Name: _____ Period: _____ Assigned on Friday, March 13, 2026

10.5 Acid-Base Bootcamp **Due Monday, March 16, 2026**

1. Fill out the following table

Property	Acids	Bases
Taste		
Feel		
Litmus color		
Rxn w/ Metals		
Electrical conductivity		
pH		

2. How did Brønsted and Lowry describe acids and bases?

3. How did Arrhenius describe acids and bases?

4. Classify each compound as an acid or base. For acids, label each as mono-, di-, or triprotic.
   a. $Ba(OH)_2$
   b. $HC_3H_5O_2$
   c. HNO_3
   d. HBr
   e. NaOH
   f. H_2SO_4

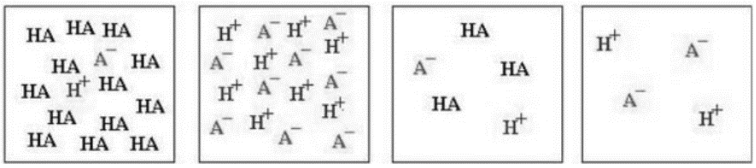
5. Using the examples for Arrhenius acids and bases in your notes, write an equation for each material dissociating (base) or ionizing (acid) into its ions when placed in water.
   a. $KOH \rightarrow$
   b. $HNO_3 \rightarrow$

6. Label each material in the following equations as an acid, base, conjugate acid, or conjugate base. Connect the conjugate acid-base pairs.
   a. $HNO_3 + H_2O \rightarrow H_3O^+ + NO_3^-$
   b. $HC_2H_3O_2 + H_2O \leftrightarrow H_3O^+ + C_2H_3O_2$
   c. $NH_3 + HCO_3^- \leftrightarrow CO_3^{2-} + NH_4^+$
   d. $HF + C_2H_3O_2 \leftrightarrow F^- + HC_2H_3O_2$

7. List the strong acids discussed in class: _____

8. List the strong bases discussed in class: _____

9. Label the diagrams below as one of the following: a) a concentrated, strong acid; b) a dilute, strong acid; c) a concentrated, weak acid; or d) a dilute, weak acid. (Note: "A" represents a generic anion.)



10. Fill in the following table using the given value to solve for the missing values.

pH	pOH	$[H_3O^+]$	$[OH^-]$	Acid or Base?
2.58				
	3.40			
		6.7×10^{-4}		
			8.2×10^{-2}	
8.54				
	9.25			
		1.9×10^{-8}		

Answers:

1. Fill out the following table

Property	Acids	Bases
Taste	sour	bitter
Feel	no distinct feel	slippery
Litmus color	red	blue
Rxn w/ Metals	produces H_2 gas	no reaction
Electrical conductivity	yes (electrolyte)	yes (electrolyte)
pH	less than 7	greater than 7

2. acid: donate proton; base: accept proton

3. acid: form hydronium in water; base: form hydroxide in water

4. a. base; b. acid, monoprotic; c. acid, monoprotic; d. acid, monoprotic; e. base; f. acid diprotic

5. a. $KOH \rightarrow K^+ + OH^-$; b. $HNO_3 \rightarrow H^+ + NO_3^-$

6. a. $HNO_3 + H_2O \rightarrow H_3O^+ + NO_3^-$
A B CA CB

b. $HC_2H_3O_2 + H_2O \leftrightarrow H_3O^+ + C_2H_3O_2^-$
A B CA CB

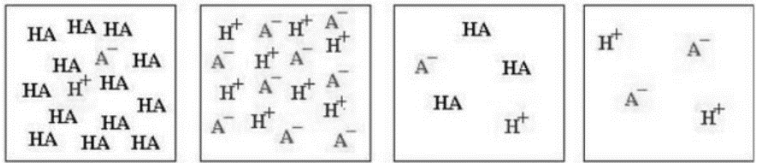
c. $NH_3 + HCO_3^- \leftrightarrow CO_3^{2-} + NH_4^+$
B A CB CA

d. $HF + C_2H_3O_2^- \leftrightarrow F^- + HC_2H_3O_2$
A B CB CA

7. HBr, HI, HCl, HNO_3, H_2SO_4, $HClO_4$

8. LiOH, NaOH, KOH, RbOH, CsOH, $Ba(OH)_2$, $Sr(OH)_2$

9.



concentrated, weak | concentrated, strong | dilute, weak | dilute, strong

10. Fill in the following table using the given value to solve for the missing values.

pH	pOH	$[H_3O^+]$	$[OH^-]$	Acid or Base?
2.58	11.42	2.6x10^-3 M	3.8x10^-12 M	acid
10.60	3.40	2.5x10^-11 M	4.0x10^-4 M	base
3.17	10.83	$6.7x10^{-4}$	1.5x10^-11 M	acid
12.91	1.09	1.2x10^-13 M	$8.2x10^{-2}$	base
8.54	5.46	2.9x10^-9 M	3.5x10^-6 M	base
4.75	9.25	1.8x10^-5 M	5.6x10^-10 M	acid
7.72	6.28	$1.9x10^{-8}$	5.3x10^-7 M	base