Steps to determine if a salt is acidic/basic/neutral

1. Identify ions that the salt came from
2. Determine if the ions will hydrolyze
   - Figure out if ions came from a strong/weak acid/base
     - From strong → ion won't hydrolyze
       = neutral contribution
     - From weak → ion will hydrolyze
       = acidic or basic contribution
3. If it hydrolyzes identify if the hydrolysis of the ion would form acid (H_3O^+)or base (OH^-).
4. Figure out what the combo of each ion's contribution would be to the solution
5. To determine the "winner" when acidic + basic
   - Compare the Ka and Kb values
   - The higher one means it is stronger, more dissociation so it will contribute more to the resulting solution

Steps to find the actual pH value of a salt solution

1. Do all the steps needed to determine which ion is the "stronger" one – which one can hydrolyze?
2. Write the hydrolysis reaction for that ion (or ions)
3. ICE Table time! Yes! More ICE tables! They just won't go away! ☺ Use your hydrolysis rxn for ICE Table
4. Find [H_3O^+] or [OH^-] from ICE Tables
5. Continue on with normal pH type calculations using the concentrations you found from the ICE Table

	Makes the solution…	
Acidic + Neutral	Acidic	
Basic + Neutral	Basic	
Neutral + Neutral	Neutral	
Acidic + Basic	Compare Ka and Kb to determine which "wins"	
	$Ka_{(ion)} > Kb_{(ion)}$	Acidic
	$Ka_{(ion)} < Kb_{(ion)}$	Basic
	$Ka_{(ion)} = Kb_{(ion)}$	Neutral

Remember: Kw = Ka x Kb

$Ka_{(acidic\ ion)} = \frac{Kw}{Kb\ (of\ where\ ion\ came\ from)}$

$Kb_{(basic\ ion)} = \frac{Kw}{Ka\ (of\ where\ ion\ came\ from)}$

	Forms a…	Hydrolyzes?	So the ion makes sol'n
Strong Acid	**Weaker** conjugate **base**	No	**Neutral**
Weak Acid	**Stronger** conjugate **base**	Yes	**Basic**
Strong Base	**Weaker** conjugate **acid**	No	**Neutral**
Weak Base	**Stronger** conjugate **acid**	Yes	**Acidic**

Steps to determine if a salt is acidic/basic/neutral

1. Identify ions that the salt came from
2. Determine if the ions will hydrolyze
   - Figure out if ions came from a strong/weak acid/base
     - From strong → ion won't hydrolyze
       = neutral contribution
     - From weak → ion will hydrolyze
       = acidic or basic contribution
3. If it hydrolyzes identify if the hydrolysis of the ion would form acid (H_3O^+)or base (OH^-).
4. Figure out what the combo of each ion's contribution would be to the solution
5. To determine the "winner" when acidic + basic
   - Compare the Ka and Kb values
   - The higher one means it is stronger, more dissociation so it will contribute more to the resulting solution

Steps to find the actual pH value of a salt solution

6. Do all the steps needed to determine which ion is the "stronger" one – which one can hydrolyze?
7. Write the hydrolysis reaction for that ion (or ions)
8. ICE Table time! Yes! More ICE tables! They just won't go away! ☺ Use your hydrolysis rxn for ICE Table
9. Find [H_3O^+] or [OH^-] from ICE Tables
10. Continue on with normal pH type calculations using the concentrations you found from the ICE Table

	Makes the solution…	
Acidic + Neutral	Acidic	
Basic + Neutral	Basic	
Neutral + Neutral	Neutral	
Acidic + Basic	Compare Ka and Kb to determine which "wins"	
	$Ka_{(ion)} > Kb_{(ion)}$	Acidic
	$Ka_{(ion)} < Kb_{(ion)}$	Basic
	$Ka_{(ion)} = Kb_{(ion)}$	Neutral

Remember: Kw = Ka x Kb

$Ka_{(acidic\ ion)} = \frac{Kw}{Kb\ (of\ where\ ion\ came\ from)}$

$Kb_{(basic\ ion)} = \frac{Kw}{Ka\ (of\ where\ ion\ came\ from)}$

	Forms a…	Hydrolyzes?	So the ion makes sol'n
Strong Acid	**Weaker** conjugate **base**	No	**Neutral**
Weak Acid	**Stronger** conjugate **base**	Yes	**Basic**
Strong Base	**Weaker** conjugate **acid**	No	**Neutral**
Weak Base	**Stronger** conjugate **acid**	Yes	**Acidic**