Section Four : Acids (酸) and Alkalis (鹼)
Unit Thirteen: Basic Chemical Calculation II

1. Number of mole of solute = 0.5 x 250 / 1000 = 0.125
   Mass of solute = 0.125 x (23+35.5) = 5g

2. Number of mole of sodium hydroxide= 8 / (23 + 16 + 1) = 0.2
   Molarity of sodium hydroxide solution = 0.2 / 0.2 = 1 M
   Mass of sodium hydroxide = 0.2 x (23+16+1) = 8g
   Concentration of sodium hydroxide solution = 8 / 0.2 = 40 g dm^{-3}

3. Molar mass of hydrated copper(II) sulphate = 63.5 + 32 + 16 x 4 + 5 x 18
   = 249.5 g
   Number of mole = 0.2 x 0.25 = 0.05
   Mass = 0.05 x 249.5 = 12.475 g

4. **Molarity x Molar mass = Concentration in g dm^{-3}**

Formula	Conc. in g dm^{-3}	Conc. in molarity (M)	Vol. of solution (cm^3)	Mass of solute (g)	Molar Mass (g)
H_2SO_4	294	3	100	29.4	98
Na_2CO_3	5.2	0.05	25	0.13	106
$(COOH)_2$	36	0.4	250	9	90

5. Number of mole of $MgCl_2$ = 0.2 x 0.05 = 0.01
   1 mole of $MgCl_2$ contains 1 mole of Mg^{2+} and 2 moles of Cl^-
   Total number of mole of ions = 0.01 x 3 = 0.03

6. (a) Molar mass of Na_2SO_4 = 142 g
   Number of mole = 1.42 / 142 = 0.01
   Molarity = 0.01 / 0.025 = 0.4 M

   (b) Molarity of Na^+ = 0.4 x 2 = 0.8 M

   (c) Molarity of SO_4^{2-} = 0.4 x 1 = 0.4 M