

Chapter 12

Study Guide

Name: _____

Date: _____ Per: _____

1. Define the following terms:

a. Solution: _____

b. Solute: _____

c. Solvent: _____

d. Saturated: _____

e. Unsaturated: _____

f. Supersaturated: _____

g. Miscible: _____

h. Immiscible: _____

i. Electrolyte: _____

j. Non-Electrolyte: _____

k. Aqueous solution: _____

l. Concentrated: _____

m. Dilute: _____

2. Define the steps in solution formation. Where does solution formation occur? _____

3. How is energy involved in solution formation? _____

4. Explain "like dissolves like": _____

5. What must be true for a given solute to dissolve in a specified solvent? _____

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6. Explain the three things that affect solubility.
 - a. _____
 - b. _____
 - c. _____
7. Explain the four things that affect rate of solution
 - a. _____
 - b. _____
 - c. _____
 - d. _____
8. How is a supersaturated solution made? _____

9. How do you calculate a percentage by mass (or volume)? What are the units? _____

10. How do you calculate molarity? What are the units? _____

11. How do you calculate molality? What are the units? _____

12. How do you calculate mole fractions? What are the units? _____

13. How are parts per million and parts per billion similar to percentages? What is different in the calculation? _____

14. Calculate the percentage by mass of 120. g NaCl in 200. g water.
15. Calculate the percentage by volume of 15.3 mL CH₃COOH in 76.5 mL water.
16. Calculate the mole fraction of 0.500 moles of NaCl in 4.00 moles of solution
17. Calculate the concentration in PPM of 10.2 g NaCl in 2.00×10^7 g solution.

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18. What is the molarity of a NaOH solution that contains 40.0g of solute in 0.25 liters? *Convert from mass to moles for your calculation.*
19. How many grams of KNO_3 must be dissolved in 500. mL of water to make a 0.200 molar solution? (*Convert mL to L. Solve the molarity equation for # of moles, then convert moles to grams.*)
20. 250. mL of 0.100 M lithium acetate solution is diluted to a volume of 750. mL, what will the concentration of this solution be?
21. Describe how 250. mL of 1.0 M HCl can be made from a stock solution of 6.0 M HCl.
22. Why is an ionic compound like NaCl more soluble in water than a covalent compound like CO_2 ?