Name: _____ Mr. Leal
Date: _____ Per: _____ 3/14/2013

Solution Chemistry – Molarity 1

Vocab:

1. Solution:
   _____
   _____
2. Solute:
   _____
   _____
3. Solvent:
   _____
   _____
4. Concentration:
   _____
   _____
5. Molarity:
   _____
   _____

When Solving Molarity problems, the symbol for Molarity (M) is changed into moles of solute per L of solution. Please write this as a unit below:

Molarity = M = _____ = _____

This final unit can be substituted anywhere Molarity, or _____ is used. The reverse can also be used.

Example

1. 0.50 M NaOH = 0.50 _____ NaOH
2. 1.50 M HCl = 1.50 _____ HCl
3. 0.0025 M $Ca(OH)_2$ = 0.0025 _____ $Ca(OH)_2$

Determining the Molarity is easy if you remember the units involve the mole.

Example

Determine the Molarity of a sodium chloride solution that has a volume of 1000. mL and contains 58.50 grams NaCl:

$$\frac{58.50\ g\ NaCl}{1000\ mL\ Solution} \times \frac{1000\ mL}{1\ L} \times \frac{1\ mol\ NaCl}{58.5\ g\ NaCl} = \frac{1\ mol\ NaCl}{L\ solution} = 1.000\ M\ NaCl$$

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Practice problems:

1. Determine the Molarity of a potassium chloride solution that has a volume of 500. mL and contains 30.50 grams of KCl:

2. Determine the Molarity of a calcium hydroxide solution that has a volume of 250. mL and contains 15.85 grams of calcium hydroxide:

3. Determine the Molarity of a magnesium fluoride solution that has a volume of 1.50 L and contains 42.93 grams of magnesium fluoride:

4. Determine the Molarity of an Iron (III) Oxide solution that has a volume of 2.50 mL and contains 0.0025 grams of Iron (III) Oxide:

5. If your solution's final volume is 32.55 mL and you added 6.825 grams sucrose, what is the Molarity?

6. If you added 6.25 grams sodium bicarbonate to a beaker that has 13.825 mL of water resulting in a final volume that differs from the original volume, what Molarity of aqueous sodium bicarbonate do you have? The Density of sodium bicarbonate is 2.159 grams/mL.