Chemistry: Matter and Change

Mini-Lab 3.3C Densities of Solutions

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Purpose: To observe how densities of solutions affects how they interact.

Materials: vegetable oil, water, beaker, eye dropper, and a graduated cylinder.

Solution A; 36 grams of salt in 100 mL of water, green

Solution B; 24 grams of salt in 100 mL of water, blue

Solution C; 18 grams of salt in 100 mL of water, yellow

Solution D; 12 grams of salt in 100 mL of water, red

Procedure:

1. Watch me do the salt solutions.

2. Now, collect all materials from the lab table.

3. Measure out 10 mL of both liquids.

4. Pour the water into the beaker. Then, pour the oil.

5. Wait for 10 minutes to let the solution settle.

6. Go back to your lab tables and observe the solution. Which is on top? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7. Dump the liquids into the sink. Wash out the beaker and put all of your materials back onto the front table. Clean up your lab tables. Then sit down and start answering questions.

Conclusion:

1. What is density?

2. What is concentration?

3. How do you calculate the density of an object or solution?

4. How do you calculate the concentration of a solution?

5. What is the density of pure water?

6. What is the concentration of salt in pure water?

7. The way you calculate density and concentration are the same, but the definitions are different. What is the difference between them?

8. Calculate the concentrations and densities of the four solutions.

Concentration Density

A A

B B

C C

D D

9. Which of the solutions was the most dense? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

10. Which of the solutions was the least dense?

11. If you put an object with a density of less than 1 in pure water, will the object float or sink?

12. Where would pure water be in the column of the four solutions in the straw?

14. Why?

15. Explain why the four salt solutions were layered on top of each other in the straw?

16. Was this solution heterogeneous or homogeneous? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

17. Why did the vegetable oil and water settle the way they did?

18. Is the oil's density less than, equal to, or greater than water's?

19. Is this solution heterogeneous or homogeneous? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_