

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## **Chemistry**

### *Acids & Bases WS 4 – Neutralization Calculations*

- I. Solve each of the following **neutralization calculations**, showing all work and circling your answer:
- Determine the normality of the unknown solution for each situation described below:
    - 10.0 mL of NaOH was neutralized by 20.0 mL of 0.200N HCl
    - 25.0 mL of H<sub>2</sub>SO<sub>4</sub> was neutralized by 15.0 mL of 0.100N NaOH
    - 17.5 mL of NaOH was neutralized by 55.0 mL of 0.120N HNO<sub>3</sub>
    - 50.0 mL of CH<sub>3</sub>COOH was neutralized by 39.6 mL of 0.0950N KOH
    - 100.0 mL of H<sub>3</sub>PO<sub>4</sub> was neutralized by 28.4 mL of 0.100N KOH
    - 30.0 mL of Ca(OH)<sub>2</sub> was neutralized by 76.0 mL of 0.250N H<sub>2</sub>SO<sub>4</sub>

2. How many milliliters of 0.850*N* hydrochloric acid will be needed to neutralize 25.0 mL of 0.480*N* sodium hydroxide?
  
3. How much 1.05*N* NaOH are needed to neutralize 50.0 mL of 0.620*N* H<sub>2</sub>SO<sub>4</sub>?
  
4. How much 0.20*N* NaOH must be added to 75 mL of 0.050*N* HNO<sub>3</sub> to make a neutral solution?
  
5. A 50.0 mL solution of H<sub>2</sub>SO<sub>4</sub> is completely neutralized by 17.0 mL of 1.0*M* NaOH using phenolphthalein indicator. What is the normality of the H<sub>2</sub>SO<sub>4</sub> solution? What is its molarity?
  
6. If 66.0 mL of 0.20*N* HCl are neutralized by 25.0 mL of an unknown base, what is the normality of the unknown base?
  
7. Upon performing a titration, it is found that 50.0 mL of 0.152*N* nitric acid will neutralize 29.2 mL of Ca(OH)<sub>2</sub>. What is the normality of the base?
  
8. What is the normality of a basic solution of if only takes 25 mL to neutralize 75 mL of 0.40*N* acid?