Grade 7 Science
Unit 3: Mixtures and Solutions
CORE LAB 4- PART 2

Name:_____

Partners:

_____ _____

_____ _____

Problem: How can we separate homogeneous mixtures (solutions)?

Materials:

- 2 mL to 3 mL distilled water
- microscope slide
- 2 beakers (250 mL)
- medicine dropper
- 500 mL Erlenmeyer flask
- 50 cm rubber or plastic tubing or flask
- 5 mL measuring spoon
- salt
- marker
- graduated cylinder
- hot plate
- stopper with glass tubing already inserted
- handle beaker

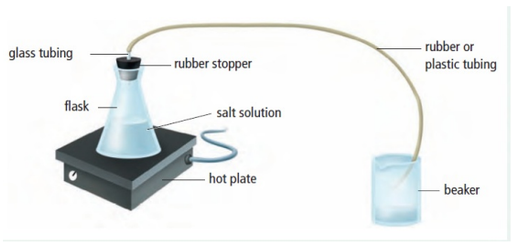
Procedure:

1. Measure 100 mL of tap water in a graduated cylinder. Pour the water into a 250 mL beaker.

2. Add 10 mL of salt, and stir until the mixture is dissolved.

3. Pour almost all of this solution into a 500 mL flask. (Save a few drops to use for testing in step 5.)

4. Using the other beaker, set up the equipment shown in the diagram below.



(a) Make sure your hands are dry. Plug in the hot plate, and turn it on. Heat the mixture until about half of the liquid has boiled away. Caution: Turn off the hot plate when half of the liquid is gone. Then carefully remove the end of the tubing from the beaker. (Be sure to wear gloves. The tubing will be hot.)

(b) Let the apparatus cool completely before taking it apart.

5. In this step, you will test for the presence of dissolved salt by letting three samples of liquid evaporate. Be sure to use the same amount of liquid for all three samples

(a) With the marker, divide the microscope slide into three parts. Label them A, B, and C as shown in the diagram on the next page.

(b) Use the dropper to put three drops of the solution you saved in step 3 on the part of the microscope slide marked A.

(c) Clean the dropper, and rinse it a few times with some of the liquid that you collected in step 4. Then use the dropper to collect a small amount of the liquid that you collected in step 4. Put three drops on the part of the microscope slide marked B.

(d) Clean the dropper, and rinse it a few times with some of the distilled water. Then use it to put three drops of distilled water on the part of the slide marked C.

(e) Set the microscope slide in a place where it will not be disturbed. When the liquid has evaporated, observe the slide to see what material, if any, is left on it. Make a sketch to record your observations.

6. Clean up and put away the equipment you have used.

Observations:

Draw a picture of your setup:

Draw a before and after picture of the evaporating dish

Analysis:

1. What did you see in the top half of the flask after the water started to boil?

_____

_____

_____

_____

2. What change of state must have occurred inside the flask? Explain how you know.

_____

_____

_____

_____

3. Describe what you saw at the end of the rubber tubing in the beaker (step 4).

4. What change of state must have occurred inside the tubing? substance likely remained in the evaporating dish?

5. After the drops of liquid evaporated from the microscope slide, what (if any) material remained on the slide for:

   (a) the salt solution?

   (b) the liquid collected in step 4?

   (c) the distilled water?

6. In steps 4(c) and (d), you rinsed the eye dropper with the liquid that you were going to collect and then put on the microscope slide. What do you think was the purpose of this rinsing process?

7. In step 4, which substance collected in the beaker: the solute or the solvent? Explain how you know.

8. What happened to the substance that was not collected in this beaker?

9. Which of the three samples in step 5 were probably pure water? Explain your answer

10. In your opinion, would distillation be a suitable method for producing large amounts of pure water, for a large city? Give reasons to justify your opinion

Conclusion: