K_a Worksheet - Weak Acids Name _____

K_a formula = A weak acid doesn't _____ completely.

1) Write the equation for the dissociation for each acid. Then write the K_a formula:

a) Acetic Acid

b) hydrocyanic acid (HCN)

c) Iodic Acid (HIO_3)

2) Without doing any math, match up these K_a values (not in order) with the acid solutions below:
K_{as} = 1.7×10^{-1}, 6.8×10^{-4}, 1.8×10^{-5}, 4.9×10^{-10}, very large

A 0.10 M soln of HCl with a pH of 1.00 _____

A 0.10 M soln of acetic acid with a pH of 2.87 _____

A 0.10 M soln of hydrocyanic acid with a pH of 5.1 _____

A 0.10 M soln of iodic acid with a pH of 1.15 _____

A 0.10 M soln of HF with a pH of 2.10 _____

3) Determine the K_a for HClO if a flask contains HClO at a concentration of 0.10 M, while the hydronium concentration is 5.5×10^{-5}.

Show K_a formula with species filled in:

Calculate K_a:

4) You have a 0.50 M solution of HNO_2 (nitrous acid $K_a = 4.0 \times 10^{-4}$). Find the pH. You may use the denominator shortcut.

5) You have a solution of 0.10 M HF. Find the pH.

6) You have a solution of formic acid (HCOOH) with a pH of 2.38. Find the molarity of the acid (HCOOH).

7) Vinegar, or a dilute solution of CH_3COOH (acetic acid), should have a molarity of around 0.83 M. Using the K_a for acetic acid, what should the pH of vinegar be?

8) You have a solution of boric acid (H_3BO_3) with a pH of 4.5. Find the molarity of the boric acid.

9) a) Draw the non-ionized and ionized Lewis structures of Benzoic acid (C_6H_5COOH):

Non-Ionized: Ionized:

b) If you have a 0.25 M solution of benzoic acid, what will the pH be?