

how many grams of solute is required for the preparation of 3.50 molar solution of sulphuric acid. the volume of the solution is 500ml.

In chemistry, the molar concentration,  $c_i$  is defined as the amount of a constituent  $n_i$  (usually measured in moles – hence the name) divided by the volume of the mixture  $V$ :

$$c_i = \frac{n_i}{V}$$

It is also called molarity, amount-of-substance concentration, amount concentration, substance concentration, or simply concentration. The volume  $V$  in the definition  $c_i = n_i/V$  refers to the volume of the solution, *not* the volume of the solvent. One litre of a solution usually contains either slightly more or slightly less than 1 litre of solvent because the process of dissolution causes volume of liquid to increase or decrease. So if molarity is 3.5 M and volume is 0.5 L, the amount of acid is:

$$n = C \cdot V = 0.5 \cdot 3.5 = 1.75 \text{ moles}$$

The mass of acid can be found from next:

$$n = m/M_w, \text{ where } M_w \text{ is molecular mass.}$$

$$m = n \cdot M_w = 1.75 \cdot 98 = 171,5\text{g}$$