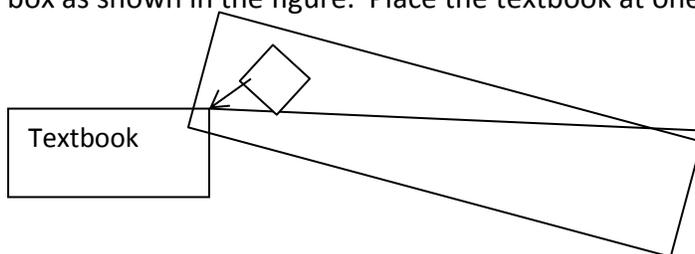


## Lab: Water Density

### Procedure:

Set up a clear plastic box as shown in the figure. Place the textbook at one end to incline the box.



Add about 800.0 mL of average temperature tap water to the box. Let the water calm down.

Next, place 25.0 mL of average temperature tap water in a small beaker.

Add one level teaspoon of salt and one drop of **yellow** food coloring to the water. Stir until the salt dissolves.

Carefully and slowly pour the solution into the raised end of the box.

1. Observe what happens to the solution. Describe what occurs.
2. Place 25.0 mL of ice water in a beaker, and stir in a drop of **blue** food coloring. Do NOT POUR it into the box yet. Predict what will happen when you pour the blue ice water into the box:
3. Now, carefully and slowly pour the blue ice water into the raised end of the box. Describe what happens:
4. RINSE and Refill your beaker with 25.0 mL of hot tap water, and stir in a drop of **red** food coloring. Predict what will happen when this solution is poured into the box:
5. Carefully and slowly pour the hot water into the raised end of the box. Describe what happens.
6. From what you have observed so far, which solution has a higher density? Saltwater or water that isn't salty? Warm water or cold water? Explain.

Next, add a level spoonful of salt and a drop of **green** food coloring to 25.0 mL of ice water. Stir until the salt completely dissolves.

7. Carefully, pour the solution into the raised end of the box. Describe what happens.
8. Use color pencils to draw a side view of your box with the various layers, showing the relative positions of each of the solutions in the box following each step.

### Analysis:

9. How would an increase in evaporation affect the density of ocean water?
10. Which would contain more water molecules: a beaker with 100ml of hot water or a beaker with 100ml of cold water?
11. What is density?
12. What is density on a molecular (atomic) level?
13. Why does the density of liquid water increase as it cools?
14. 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?