

If you dilute 175 mL of a 1.6 M solution of LiCl to 1.0 L, what is the new concentration of the solution?

Solution:

Dilution is calculated by the following formula:

$$C_1(\text{LiCl}) * V_1(\text{LiCl}) = C_2 (\text{LiCl}) * V_2 (\text{LiCl})$$

where $C_1(\text{LiCl})$ is the initial concentration or molarity and $V_1(\text{LiCl})$ is the initial volume and $C_2 (\text{LiCl})$ is the final concentration or molarity and $V_2 (\text{LiCl})$ is the final volume.

So,

$$1,6 \text{ mole/ml} * 175 \text{ ml} = C_2 (\text{LiCl}) * 1000 \text{ ml}$$
$$C_2 (\text{LiCl}) = \frac{1,6 \text{ mole/ml} * 175 \text{ ml}}{1000 \text{ ml}} = 0,28 \text{ mole/ml}$$

The 1000 mL was used rather than 1.0 l

Answer: the concentration of the resulting solution LiCl – 0,28 mole/ml