and SO_4^{2-}

v) Cu^{2+} and NO_3^- vi) NH_4^+ and PO_4^{3-}

6. a) A sample of a compound has the composition sodium 9.2g; sulphur 12.8g; oxygen 9.6g . Find the empirical formula of the compound

b) The relative molecular mass of glucose is 180. The empirical formula of glucose is CH_2O . Find the molecular formula of glucose.

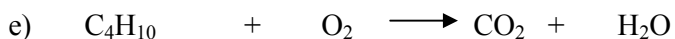
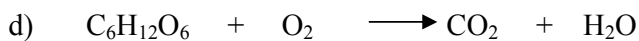
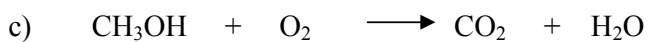
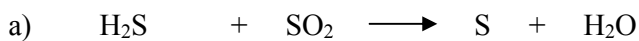
c) An organic substance contains 57.2% C, 4.75% H and 38.0% oxygen by mass. If the relative molecular mass of the substance is 84. What is the i) empirical formula ii) molecular formula

d) 6.9g of metal Y reacted with oxygen to produce 9.3g of the oxide with formula Y_2O . What is the relative atomic mass of Y.

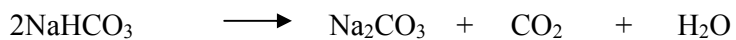
7. a) Calculate the amount of iron, Fe, that can be extracted from 100 kg of Fe_2O_3

b) Calculate the amount of C that is found in 150g of glucose, $\text{C}_6\text{H}_{12}\text{O}_6$

8. Balance the following equations

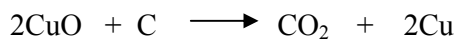


9. The decomposition of sodium bicarbonate can be represented by the formula below

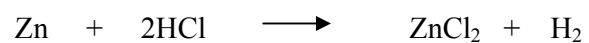


Calculate the volume of CO_2 produced when 8.4g of NaHCO_3 is decomposed at r.t.

10. Calculate the mass of C required when 80g of CuO is heated with C according to the following equation



11. a) What is the concentration of hydrochloric when 50 cm³ of the acid is reacted with 6.5g of Zn



b) What is the conc of H₂SO₄ when 25 cm³ of 0.05M NaOH was titrated with 23.5 cm³ of H₂SO₄

12. Calculate the concentration of HCl when 30 cm³ of water is added to 100 cm³ of 0.2M HCl.