Name: Mr. Smith Date: _____ Mod: _____

Review Sheet Chapter 1B

Pages 21-40

1. When gasoline and water are mixed, they form 2 distinct layers with gasoline on the top. What can you tell about the density of gasoline?

gas is less dense than water

2. Use the following information to determine the density of the substance:
   Mass of unknown liquid = 13.79 g
   Volume of unknown = 17.6 mL

   Density = $\frac{M}{V} = \frac{13.79\text{g}}{17.6\text{mL}} = .784\ \text{g/mL}$

   Would this liquid float or sink if placed in a graduated cylinder with water? YES

3. Determine the volume of the following solid:
   Mass = 624.4 g
   Density = 8.89 g/cm^3

   $V = \frac{M}{D} = \frac{624.4\text{g}}{8.89\ \text{g/cm}^3} = 70.2\ \text{cm}^3$

   Would this solid float or sink if placed in water?

   Sink

4. Determine the density of the following irregular solid:
   Water in a graduated cylinder = 61 ml
   Water in the graduated cylinder plus the solid = 67 ml
   Mass of the solid = 18.1 g

   Volume = 67mL − 61mL = 6mL

   Density = $\frac{M}{V} = \frac{18.1\text{g}}{6\text{mL}} = 3.0\ \text{g/mL}$

   Would this solid float or sink if placed in water?

   Sink

5. Use the following information to determine the density of the substance:
   Mass of empty graduated cylinder = 43.55 g
   Mass of graduated cylinder with liquid = 57.34 g
   Volume of liquid = 17.6 mL

   mass = 57.34g − 43.55g = 13.79g

   Density = $\frac{M}{V} = \frac{13.79\text{g}}{17.6\text{mL}} = .784\ \text{g/mL}$

   Would this liquid float or sink if placed in a graduated cylinder with water?

   Float

6. Does ice has a higher or lower density than liquid water? Why is this information important for aquatic animal and plant life?

ponds will freeze on the top and aquatic life can live below the ice surface

7. What is "surface tension"?

the force that causes the surface of a liquid to contract

List clear signs that water has a high amount of surface tension.

- You can fill a glass above the rim
- You can float a needle on the surface of water

8. Identify the following substances as either a suspension, solution or colloid.

- Rubbing alcohol used to clean cuts — solution
  How do you know?
  homogeneous mixture, no Tyndall effect
- A blue liquid that has no cloudiness. — solution
  How do you know?
  homogeneous mixture, no Tyndall effect
- Italian salad dressing — suspension - You have to shake before using
  How do you know?
  the various ingredients separate upon standing

Milk = Mixture & Colloid

- River water that stays slightly "murky" even after several days of sitting — colloid
  How do you know?
  Tyndall effect

9. Determine whether or not each substance below is an element, a compound, a solution or a mixture.

- Carbon dioxide (CO_2) — Compound
- Gold (Au) — Element
- $CuCl_2$ completely dissolved in water — solution
- Italian salad dressing — Mixture

10. Use the following equation:

$2\ H_2\ (g) + O_2\ (g) \rightarrow 2H_2O\ (l)$

- What is (are) the reactant(s) in the equation? — H_2 and O_2
- What is (are) the product(s) in the equation? — H_2O
- What does the 2 in front of H_2 and H_2O tell you?

Two molecules of H_2 and H_2O

11. Give the name of each element and number of atoms of each element present in the following chemical formulas:

- Phosphoric acid, H_3PO_4 (used in soft drinks) H = 3 P = 1 O = 4

- Sodium hydroxide, NaOH (found in some drain cleaners)

Na = 1 O = 1 H = 1

- Sulfur dioxide, SO_2 (a by-product of burning some types of coal)

S = 1 O = 2

12. Water is sometimes known as the universal solvent. Why do you think it was given this name?

water dissolves many substances

13. Why are solutions also considered to be homogeneous mixtures?

they are the same throughout

14. What unusual thing happens when ionic compounds like NaCl (table salt) and $CaCl_2$ (road salt) dissolve in water?

these compounds separate into ions and dissolve.

15. If a molecule is <u>polar</u>, does that mean that the charge is evenly spread out around the molecule, or is there more negative charge in one part of the molecule than the other part?

more negative on one part, more positive on another part.

16. A substance called benzene dissolves well in oil based solvents, but not in water. Is benzene a polar molecule or a nonpolar molecule? **Explain.**

Nonpolar molecule

Like Dissolves Like

Remember your vocabulary words!

Unlike does not dissolve.

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