Acid/Base Strengths & pH/pOH Calculations

Name:_____

1. **In each of the following reactions, identify the conjugate acid/base pairs:**

2. **Write the chemical formula of the following acids.**

   a. Perchloric Acid _____ c. Hydrosulfuric Acid _____

   b. Chloric Acid _____ d. Nitrous Acid _____

3. **Write the chemical formula of the following bases.**

   a. Sodium Hydroxide _____ c. Iron (III) Hydroxide _____

   b. Potassium Hydroxide _____ d. Calcium Hydroxide _____

4. **Give the name of the following acids or bases.**

   a. H_2CO_3 _____

   b. HBr _____

   c. $Ba(OH)_2$ _____

DIRECTIONS:

A. **Determine if each substance is an Acid or Base.**
B. **Use the rules for determining acid/base strength to decide if strong or weak.**
   a. ******* When ternary *WEAK* acids dissociate, just take ONE hydrogen off the front of the formula. Ex: H_3PO_4 → Weak Acid → Dissociates into H^+ / $H_2PO_4^-$ / H_3PO_4) *******
C. **Place dissociated/undissociated particles on blank labeled, "Particles Dissociated in Water Solution"**
   a. Ex: HBr → Strong Acid → Dissociates *FULLY* into H^+ and Br^-
   b. Ex: $Fe(OH)_3$ → Weak Base → Dissociates *PARTIALLY* into Fe^{3+} / OH^- / $Fe(OH)_3$

	Acid or Base?	***Strong or Weak?***	***Particles Dissociated in Water Solution:***
5. H_2SO_4	_____	_____	_____
6. $Ca(OH)_2$	_____	_____	_____
7. NH_4OH	_____	_____	_____
8. HF	_____	_____	_____

Answer the following problems by showing ALL work and correct units for FULL credit.

9. What is the **pH** of a 0.00200*M* KOH solution?

10. What is the **pOH** of a solution with an $[H^+]$ concentration of $1.00 \times 10^{-10} M$?

11. The pOH of a solution is 13.0. What is the **$[OH^-]$** of this solution? *Is this solution* ***acidic, basic, or neutral****?*

12. What is the value of **$[OH^-]$**, if $[H^+] = 1.00 \times 10^{-8} M$?

13. What is the **$[H^+]$, $[OH^-]$, and pOH** of a solution with a $[H^+]$ of $1.00 \times 10^{-5} M$?

14. What is the **$[H^+]$, $[OH^-]$, and pH** of a solution with a pOH of 12.0? Is this an **acid or a base**?