

Name: \_\_\_\_\_  
Date: \_\_\_\_\_ Per: \_\_\_\_\_

Mr. Leal  
3/14/2013

## **Solution Chemistry – Molarity 3**

Vocab:

1. Chromatography:

\_\_\_\_\_

\_\_\_\_\_

2. Distillation:

\_\_\_\_\_

\_\_\_\_\_

3. Solubility:

\_\_\_\_\_

\_\_\_\_\_

4. Saturated:

\_\_\_\_\_

\_\_\_\_\_

5. Electrolyte:

\_\_\_\_\_

\_\_\_\_\_

6. Surfactant:

\_\_\_\_\_

\_\_\_\_\_

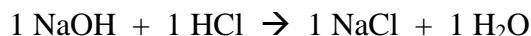
When solving Molarity problems for volume, we need to account for a balanced equation only if a reaction is present. The Mass given is multiplied by the molar mass. Then, the mole ratio from the balanced equation is needed. Next, the Molarity is needed. Last, **a volume conversion factor is multiplied** to end up with a volume **only if the volume needed is in milliliters**. Please write this below:

\_\_\_\_\_ x \_\_\_\_\_ x \_\_\_\_\_ x \_\_\_\_\_ x \_\_\_\_\_ = mL solution

### **Example**

What volume in milliliters of a 0.500 M NaOH solution is needed to react with an excess of HCl to provide 3.50 grams of NaCl:

Balanced equation:



$$3.50 \text{ g NaCl} \times \frac{1 \text{ mol NaCl}}{58.5 \text{ g NaCl}} \times \frac{1 \text{ mol NaOH}}{1 \text{ mol NaCl}} \times \frac{1 \text{ L Solution}}{0.500 \text{ mol NaOH}} \times \frac{1000\text{mL}}{1\text{L}} = \mathbf{120. \text{ mL NaOH}}$$

(mass given) (molar mass) [mole ratios] (Molarity) (conversion factor)

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**Practice problems:**

1. What volume in milliliters of a 0.500 M KOH solution is needed to react with an excess of HCl to provide 1.50 grams of KCl?
2. What volume in milliliters of a 0.500 M calcium hydroxide solution is needed to react with an excess of HCl to provide 11.0 grams of CaCl<sub>2</sub>?
3. What volume in milliliters of a 0.250 M CuSO<sub>4</sub> solution is needed to react with an excess of Aluminum solid to provide 10.8 grams of Cu? (Hint: Single Replacement)
4. What volume in liters of a 1.25 M solution of acetic acid is needed to provide 3.50 grams of acetic acid:
5. If your solution's final volume of 32.55 mL yields 3.6 grams of AgCl, determine the Molarity of the final solution. Also, how many milliliters of a 1.85 M solution of AgNO<sub>3</sub> did you add to an excess of aqueous NaCl to provide the 3.6 grams of AgCl?