

Date: _____

Name: _____

Lab Partner: _____ (optional) _____

Blk: _____

Chemistry 11
Separating Matter Lab

Objective:

1. Using a centigram balance, measure out and record ***approximately***:

3.000 g Sand, 3.000 g Fine Grain Salt and 5.000 g Calcium Carbonate.

2. Combine the above three items into a mechanical mixture, then devise a detailed step by step procedure to separate the mechanical mixture back into its individual 3 components

3. Use necessary calculations to determine the Percent Yield of each solid

You will need to come up with the materials that are necessary for separating the above solids, it is a requirement that the mass of the items are recorded with the **before** and **after** values. You have access to (but are not limited to): magnets, sieves, filter paper, funnels, Erlenmeyer flasks, centigram balances, pure water, hot plates, graduated cylinders, beakers, tongs, tweezers, and crucible dishes. Be specific with the items that you select ie not just a graduated cylinder, rather a 25.0 mL graduated cylinder. **(FYI: 35.7 grams of salt will dissolve in 100.0 mL of pure water, use this information when considering the quantity of water you will use)**

Procedure: (must be in a flow chart format)

Write out a **detailed procedure** for the separation techniques that you will use to measure out, combine and then separate the following three solids:

1. Sand
2. Fine Grain Salt
3. Calcium Carbonate

Data and Observations:

You must create your own **data table** to record the **before and after mass values** for each component in the mixture.

Analysis:

1. Produce two separate pie charts that show the “before” and “after” of the **percent composition** (**Percent composition = individual masses ÷ sum of masses**) of the mixtures, be sure to label the “pie pieces”.
2. Using the mass values of each solid that you “recovered” calculate the Percent Yield of each solid.

$$\text{Percent Yield} = \text{mass recovered} \div \text{mass used}$$

3. Suppose a lab group reports a percent yield of 115% sand, is it possible to collect more sand than was originally present? What is a possible explanation for such a high yield?
4. Suppose a lab group reports a percent yield of 90% salt, is it possible to collect less salt than was originally present? What is a possible explanation for such a low yield?

Discussion:

1. Explain how you used the different **physical properties** of the materials involved to separate the **three solids**.
2. If you were to do this experiment again, describe a different separation technique that you could use.

Sources of Error:

List only the equipment and their corresponding uncertainties used to record **quantitative data**

Conclusion:

Be sure to include your quantitative data (Percent Yields for each solid), why you reached these values and briefly explain your separation process.

No lab report is complete without a connection between the lab and everyday life along with it's cited source in ACS format!