Honors Chemistry Hour\_\_\_\_\_ Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
Dr. Wexler  
Acids and Bases Worksheet 1  
Date assigned\_\_\_\_\_\_

1. Write the balanced equation for the dissociation of water into hydrogen ions (protons) and hydroxide ions.

2. Write the expression for the equilibrium constant (Kw) of water.

Kw = [ ] x [ ] = 1 x 10-14

3. If the hydrogen ion concentration is 1 x 10-5M, what is the hydroxide ion concentration?

4. If the hydrogen ion concentration is 1 x 10-3M, what is the hydroxide ion concentration?

5. In general, if the acidity is increased, what is the effect on the hydroxide ion concentration?

6. If the hydrogen ion concentration is 2 x 10-5M, what is the hydroxide ion concentration?

7. For an acid in which [H+] = 1 x 10-5M, what is the pH?

Note: pH = -log[H+]

8. For an acid in which [H+] = 2.5 x 10-5M, what is the pH?

9. For an acid solution at pH 3, what is the [H+]?

Note: [H+] = 10-pH

10. For an acid solution at pH 3.5, what is the [H+]?

11. What are always produced as a result of the combination of an acid and a base (neutralization reaction)?   
For example: HCl + NaOH 🡪 NaCl + H2O

12. Given a solution of formic acid with a pH of 3.0, calculate the molar concentration.

Given: Ka = 1.8 x 10-4

Formulas:   
[H+] = 10-pH  
Ka= [H+][A-]/[HA]

Hint: You are solving for [HA], the acid concentration.   
Hint: [H+] and [A-] are equal for a monoprotic acid, therefore Ka = [H+]2/[HA]