**Density Layering Activity**

**Objective:** Understand how salinity and temperature affect the density of water.

**Hypothesis:**

*Your Hypothesis Goes Here:*

**Least Dense**

**Most Dense**

*Put in order from most dense to least dense:*

* *Tap water at room temperature (CLEAR)*
* *Salt water at room temperature (YELLOW)*
* *Cold water (BLUE)*
* *Hot water (RED)*

**Procedure:**

1. Place one end of your clear plastic box onto the textbook so it is tilted.
2. From sink, measure 800 mL of tap water at room temperature in large beaker.
3. Pour 800 mL of clear tap water into box.
4. Obtain 40 mL salt water at room temperature. 🡨 from teacher.
5. SLOWLY pour salt water into the HIGH END of the plastic box.
6. WATCH what happens by viewing at eye-level from the side. Describe what occurs. \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
7. Obtain 40 mL cold water. 🡨 from teacher.
8. Predict what will happen when you pour the cold water into the box. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
9. SLOWLY pour cold water into the HIGH END of the plastic box.
10. WATCH and DESCRIBE what happens. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
11. Obtain 40 mL hot water. 🡨 from teacher.
12. Predict what will happen when you pour the hot water into the box. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
13. SLOWLY pour.
14. WATCH and DESCRIBE what happens. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_­
15. Use colored pencils to fill in the diagram below, show the relative positions of each of the solutions in the box:

**Results:**

**Least Dense**

**Most Dense**

**Analysis:**

1. **What is density?**
2. **Which factor has the greater effect on density? temperature/salinity**
3. **How did your layers demonstrate this?**
4. **How would an increase in evaporation affect the density of ocean water?**
5. **Draw what a beaker of salt water would look like before and after an increase in evaporation (use dots to represent salt molecules):**

**After**

**Evaporation**

**Before**

1. **Why does the density of liquid water increase as it cools?**
2. **When seawater freezes in Polar Regions, most of the salt is left behind. How would this effect the density of the water that is left unfrozen?**
3. **Based on what you have learned today, why does ice float in seawater? (think of icebergs)**