

Quiz 2 Review

**Remember, this is just a quick review. The quiz covers EVERYTHING from notes 12.3 and 12.4. Make sure you study your NOTES!

1. What is the difference between diluted and concentrated solution? Use chemistry terms that you've learned this unit.

unit. \leftarrow small # solute + large # solvent \leftarrow large # solute + small # solvent

2. What can you do to a solution to dilute it?

add a solvent (water)

3. Name all 3 ways to quantify/ represent concentration:

Molarity, molality, % mass

4. How do you find the mass in grams of the solution? Which 2 parts?

$m_{\text{solution}} = m_{\text{solute}} + m_{\text{solvent}}$

5. Calculate the amount of water needed to produce a 65% solution with 105 grams of sodium acetate.

$\% = \frac{m_{\text{solute}}}{m_{\text{solution}}} \cdot 100 \rightarrow 65\% = \frac{105 \text{ g}}{m_{\text{solution}}} \cdot 100$

$m_{\text{solution}} = 161.5 \text{ g}$

$m_{\text{solvent (water)}} = m_{\text{solution}} - m_{\text{solute}} = 161.5 \text{ g} - 105 \text{ g} = 56.5 \text{ g H}_2\text{O}$

6. What is the percent mass if you mix 88 grams of solute with 0.35 kg of water?

$\% = \frac{88 \text{ g}}{(88 + 350)} \cdot 100 = 20.09\%$

7. What is the new concentration of 50 mL of 18 M hydrofluoric acid if it was diluted to a 0.445 L solution?

$M_1 V_1 = M_2 V_2$ (initial $V_2 = 445 \text{ mL}$)

$(18)(50) = M_2(445) \rightarrow M_2 = 2.02 \text{ M}$

8. How much water is needed to dilute 75 mL of 8.5 M potassium chloride to a produce a new concentration of 2.5 M?

$M_1 V_1 = M_2 V_2$ ($V_{\text{water}} = ? \text{ mL}$)

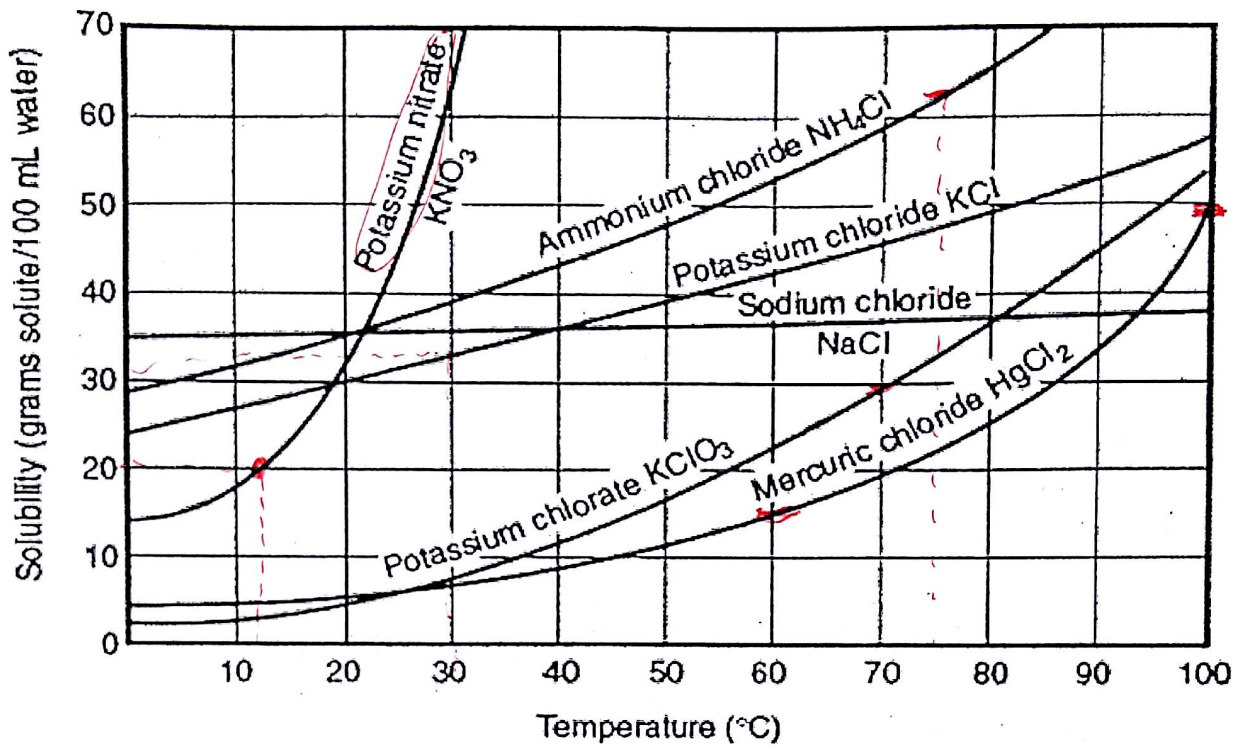
$(8.5)(75) = (2.5) V_2 \rightarrow V_2 = 255 \text{ mL}$

$V_{\text{water}} = V_2 - V_1 = 255 - 75 = 180 \text{ mL}$

9. Calculate the final volume if 0.50 M with 25 mL of a solution was diluted to a concentration of 0.10 M?

$M_1 V_1 = M_2 V_2$ ($V_2 = ?$)

$(0.50)(25) = (0.10) V_2 \rightarrow V_2 = 125 \text{ mL}$



10. If mercuric chloride was cooled from 100 °C to 60°C, how many grams of the salt will fall out of solution?

$$50g - 15g = 35g$$

11. How much ammonium chloride can dissolve at 75 °C?

$$62g$$

12. At 70°C, how much potassium chlorate can dissolve in 285 grams of water?

$$\frac{30}{100} = \frac{x}{285} \rightarrow x = 85.5g$$

13. Approximate at which temperature will 20 grams of potassium nitrate dissolve completely?

$$12^{\circ}C$$

14. If there are 20 grams of potassium chloride currently at 30°C, what kind of solution is this?

unsaturated

15. Which substance is the LEAST soluble at 10°C?

Potassium chlorate . $KClO_3$