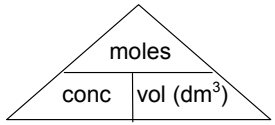
CONCENTRATION

The concentration of a solution is usually measured in moles per cubic decimetre (mol/dm^3). This is a measure of the number of moles in one cubic decimetre.

The volume must be in dm^3 (there are 1000 cm^3 in 1 dm^3). vol in dm^3 = $\frac{\text{vol in cm}^3}{1000}$

concentration (mol/dm^3) = $\frac{\text{moles}}{\text{volume (dm}^3\text{)}}$



1) Calculate the concentration of the following solutions in mol/dm^3.

a) 0.1 moles of NaCl in 200 cm^3 ……

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b) 0.2 moles of H_2SO_4 in 100 cm^3 ……

……

c) 0.02 moles of NaOH in 25 cm^3 ……

……

2) Calculate the number of moles in the following solutions.

a) 100 cm^3 of 0.20 mol/dm^3 HNO_3 ……

……

b) 25 cm^3 of 1.50 mol/dm^3 KOH ……

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c) 50 cm^3 of 0.10 mol/dm^3 H_2SO_4 ……

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Concentration can also be measured in grams per cubic decimetre (g/dm^3). This is a measure of the number of grams in one cubic decimetre. [remember that *mass* = M_r *x moles*]

1 dm^3

2 moles of H_2SO_4

196 g of H_2SO_4

Concentration = 2 mol/dm^3

M_r of H_2SO_4 = 98

Concentration = 2 x 98 =196 g/dm^3

A simple conversion is: **conc (g/dm^3) = conc (mol/dm^3) x M_r**

3) Calculate the concentration of the following solutions in g/dm^3.

a) 0.100 mol/dm^3 NaOH ……

……

b) 0.250 mol/dm^3 CH_3COOH ……

……

c) 1.50 mol/dm^3 HNO_3 ……

……

4) 0.2 moles of NaOH is dissolved in 250 cm^3 of water.

a) Calculate the concentration in mol/dm^3. ……

b) Calculate the concentration in g/dm^3. ……

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5) 5 g of KNO_3 is dissolved in 100 cm^3 of water.

a) Calculate the concentration in g/dm^3. ……

b) Calculate the concentration in mol/dm^3. ……

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