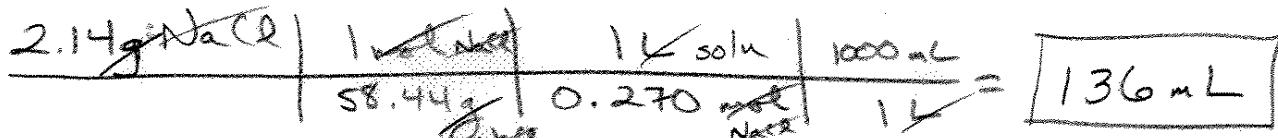


- 1) How many moles of MgCl₂ are present in 60.0 mL of 0.100 M MgCl₂ solution?

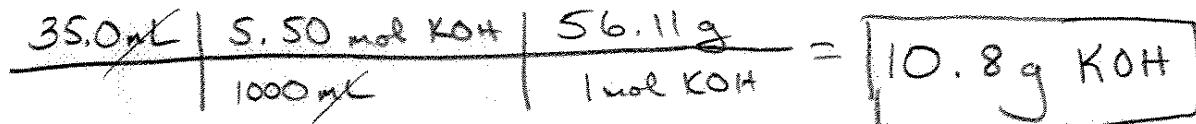


$$= 0.00600 \text{ mol} = \boxed{\frac{6.00 \times 10^{-3} \text{ mol MgCl}_2}{6.00 \text{ mmol}}}$$

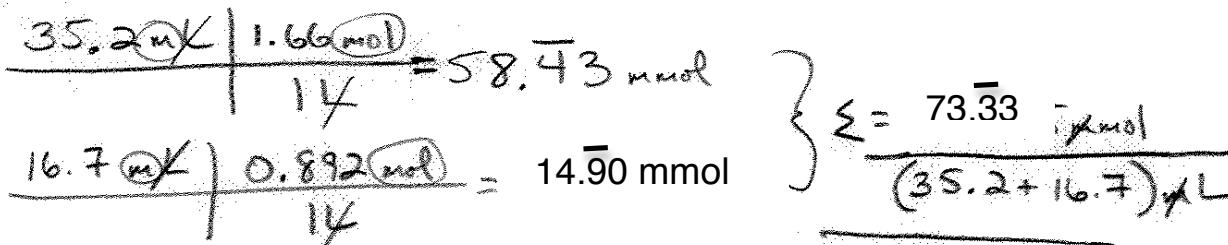
- 2) Calculate the volume in mL required to provide 2.14 g of sodium chloride from a 0.270 M solution.



- 3) How many grams of KOH are present in 35.0 mL of a 5.50 M solution?



- 4) A 35.2-mL, 1.66 M KMnO₄ solution is mixed with 16.7 mL of 0.892 M KMnO₄ solution. Calculate the concentration of the final solution. Assume volumes are additive.



- 5) Calculate the volume in mL required to provide 4.30 g of ethanol from a 1.50 M solution.
- $$\begin{array}{c|c|c|c|c} 4.30 \text{ g C}_2\text{H}_5\text{OH} & 1 \text{ mol C}_2\text{H}_5\text{OH} & 1 \text{ L soln} & 1000 \text{ mL} & \\ \hline & 46.07 \text{ g C}_2\text{H}_5\text{OH} & 1.50 \text{ mol} & & \\ & & \text{C}_2\text{H}_5\text{OH} & & \end{array} = \boxed{1.41 \frac{\text{mol C}_2\text{H}_5\text{OH}}{\text{L}}} = 62.2 \text{ mL}$$

- 6) Water is added to 25.0 mL of a 0.866 M KNO₃ solution until the volume of the solution is precisely 500.0 mL. What is the concentration of the final solution?

$$M_1 V_1 = M_2 V_2$$

$$(25.0 \text{ mL})(0.866 \text{ M}) = M_2 (500.0 \text{ mL})$$

$$M_2 = \boxed{0.0433 \text{ M KNO}_3}$$