**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ AP Chemistry Hydrolysis of Salts**

Guiding Question: Are all salts neutral?

PreLab:

1. Label each species as a weak or strong, acid or base.
   1. NaOH \_\_\_\_\_\_\_\_\_\_ c. NH3 \_\_\_\_\_\_\_\_\_\_ e. LiOH \_\_\_\_\_\_\_\_\_\_ g. Al(OH)3 \_\_\_\_\_\_\_\_\_\_
   2. HNO3 \_\_\_\_\_\_\_\_\_\_ d. HCl \_\_\_\_\_\_\_\_\_\_ f. H2CO3 \_\_\_\_\_\_\_\_\_\_ h. HC2H3O2 \_\_\_\_\_\_\_\_\_\_
2. Complete the hydrolysis equation for the following weak ions:
   1. NH4+ + H2O 🡪 \_\_\_\_\_\_\_\_\_\_\_\_\_ + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. C2H3O2-+ H2O 🡪 \_\_\_\_\_\_\_\_\_\_\_\_\_ + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Part One: Test each of the solutions with pH paper and record the relative pH, name, and molarity.

1. Salt: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Molarity: \_\_\_\_\_\_\_\_\_\_ pH: \_\_\_\_\_\_\_\_\_
2. Salt: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Molarity: \_\_\_\_\_\_\_\_\_\_ pH: \_\_\_\_\_\_\_\_\_

What properties do all these salts have in common? (Hint: what type of acids and bases did they originate from?)

Part Two: Test each of the solutions with pH paper and record the relative pH, Ka, name, and molarity.

1. Salt: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Molarity: \_\_\_\_\_\_\_\_\_\_ pH: \_\_\_\_\_\_\_\_\_ K\_: \_\_\_\_\_\_\_\_\_\_
2. Salt: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Molarity: \_\_\_\_\_\_\_\_\_\_ pH: \_\_\_\_\_\_\_\_\_ K\_: \_\_\_\_\_\_\_\_\_\_

Based on the Molarity and Ka, verify the pH of the salt using ice box for salt three:

Based on the Molarity and Ka, verify the pH of the salt using ice box for salt four:

Part Three: Test each of the solutions with pH paper and record the relative pH, Ka, name, and molarity.

1. Salt: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Molarity: \_\_\_\_\_\_\_\_\_\_ pH: \_\_\_\_\_\_\_\_\_ K\_: \_\_\_\_\_\_\_\_\_\_
2. Salt: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Molarity: \_\_\_\_\_\_\_\_\_\_ pH: \_\_\_\_\_\_\_\_\_ K\_: \_\_\_\_\_\_\_\_\_\_

Based on the Molarity and pH, verify the Ka of the salt using ice box for salt five (calculate Ka):

Based on the Molarity and pH, verify the Ka of the salt using ice box for salt six (calculate Ka):

**Claim:** Answer the guiding question.

**Evidence:** What data do you have and how do you interpret that data?

**Justification:** What is the relationship between the type of salt formed and the strength of the acids and bases that formed them**?**

Questions:

1. Write hydrolysis equations for all non-neutral salts you tested.

3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. Underarm antiperspirants use salts containing aluminum ions. Explain how the aluminum ions work to help keep your underarms dry and what negative side effect results when it does work.