Name _____   Period _____

Partner_____   Date _____

AP Chemistry Lab
Strong and Weak Acids

Prelab Questions

1) What is the formula for calculating pH?

2) What is the difference between a strong acid and a weak acid?

3) Write the equations for the dissociation of HCl in water

4) Write the equations for the dissociation $HC_2H_3O_2$ in water.

5) How are these two equations different?

6) What is a serial dilution?

7) How do you calculate the theoretical pH of a strong acid without a pH meter?

8) How do you calculate the theoretical pH of a weak acid without a pH meter?

Procedure Strong Acid

1) Get a beaker of 0.10M HCl. 60 mL should be fine.
2) Using a graduated cylinder, pour 50 mL of this into a different beaker. Label it 0.10M HCl.
3) Measure 5 mL of the remaining solution into a graduated cylinder and dilute to 50 mL with distilled water. Transfer this to a beaker and label it 0.010 M HCl.
4) Take 5 mL of the 0.010 M HCl and dilute it the same way to 50 mL. Label it 0.0010 M HCl.
5) Take 5 mL of the 0.0010 M HCl and dilute it the same way to 50 mL. Label it 0.00010 M HCl.
6) Using a pH probe measure the pH of each solution.
7) Dispose of the solutions by pouring them into some baking soda sprinkled into a sink.

Data

	0.10 M HCl	0.010 M HCl	0.0010 M HCl	0.00010 M HCl
Theoretical pH				
Measured pH				
Difference				
Explanation of any difference				

Procedure Weak Acid

1) Repeat the same procedure as before but with 0.10 M acetic acid.

	0.10 M $HC_2H_3O_2$	0.010 M $HC_2H_3O_2$	0.0010 M $HC_2H_3O_2$	0.00010 M $HC_2H_3O_2$
Theoretical pH				
Measured pH				
Difference				
Explanation of any difference				
Calculate the $[H^+]$ based on the pH				
Calculate the $[C_2H_3O_2^-]$ based on the pH				
Calculate the Ka for each solution				

Post Lab

1) For two solutions of equal Molarity which will have the lower pH, the strong acid or the weak acid?

2) Can a weak acid have a lower pH then a strong acid? Explain