

Acid/Base Strengths & pH/pOH Calculations

Name: _____

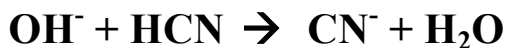
1. In each of the following reactions, identify the conjugate acid/base pairs:



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2. Write the chemical formula of the following acids.

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|--------------------------|-----------------------------|
| 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. $\text{Ba}(\text{OH})_2$ _____ |

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: $\text{H}_3\text{PO}_4 \rightarrow \text{Weak Acid} \rightarrow \text{Dissociates into } \text{H}^+ / \text{H}_2\text{PO}_4^- / \text{H}_3\text{PO}_4$ ***
- C. Place dissociated/undissociated particles on blank labeled, "Particles Dissociated in Water Solution"
 - a. Ex: $\text{HBr} \rightarrow \text{Strong Acid} \rightarrow \text{Dissociates FULLY into } \text{H}^+ \text{ and } \text{Br}^-$
 - b. Ex: $\text{Fe}(\text{OH})_3 \rightarrow \text{Weak Base} \rightarrow \text{Dissociates PARTIALLY into } \text{Fe}^{3+} / \text{OH}^- / \text{Fe}(\text{OH})_3$

	<u>Acid or Base?</u>	<u>Strong or Weak?</u>	<u>Particles Dissociated in Water Solution:</u>
5. H_2SO_4	_____	_____	_____
6. $\text{Ca}(\text{OH})_2$	_____	_____	_____
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 0.00200M KOH solution?

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

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

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

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

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