

Determining the Murderer through Filtration and Molarity calculations

Day 1 - Today, you will begin the final step to determine the murderer. On the last day of the lab, you determined the murder weapon. That murder weapon was the chemical _____.

- Using your data from the previous lab, find a reaction that has a **1:1** mole ratio (if there is one) using your murder weapon that produces a precipitate. Record that reaction below.
- When you did this reaction, what chemical is added to your murder weapon? _____
- When you did this reaction, what chemical is the precipitate? _____
- To perform the reaction, measure precisely 5 mL of the Murder Weapon Solution using a graduated cylinder and pour into the mixing container.
- Now rinse out the graduated cylinder with deionized water, and pour in sink.
- Now measure 10 mL of the second reactant (your answer to question #2) and pour into the mixing container. This should make the murder weapon the limiting reactant (meaning all of it will react).
 - If you chose a reaction where the mole ratio is not 1:1, you either need to double the amount in number 5 or pick a different reaction. It is better to make a change now than at the end of the lab.**
- Now rinse out the graduated cylinder with deionized water, and pour in sink.
- Combine the two solutions in a small beaker. Be careful not to spill any. Make certain that every container which touches a chemical in this process is rinsed with deionized water into the next container (including stirring rods).
- Stir for two minutes to achieve a complete reaction. Rinse the stirring rod into the beaker BEFORE setting it down. Allow the precipitate to settle to the bottom. Record observations below!
- Obtain a piece of filter paper write your group initials on the edge of the paper, and then record its mass.
_____ g
- Take an Erlenmeyer flask and put a funnel on top, then place the filter in the funnel, this will be your gravity filtration device. Gravity filter wet product (Pour the remaining product through filter paper). Do this slowly to not allow the precipitate to go around the filter paper. IF YOU SEE ANY PRECIPITATE IN THE LOWER (WASTE) CONTAINER YOU **MUST** STOP AND RE-FILTER YOUR WASTE CONTAINER.
- Be sure to rinse the beaker into the filter (not the sink) using deionized water. EVERY particle MUST end up in the filter paper.
- When you are done, allow the set up to sit and gravity filter until all of the liquid has gone through the filter.
- Place you filter paper on top of a small paper cup with your group names on it and allow it to dry until next class (in the fume hood).
- WASH (with water from the faucet) EVERY CONTAINER AND PIECE OF EQUIPMENT YOU USED! POINTS WILL BE DEDUCTED IF THE NEXT CLASS HAS TO CLEAN YOUR GLASSWARE!

Day 2

1. Take your now dry filter paper and murder weapon and find its mass. _____ g
2. Determine the mass of the precipitate you collected. Calculate below, show your work.
3. Use stoichiometry to calculate the moles of your murder weapon which was in the 5.0mL worth of solution you reacted. Show your work!
4. Calculate Molarity using what you have learned from the Molarity PHeT simulation.
5. If you calculated Molarity correctly, followed all laboratory procedures correctly, and identified the correct murder weapon, you should be able to accuse someone of murder. Use the space below to state your evidence used to arrive at your murderer, who is: _____
6. Calculate the percent error from your lab. (The theoretical value being the molarity the suspect was known to have had.) How close to the number you should have gotten were you? How sure are you that you will be sending the guilty party to prison? (If you have more than a 30% error, is that accurate enough to convict?)