



TESTING THE EFFECT OF DETERGENT ON WATER SURFACE TENSION

Name: _____

Date: _____

Grade: _____

QUESTION: How does adding detergent to water affect its surface tension?

HYPOTHESIS:

If detergent is added to water, then the surface tension will _____
because _____.

BACKGROUND

Surface tension is the "tightness" at the surface of a liquid caused by the attraction of water molecules to each other. Detergent breaks some of these attractions, causing the surface tension to decrease.

MATERIALS

- Water
- Liquid dish detergent
- 3 clear cups or bowls
- Eye dropper or pipette
- Ruler (with millimeters)
- Paper clip or sewing needle
- Paper towel



PROCEDURE

1. Label three cups: 0% (control), 0.1% detergent, and 0.5% detergent.
2. Fill each cup with 100 mL of water.
3. To the 0.1% cup, add 1 drop of dish detergent (about 0.05 mL). Stir gently.
4. To the 0.5% cup, add 5 drops of dish detergent (about 0.25 mL). Stir gently.
5. Wait 1 minute for the solutions to settle.
6. Carefully place a small paper clip (or sewing needle) on the surface of the water in the 0% cup. Count how many additional paper clips you can add on the surface before they sink. Record your result.
7. Repeat Step 6 for the 0.1% cup and the 0.5% cup.
8. Do 3 trials for each solution and record your data.

DATA TABLE

Solution	Detergent Concentration	Number of Paper Clips That Could Float			
		Trial 1	Trial 2	Trial 3	Average (Number)
Control (water only)	0%				
Detergent Solution	0.1%				
Detergent Solution	0.5%				



ANALYSIS QUESTIONS

1. What happened to the number of paper clips that could float as detergent concentration increased?

2. What does this tell you about the effect of detergent on water surface tension?

3. Why do you think detergent causes this change?

4. What are some real-life examples where lowering surface tension is useful?

SAFETY REMINDERS

- Do not drink any of the solutions.
- Avoid touching your eyes after handling detergent.
- Clean up spills immediately.
- Wash hands when finished.



TIP: Keep the paper clip dry before placing it on the water. Place it gently on the surface—do not drop it.