Chem 12 Acid/Base K_a & K_b Worksheet Name:_____

1) Hydrazine (N_2H_4) acts as a weak base in water. Write the equilibrium expression for this reaction. (Write the chemical equation first.)

2) Determine the pOH and pH of a 1.0 M solution of the weak base NH_3 at 25°C. The K_b for NH_3 at 25°C is 1.8×10^{-5}.

3) K_b for NH_3 at 30°C is 5.0×10^{-5}. Calculate $[H^+]$, $[OH^-]$, pH and pOH of a 1.0 M NH_3 solution at this temperature.

4) $K_b = 1.7 \times 10^{-6}$ for N_2H_4, hydrazine. If a solution of N_2H_4 has a pH of 10.50, what is the $[N_2H_5^+]$ in the solution?

5) K_a for HNO_2 is 5.1×10^{-4}. What is the pH of a 0.400 M HNO_2 solution?

6) The pH of a 0.10 M solution of HA is 5.75. What is K_a for HA?

7) A 0.15 M solution of acid HX has a pH of 0.82.
   a) Is HX a strong or weak acid? Explain.

   b) Write the equation for HX reacting with water.

   c) Another solution of HX has a pH of 3.24. What was the initial concentration of HX in this solution?

8) A 1.00 M solution of acid HY has a pH of 4.50.
   a) Is HY a strong or weak acid? Explain.

   b) Calculate K_a for HY if you can.

9) The weak base B has a K_b value of 2.4×10^{-8}. What is the pH of a 1.5 M solution of B?