

Group # _____

Name _____

Period ___ Date ___/___/___

Lab Ch 3 • Separation Techniques - Filtration

Lab Partners: _____

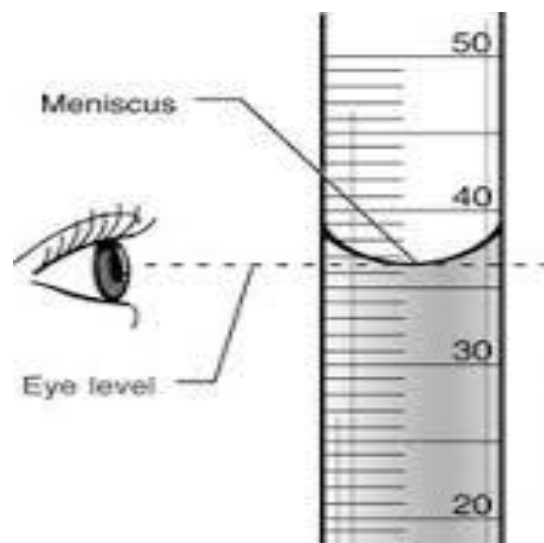
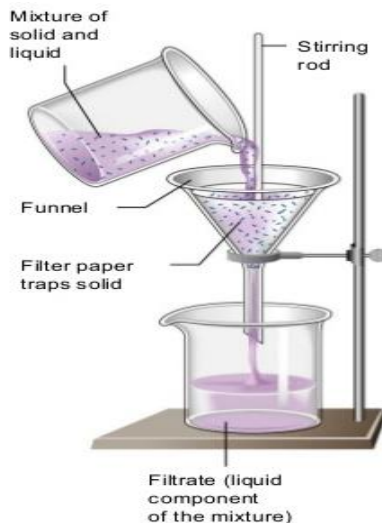
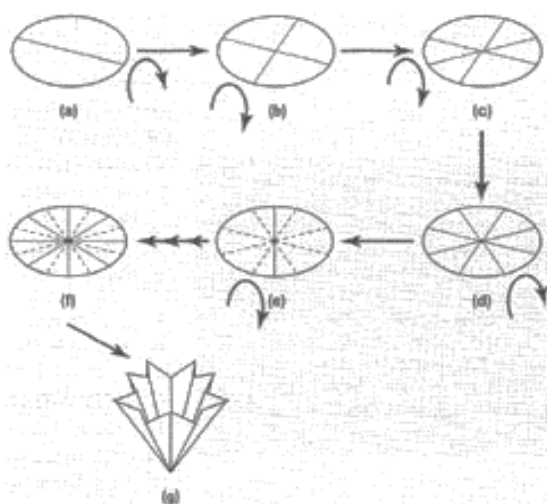
Objective of Lab

- **Measure** the mass of solid substances using the triple-beam balance.
- **Measure** volume of a liquid using a graduated cylinder.
- **Separate** components of a mixture through filtration.
- **Separate** a solid from a liquid through evaporation.

Materials

Chemical	Equipment
Table Salt	100mL Graduated Cylinder
Sand	(2) 250mL or 400mL Beakers
Distilled Water	Balance
	Ring Stand & iron ring
	Funnel
	(2) spatulas
	Stirring Rod
	Filter Paper
	Weighing Paper
	Water Bottle
	Watch Glass
	China marker

Lab Illustrations



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Procedure:

1. Measure the mass of a weigh boat to using an electronic balance. **Record** this mass in **Data Table 1**.
2. Add about 5g of table salt to the weigh boat. **Record** the mass of the weigh boat and table salt to 0.01g in **Data Table 1**.
3. Transfer the table salt to a beaker.
4. Using a clean spatula and the techniques described in Steps 2 and 3 above, measure out about 5g of sand. Be sure to **Record** measurements. Then transfer the sand to the beaker containing the table salt.
5. Using a 100mL graduated cylinder, measure out 80.0mL of distilled water. Measure the volume of the water to 0.1mL (this means you should have at least one number after decimal) by reading at the bottom of the meniscus, as illustrated. **Record** the volume of water measured in **Data Table 1**.
6. Pour the water into the beaker containing the table salt and sand. Using the stirring rod, gently stir the mixture for 1 minute. **Record** your observations in **Data Table 2**.
7. Attach the ring to the ring stand. Place a clean beaker on the base of the ring stand and set the funnel in the ring so that the stem of the funnel is in the beaker. Adjust the height of the ring so that the bottom of the funnel stem is approximately halfway up the beaker.
8. Fold a piece of filter paper as illustrated. Place the fluted filter cone in the funnel.
9. To avoid splashing and to maintain control, you will pour the liquid down the stirring rod. The stirring rod should rest in the spout and extend several inches beyond the spout. Grasp the beaker with your hand and place your index finger over the stirring rod to keep it in place. Slowly pour the contents of the beaker into the filter cone, allowing the liquid to pass through the filter paper and collect in the beaker.
10. While holding the beaker at an angle, use the water bottle to rinse the bottle to rinse the beaker and wash any remaining solid from the beaker into the filter cone. **Record** your observations in **Data Table 2**.
11. Allow the filter cone to drain. Then remove the filter cone and carefully place the filter paper on a watch glass. Open the filter paper and **record** your observations **Data Table 2**.
12. Using a China marker, write your period on your beaker containing the filtrate. Set against the wall at your lab bench to **SAVE for Day 2**.

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Day 2 Procedures:

1. Set up ring stand and attach the ring stand. Place the wire gauze on the ring to provide a platform on which to place the beaker of salt water.
2. Connect the gas hose to gas inlet. Make sure hose has no cracks or holes.
3. Light Bunsen burner with a striker.
4. When the flame is lit, **ADJUST THE GAS FLOW AND OXYGEN FLOW SO THAT THE FLAME IS BLUE WITH AN INNER LIGHT-BLUE CONE.** A YELLOW FLAME IS TOO COOL AND NEEDS MORE OXYGEN (DO NOT WANT YELLOW FLAME). SHOW YOUR TEACHER YOUR FLAME BEFORE CONTINUING.
5. After you adjust the flame to the proper color, move the Bunsen burner to the base of the ring stand and observe the height of the wire gauze. Adjust the height so the wire gauze is approximately halfway up the inner blue cone.
6. Place you salt water beaker onto the wire gauze and boil the solution to **ALMOST** dryness. If you boil to dryness it will crack the beaker. BE CAREFUL!!
7. You should notice the water has evaporated and the salt crystals are attached to the sides of the beaker.
8. Turn the burner off and using beaker tongs carefully remove the hot beaker from the wire gauze and place it on the base of the ring stand (move burner so beaker can rest on it). DO NOT PLACE THE HT BEAKER ON LAB BENCH. IT WILL CRACK/SHATTER!!!

Disposal/Clean Up

- Solids and filter paper go in the trash
- Clean ALL equipment with LAB Equipment soap & brushes
- Leave dishes to dry inverted on a paper towel.
- Clean Lab BENCH with small soap bottle and sponge.
- Wash hands with hand soap.
- Let me know when you are ready. **Do not get unprotected until dismissed.**

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Data and Observations

Data Table 1

(READ: Mass should have 2 numbers after decimal when using balance and Volume should have at least 1 number after decimal when using graduated cylinders)

Mass of weigh boat (g)	
Mass of table salt + weigh boat (g)	
*Mass of table salt (g)	
Mass of weigh boat (g)	
Mass of sand + weigh boat (g)	
*Mass of sand (g)	
Volume of water (mL)	

- ***To find the table salt:** subtract "Mass of weighing paper" from "Mass of table salt + weighing paper."
- ***To find the sand:** subtract "Mass of weighing paper" from "Mass of sand + weighing paper."

Data Table 2

Step	Observations
Step 6	
Step 10	
Step 11	

