Name _____

FINDING THE EMPIRICAL FORMULA OF A COMPOUND

Problem: To find the empirical formula of a zinc-chlorine compound

Procedure: 1) Mass a clean, dry evaporating dish

2) Mass between 2.00 and 2.50 grams of zinc and place in the evaporating dish

3) Measure out 15 mL of HCl in a graduated cylinder. Slowly pour the HCl on the zinc. The solution should start fizzing, telling you that the reaction has started. Let the reaction continue until all the zinc has been reacted.

4) Place the contents of the evaporating dish on a hot plate and heat until a white film appears on the top of the solution. **DO NOT OVERHEAT THE RESIDUE IN THE DISH! *there are problems on the back of this sheet to work on while your solution is heating***

5) Let the evaporating dish cool on your lab table, then mass the dish and residue. Once you have recorded your data, clean out the dish in your lab sink and put your dish back in the lab drawer.

Data Table: Mass of evaporating dish: _____ g

Starting mass of zinc: _____ g

Mass of dish and residue: _____ g

Mass of zinc-chlorine residue: _____ g

Calculations: Show your work!

1)   Calculate the moles of zinc used.

2) Calculate the mass of chlorine present in the compound.

3) Calculate the moles of chlorine used.

4) Calculate the % composition of the zinc-chlorine compound.

5) Calculate the empirical formula of the zinc-chlorine compound.

SHOW ALL OF YOUR WORK FOR THE FOLLOWING PROBLEMS:

1) Calculate the % composition for the following:
   a. $Ca(HCO_3)_2$
   b. $Al_2(SO_4)_3$
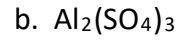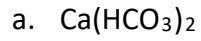
2) Using the % above, calculate the amount of substance in the following:
   a. grams of **carbon** and **calcium** in 10.35 g of $Ca(HCO_3)_2$

   b. grams of **aluminum, sulfur, and** oxygen in 25.98 g of $Al_2(SO_4)_3$

3) Do the following calculations:
   a. 3.2 grams of LiOH to moles

   b. 17.3 grams of NaCl to formula units

   c. 2.1×10^{24} molecules of $C_6H_{12}O_6$ to grams