Do Now - 9/8/14

I'm hoping to stop paying so much for salt at the grocery store. So the next time I'm at the beach, I'm going to take some of the salt out of the salt water.

Is this possible? If not, why is it not possible? If so, how could I extract salt from water?

Please turn in your Conserv. of Mass Lab if you have not done so already.

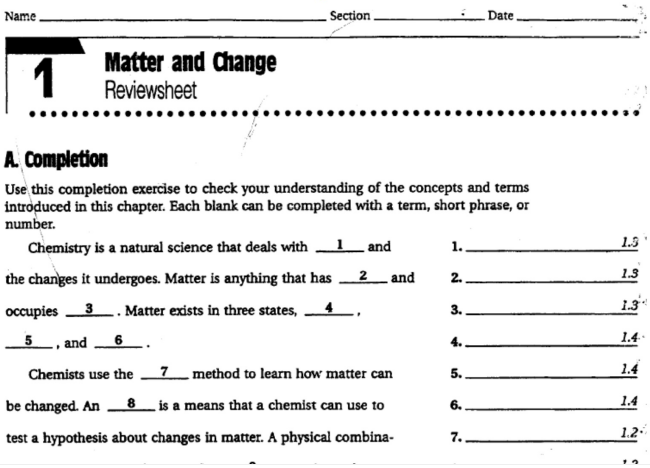
Please grab a copy of the **lab** from the front desk.

9/8/14 Agenda

1. Explain techniques for separating the lab mixture of iron, sand, and salt
2. Separation of a Mixture Lab Steps #1-10
3. Review the Matter & Change handout

Hw: Work on post-lab questions; Unit 1 Quiz I on Wednesday; lab will be due Wednesday; Ch. 3 ?s due next Monday

Please take out your homework



Name _____ Section _____ Date _____

1 Matter and Change
Reviewsheet

A. Completion

Use this completion exercise to check your understanding of the concepts and terms introduced in this chapter. Each blank can be completed with a term, short phrase, or number.

Chemistry is a natural science that deals with __1__ and the changes it undergoes. Matter is anything that has __2__ and occupies __3__. Matter exists in three states, __4__, __5__, and __6__.

Chemists use the __7__ method to learn how matter can be changed. An __8__ is a means that a chemist can use to test a hypothesis about changes in matter. A physical combina-

1. _____ 1.5
2. _____ 1.5
3. _____ 1.5
4. _____ 1.4
5. _____ 1.4
6. _____ 1.4
7. _____ 1.2

Separation of a Mixture Lab Overview

- At each of your lab stations is a container of a mixture of **iron, sand, and salt**.
  - *The mixture has specific *proportions* of iron, sand, and salt. I know what these proportions are, but I'm not telling you them (yet).
- Your first goal is to do as the title of the lab suggests – separate the mixture.

Lab Overview (cont.)

- After separating the mixture (Day 2), you will calculate the **percent composition** of your mixture, that is you will say exactly *how much* iron, sand, and salt made up your mixture.
  - *Was it 10% iron, 50% sand, and 40% salt?
  - *Was it 0.5% iron, 0.5% sand, and 99% salt?
  - *The possibilites are endless.
- Then you will compare your experimental percent composition values with the *true* values that I know (and will eventually tell you).

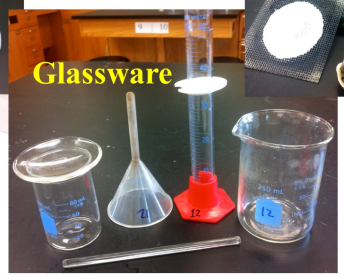
Lab Overview (cont.)

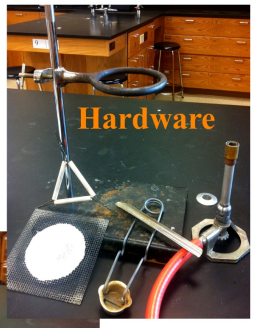
- Today we're just focusing on the *separating the mixture*, not making other calculations.
- First you will **separate the iron from the sand/salt**.
  - *Hover the bar magnet *in the plastic baggie* above your mixture until all of the iron filings are stuck to it.

Lab Overview (cont.)

- Then you will **separate the salt from the sand**.
  - *By putting the salt/sand mixture in water, you are dissolving the salt in the water, and the sand will sink to the bottom. You can filter out the sand so that you are just left with saltwater.
  - *I'll put your filter papers with the wet **sand** in the oven overnight to dry.
- Then you will **extract the salt from the water**.
  - *Boil off all of the water, so that only salt is left.

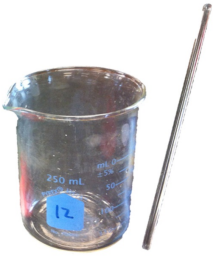
Lab Materials

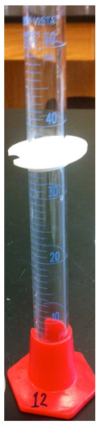




Lab Procedure Simplified

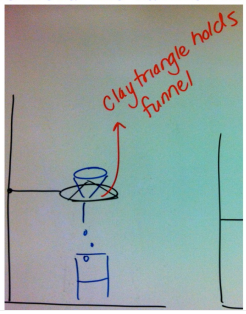
- **Separate** the IRON using the bar magnet.
- **Mix** the SAND/SALT with 20 mL water in 250 mL beaker until the salt dissolves.

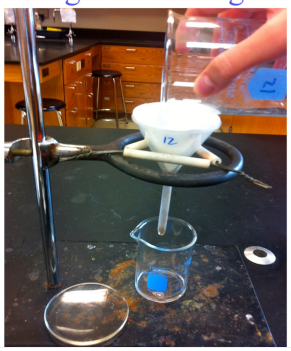




Lab Procedure Simplified (cont.)

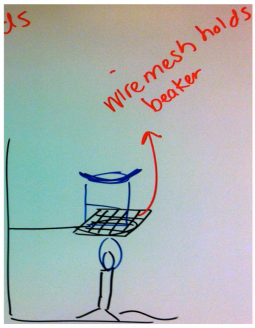
- **Filter** SAND/SALTWATER through filter paper/ funnel into the 100 mL beaker (that goes with the watch glass). Use the clay triangle on the ring stand to hold the funnel in place.

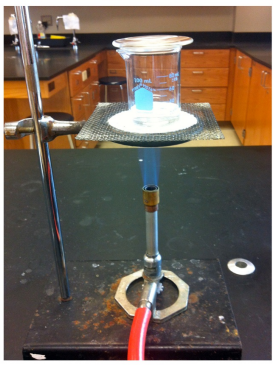




Lab Procedure Simplified (cont.)

- **Boil** the SALTWATER in the 100 mL beaker with the watch glass cup-up. Use the wire gauze on the ring stand to hold the beaker.





Lab Safety & Tips

- ***Follow the procedure very CAREFULLY***. Make sure you've gotten masses of *everything*! Only Data Table (*i*) should be left blank for Day 2.
- *For the filter paper:* make sure to write your names in PENCIL and to fold it correctly.
- *While filtering:* answer **Conclusion ?s 1-4 on pg. 3** and **record any lab observations on pg. 2**
- *When boiling:* don't point the spout at a person.

Please leave your hw on your desk.

Lab Clean-Up

- Put any UNMARKED GLASSWARE **on my front desk** (watch glasses & any beakers that don't have labels). Bring distilled water bottles up too.
- Put any MARKED GLASSWARE (beakers with labels) **in the appropriate drawer** (number corresponds to your Station #).
- **Put everything else away** (ring, ring stand, wire gauze, scoopula, stirring rod, Bunsen burner, striker, gloves, graduated cylinder, etc.).

Thank you!

Matter and Change Review Sheet

Chemistry is a natural science that deals with __1__ and the changes it undergoes. Matter is anything that has __2__ and occupies __3__. Matter exists in three states, __4__, __5__, and __6__.

Chemists use the __7__ method to learn how matter can be changed. An __8__ is a means that a chemist can use to test a hypothesis about changes in matter. A physical combination of two or more substances is a __9__. A mixture has a variable composition and may be identified as __10__ or __11__. Homogeneous mixtures are known as __12__ and have uniform properties.

A pure substance is either a __13__ or a __14__. Compounds are made up of __15__, which are always present in the same __16__ in a given compound. Compounds can be sepa-

1. matter 1.5
2. mass 1.3
3. space 1.3
4. solid 1.4
5. liquid 1.4
6. gas 1.4
7. scientific 1.2
8. experiment 1.2
9. mixture 1.6
10. heterogeneous 1.6
11. homogeneous 1.6
12. solutions 1.6
13. element 1.7
14. compound 1.7

Matter and Change Review Sheet (cont.)

same __16__ in a given compound. Compounds can be separated into their constituent elements only by __17__ reaction. A change in the properties of a substance without a change in the composition is a __18__ change. If the composition changes, then a __19__ reaction has occurred. In a chemical reaction, __20__ are converted to products. __21__ changes are usually reversible; many __22__ changes are not easily reversible. The law of __23__ states that mass is neither created nor destroyed in any physical or chemical reaction.

14. compound 1.7
15. elements 1.7
16. ratio 1.7
17. chemical 1.7
18. physical 1.5
19. chemical 1.9
20. reactants 1.9
21. physical 1.9
22. chemical 1.9
23. Conservation of Mass 1.10

Matter and Change Review Sheet (cont.)

24. State whether each of the following is a homogeneous or heterogeneous mixture. 1.6
    a. oxygen *dissolved in water* — a. homogeneous
    b. carbon mixed with sand — b. heterogeneous
    c. apple juice — c. homogeneous
    d. vegetable soup — d. heterogeneous
    e. sour milk — e. heterogeneous
25. When 400 grams of wood are burned, 30 grams of ash remain. What happened to the missing 370 g of matter? 1.10
    It was converted into something other than wood (H_2O, CO_2)
26. Car batteries give off a potentially explosive mixture of gases. What kind of change is taking place in the battery? 1.9
    Chemical

...So what did we do today?

1. Explained techniques for separating the lab mixture of iron, sand, and salt
2. Completed Steps #1-10 of the Separation of a Mixture Lab
3. Reviewd the Matter & Change handout

Hw: Work on post-lab questions; Unit 1 Quiz I on Wednesday; lab will be due on Wednesday too

Tomorrow: We'll finish up the lab procedure, work on the calculations, and prepare for our quiz