Answer on Question #41849, Chemistry, Other

Task:

Calculate the concentration of $Mg(NO_3)_2$ in a solution prepared by diluting 81.00 mL of 0.217 M $Mg(NO_3)_2$ to a volume of 500.0 mL in a volumetric flask?

Answer:

$$C_M = \frac{v}{V} \qquad v = \frac{m}{M}$$

where C_M -molar concentration of a solution;

v-amount of moles of a certain substance;

m-mass of a substance, gramms;

M-molar mass of a substance, g/mol.

The amount of moles in an initial solution of $Mg(NO_3)_2$ is:

$$v = C_M \cdot V$$

$$v(Mg(NO_3)_2) = 0.217 \cdot \frac{81.00}{1000} = 0.018 \text{ moles}$$

That is why the concentration of the solution after diluting in a volumetric flask will be:

$$C_M(Mg(NO_3)_2) = \frac{0.018}{0.500} = 0.036M$$