Unit 9 Solutions Review – Accel. Name/Period: _____

1. Describe a solution (use the vocabulary you've learned in this chapter):

2. Give 4 examples of solutions (not just solids dissolved in liquids):
   a. c.
   b. d.
3. Define the following terms in your own words:
   a. Solvent c. Soluble
   b. Solute d. Insoluble

4. **Describe in detail** what happens as a crystal of salt (NaCl) dissolves in water.

5. How is the dissolving process different in sugar (as compared with salt)?

6. What three things can be done to increase the **rate** at which a solid dissolves? How do they affect the rate?
   a.
   b.
   c.

7. Dissolving is a (PHYSICAL / CHEMICAL) change.
8. What is solubility?

9. How does temperature generally affect solubility:
   a. For solids? b. For gases?
10. Can you do anything else, besides change temperature, to change solubility (or how much dissolves)? If yes, what?

11. ***How would you prepare*** a supersaturated sugar solution? (Hint: Think about the supersaturated lab we did in class)

12. What is one test you could do to determine if a solution was saturated, unsaturated, or supersaturated? Describe how the results would be different for unsaturated, saturated, supersaturated solutions.

13. Water is known as the _____ _____.
14. When determining solubility remember, " _____ dissolves _____."
15. Why doesn't oil dissolve in water? Does it dissolve in anything? If so, what type of solvent would it dissolve in?

16. How do you know if a molecule is polar or nonpolar?

17. Circle which of the following compounds **will** dissolve in water: **$MgCl_2$** **SeO_2** **SiO_2** **PCl_3**
18. Justify your answer to the above question.

19. What is solution concentration?

20. List the equations for each of the concentration units we learned about this unit:
    a. Percent by mass:
    b. Percent by volume:
    c. Molarity:
    d. Molality:

21. What unit do we use to describe solution concentration ***most often*** in chemistry? _____

22. If a solution is "strong" it is _____ and if it is "weak" it is _____.

23. What is the percent by mass of a sodium chloride solution that contains 17.3 g NaCl in 394 g of solution?

24. What is the molarity of potassium nitrate solution that contains 23.5 g KNO_3 in 500.0 mL of solution?

25. ***How would you prepare*** 500 mL of 3.0 M NaOH from solid solute? Show your work and include all steps.

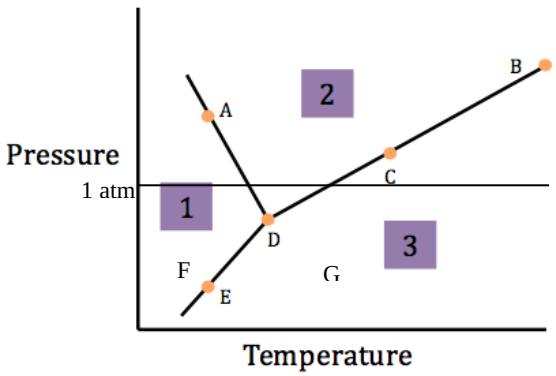
26. What does it mean to dilute a solution? What equation do we use for dilutions?

27. If you have 12.0 M HCl stock solution, ***how would you correctly prepare*** 600.0mL of 2.50M HCl solution? Show your and include all steps.

28. Calculate the molality when 75.0 grams of $MgCl_2$ is dissolved in 500.0 g of solvent.

29. How does the freezing point of a solvent change when a solute is added? How does the boiling point change?

30. What is the new boiling point when 11.4 g of ammonia (NH_3) is dissolved in 200. g of water? K_b for water is 0.52 °C/m.



31. What phase does each number represent?

32. What process is happening at the following letters?
    a. letter A:
    b. letter B:
    c. letter C:
    d. letter E:

33. What letter represents the triple point? What is special about the triple point?

34. What is happening to the substance when it moves from letter F to letter G on the phase diagram?

35. What is the normal freezing and boiling point for this substance?