Solution Stoichiometry Lab-Part 1

Purpose
To make 100 mL of 0.5 M calcium chloride or potassium carbonate solution (will become your stock solution for Part 2).

Suggested Materials
Solid calcium chloride or potassium carbonate
Distilled water
100 mL Volumetric flask
Electronic Scale
Rubber stopper

Procedure
You will need to write a detailed procedure to make 100 mL of a 0.5 M calcium chloride or potassium carbonate solution.

Calculations
Include all calculations performed in order to write your lab procedure.

Solution Stoichiometry Lab-Part 2

Purpose
To make 25 mL of _____ M (pick a card...any card!) calcium chloride or potassium carbonate solution.

Suggested Materials
Stock Solution (from Part 1)
Distilled water
25 mL Volumetric flask
Rubber stopper
Pipet

Procedure
You will need to write a detailed procedure to make 25 mL of a _____ M calcium chloride or potassium carbonate solution. You will be using the stock solution made in Part 1.

Calculations
Include all calculations performed in order to write your lab procedure.

Solution Stoichiometry Lab-Part 3

Purpose

To determine the accuracy of the concentration of the solution previously made in Part 2.

Prelab (all work must be shown with units and significant figures for credit)

1. Ask your teacher for a card that will tell you the identity of your second solution for your double replacement reaction.
2. Write a balanced equation (with all states included) between your solution from part 1 and the solution on your card.
3. Determine what volume of your 0.5 M solution (from the card) will be needed to precipitate the solid out of a 25 mL sample of the diluted solution from Part 2.

Procedure

1. Carefully measure ~1.5 times the amount of a 0.5 M aqueous solution as calculated in the prelab (step 3).
2. Transfer the 25 mL of the solution you made in Part 2 to an appropriately sized beaker.
3. Add your measured volume of the 0.5 M aqueous solution into the same beaker. Stir to mix well. Allow solid to settle.
4. Decant the supernatant (liquid portion of the mixture) off into another beaker, being careful not to pour off any of the solid.
    a. To the supernatant, add 1 mL of the 0.5 M aqueous solution.
    b. If no precipitate is made, then all of your solution has been used up.
    c. If a precipitate appears, not enough of the 0.5 M aqueous solution has been added, and more will be required.
        i. Add 0.5 M aqueous solution from the buret dropwise to the supernatant beaker until no additional solid is formed.
        ii. Repeat step 4.
5. Mass a piece of filter paper. Filter the precipitate.
    a. Use distilled water to rinse the precipitate in the filter paper to make sure all of the supernatant has been removed from the solid.
    b. Place in an oven for drying.
6. Once filter paper and solid are dry, weigh the materials.
7. Dispose of the filter paper and solid in the trash bin.

Data Table

Create a data table to record all measurements taken during lab.

Data Analysis/Calculations

1. What mass of precipitate should have been formed from 25 mL of your solution (This is the limiting reactant!).
2. What is the percent yield of the reaction?