Name: _____ Class: _____ Date: _____ ID: A

## Solutions Multiple Choice Practice

### Multiple Choice

*Identify the choice that best completes the statement or answers the question.*

____ 1. Two liquids that can be mixed together but separate shortly after are:
a. immiscible
b. insoluble
c. miscible
d. soluble

____ 2. More solute can be dissolved in a _____ solution:
a. saturated
b. supersaturated
c. suspended
d. unsaturated

____ 3. An example of a suspension is:
a. blood
b. gelatin
c. milk
d. muddy water

### Short Answer

4. What volume, in milliliters, of the calcium chloride stock solution (shown below) would you use to make 0.50 L of 0.300 M of calcium chloride solution?

2.00 M

5. What is the relationship between temperature and solubility of substances?

6. Use the solubility curves to describe how you would prepare 300 mL of a saturated solution of potassium nitrate at 50 degrees.

### Problem

7. Calculate the molarity of a solution containing 0.2 mol of sodium hydroxide dissolved in 0.5 L of water.

8. What is the molarity of a methanol solution that contains 25 g of methanol in 3.5 L of a solution? The molar mass of methanol is 32 g/mol.

9. A 41.0-mL barium hydroxide solution of molarity 3.41 $M$ is diluted with water to form 279 mL of the solution. Calculate the molarity of the solution.

# Solutions Practice - KEY

1. A
2. D
3. D
4. $M_1V_1 = M_2V_2$

   $(2.00\ M)(V_1) = (.300\ M)(.50L)$

   $V_1 = .075L$ or 75 mL

5. Most ionic solids show an increase in solubility - but not all!

   Most molecular solids show an increase in solubility - but not all!

   Gases are less soluble at higher temperatures.

   (see solubility curves)

6. According to the curve, 60g of $KNO_3$ will dissolve in 100g of $H_2O$ at 50°C.

$$\frac{60g\ KNO_3}{100g\ H_2O} = \frac{X\ g\ KNO_3}{300g\ H_2O}$$

$$X = 180\ g\ KNO_3$$

I would add this amount of $KNO_3$ to 300mL of $H_2O$.

7. $\frac{.2\ mol}{.5\ L} = \boxed{.4\ M\ NaOH}$

8. $\frac{25\ g \mid 1\ mole}{3.5\ L \mid 32\ g} = .22\ \frac{mole}{L} = \boxed{.22\ M}$

9. $M_1V_1 = M_2V_2$

$(3.41\ M)(41.0\ mL) = (M_2)(279\ mL)$

$M_2 = \boxed{.501\ M}$