**Name: Period: Seat#:**

**S-68, 69, 70, 71**

**Directions:** Try these problems. If you can DO them, check the box (🗹).
If you CANNOT do them, write some notes TO YOURSELF about what you need to study to succeed at these problems.

**S68 – Quick Check #1**

🞎 **Formulas**

 Quickly write the formulas for the following concentration units:

|  |  |  |  |
| --- | --- | --- | --- |
| Molality | Weight Percent | Mole Fraction | Molarity |
|  |  |  |  |

🞎 **Dissecting a Given Concentration**

The concentration of a NaOH solution is 0.25 m. This translates into 0.25 and 1.0.

0.25 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and 1.0 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The concentration of a HC2H3O2 solution is 5.00% by weight. This translates into 5.00 and 100.

5.00 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and 100 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and 95.0 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

🞎 **Change one concentration into another**

Household vinegar is labeled as 5.00% by weight. It has a density of 1.01 g/mL. Fill in the chart.



|  |  |  |  |
| --- | --- | --- | --- |
|  | mass (grams) | moles (mol) | volume (L) |
| solute |  |  |  |
| solvent |  |  |  |
| solution |  |  |  |

|  |  |  |
| --- | --- | --- |
| Molality | Mole Fraction | Molarity |
|  |  |  |

**S69 – Quick Check #2**

🞎 **Terminology:**
In the first reaction, \_\_\_\_\_\_\_\_\_\_ is getting oxidized. \_\_\_\_\_\_\_\_ is the oxidizing agent.
In the first reaction, \_\_\_\_\_\_\_\_\_\_ is getting reduced. \_\_\_\_\_\_\_\_ is the reducing agent.

In the second reaction, \_\_\_\_\_\_\_\_\_\_ is getting oxidized. \_\_\_\_\_\_\_\_ is the oxidizing agent.
In the second reaction, \_\_\_\_\_\_\_\_\_\_ is getting reduced. \_\_\_\_\_\_\_\_ is the reducing agent.

🞎 **Review of oxidation numbers**

Write the balanced chemical equations for the following. Indicate the oxidation numbers.

 Zn(s) + HCl(aq) = \_\_\_\_\_\_\_ + \_\_\_\_\_\_\_ Fe(s) + CuSO4(aq) = \_\_\_\_\_\_\_ + \_\_\_\_\_\_\_

|  |  |  |
| --- | --- | --- |
|  | **Reactants** | **Products** |
| Zn |  |  |
| H |  |  |
| Cl |  |  |

|  |  |  |
| --- | --- | --- |
|  | **Reactants** | **Products** |
| Fe |  |  |
| Cu |  |  |
| S |  |  |
| O |  |  |

**S70 – Quick Check #3**

🞎 **Concentration**

Concentrated sulfuric acid contains very little water, only 5.0% by mass. It has a density of 1.84 g/mL. What is the molarity of this acid?



🞎 **Particles**

When 1 mole of each of the following solutes dissolves in water,
how many moles of particles are in the solution?
Note: this value is called the van’t Hoff factor, *i*.

|  |
| --- |
|  \_\_\_ NaCl \_\_\_ glycerol \_\_\_ sugar \_\_\_ Ca(NO3)2 \_\_\_ KNO3 \_\_\_ KCl |

**S71 – Quick Check #4**

🞎 **Raoult’s Law** Write the formula for Raoult’s Law: Psolution =

A solution is made by dissolving 164 g of glycerin (C3H8O3) in 338 mL of H2O at 40.0 °C.

The vapor pressure of pure H2O at 40.0 °C is 54.74 torr.

The density of H2O at 39.8 °C is 0.992 g/mL. The molar mass of glycerin is 92.11 g/mol.

a) How many moles of glycerin are in this solution? How many moles of water?

c) What is the mole fraction, *X*, of solvent in this solution?

d) ~~Calculate the vapor pressure of the solution.~~