

Chapter 6 Mini-Lab at Home

(use with text pg 161 - 162)

How does Liquid Soap Affect the Surface Tension of Water?

Surface tension of water is a force exerted by the surface of water on the particles below. It results from the attraction of water molecules to other water molecules (cohesion). The force of surface tension tends to pull drops of water into spherical (ball) shapes. When drops of falling water are photographed with a high speed camera, their spherical shape is visible.

Procedure

1. Place one drop of water on a piece of waxed paper.
2. Look carefully at the water drop from the side and draw its shape.
3. Look carefully at the water drop from above and draw its shape.
4. Write down a hypothesis answering the question given at the top of this page. It should be a complete sentence and offer an idea as to why you think you are correct.
5. Dip a toothpick in liquid soap (dish soap works great).
6. Touch the toothpick to the water drop while viewing from the side.
7. Look carefully at the water drop from the side and now draw its shape again.
8. Look carefully at the water drop from above and draw its shape again.
9. Write up a lab report containing the following information.
10. Extension (for those interested in higher than an 88%), try two other surfaces for the water drop, provide hypotheses and drawings, and explain why shapes might be the same or different. Make a conclusion as to whether or not the surface on which the water is located matters.

Lab Report – on a separate sheet of paper, with your name, and period, write:

Problem: write down the Problem question (see above)

Hypothesis: write down the answer to the question that you did at step 4 above.

Materials: write down a list of the materials used for the lab

Drawings: include four drawings, two before the soap (side view and top view) and two after adding soap (side view and top view).

Analysis: completely and scientifically answer each of the following questions.

1. What was the shape of the original water drop?
2. How did the shape change when the soap was added?
3. What caused the drop to change?
4. What can you conclude about the effect of soap on the surface tension of water?

Conclusion: write down a statement that summarizes your results when compared to the hypothesis that you wrote down earlier. This should also conclude and restate the problem as a statement or answer to the original question and a summary of what happened and why.