**Name: Period: Seat#:**

**Worksheet #7**

**Directions:**

* Show your work on binder paper!
* Some answers are provided at the end of the problem. They are underlined.
1. **strong acid solution** – 0.00125M HNO3
	1. determine [H+]
	2. calculate pH *2.903*
2. **strong base solution** – 0.00125M KOH
	1. determine [OH-]
	2. calculate pOH
	3. calculate pH *11.097*
3. **weak acid solution** – 0.00125M HOCl Ka = 3.5 x 10-8
	1. determine [H+] using ICE box
	2. calculate pH *5.18*
4. **weak base solution** – 0.00125M NH3 Kb = 1.8 x 10-5
	1. determine [OH-] using ICE box
	2. calculate pOH
	3. calculate pH *10.15*

 **For the following problems, assume the 5% rule for all (even if it may not apply) just so you can get some extra practice with the 5% rule.**

1. Find the pH of 0.065 M formic acid. The acid dissociation constant (Ka) for formic acid is 1.8 x 10-4. *2.47*
2. Find the pH of a 0.325 M acetic acid solution. Ka = 1.8 x 10-5. *2.62*
3. Find the pH of a solution that contains 0.0034 M lactic acid (Ka =1.4 x 10-4) and 0.056 M propionic acid
(Ka = 1.4 x 10-5). *2.80*
4. What is the pH of a 0.00056 M butyric acid solution. Ka = 1.5 x 10-5 . *4.04*

 **Challenge Problems (optional):**

* Complete these and come show me – if you get it correct I’ll give you some tickets!
1. **Diprotic acid solution** – Calculate the pH of 0.00125M H2CO3 Ka1 = 4.2 x 10-7 Ka2 = 4.8 x 10-11
	1. First dissociation – assume all molecules lose one [H+]
		1. Find [H+] with simple pH calculation
	2. Second dissociation – assume all molecules lose the second [H+]
		1. Find [H+] using ICE box
	3. Add [H+] from first and second dissociation
	4. Calculate pH from the sum of all [H+]
2. **Mixture of acid and base** – Calculate the pH of 20.0 mL of 0.00125M HNO3 + 30.0 mL of 0.00125M KOH
	1. calculate moles of H+ and OH-
	2. determine moles of excess H+ or OH-,
	3. determine total volume
	4. calculate [H+] or [OH-]
	5. calculate pH