

Water has a density of 1g/cm³

Oil has a density of .93 g/cm³

Period _____ Name _____
Soap Density Lab

Date _____ # _____

I. Problem: Given four pieces of soap, the mass and volume of each, and a cup of water, can you accurately predict which type of soap floats??

II. Hypothesis: _____

III. Design an Experiment: Materials:

- 4 types of soap (10 grams each):
- Dove - 8 cm³
- Irish Spring - 6 cm³
- Dial - 9 cm³
- Ivory - 11.1 cm³
- Cup of Water
- Calculator

IV. Do the Experiment: Procedures:

1. Using the equation $D=M/V$, find the density of soap 1 (Dove).
2. Record your data.
3. Predict whether soap one will float based on your math.
4. Test the soap in the cup of water.
5. Record your data.
6. Repeat steps 1-5 for soaps 2-4.

Record and Analyze Data:

Soaps	Mass (g)	Volume (cm ³)	Density g/cm ³ $D=M/V$	Prediction: Sink or Float	Test: Did your soap float? Y/N
1 Dove					
2 Irish Spring					
3 Dial					
4 Ivory					

Conclusion: _____

Analysis Questions:

Answer the following questions:

1. What is the independent variable in this experiment?

2. What is the dependent variable in this experiment?

3. List all the variables (anything that you can change) in this experiment.

4. Which soap floats?

5. Which soap is the densest? How do you know?

6. Which soap is the least dense? How do you know?

7. If you changed the experiment by placing larger bars of soap in water, would your results change? Why would it change or not change?

8. If you had an object with a mass of 10 g and a volume of 11 cm³, would the object sink or float in water? Why?

9. If you placed the same object from question 8 in another liquid, such as vegetable oil with a density of .93 g/cm³, would it sink or float? Explain your answer.

10. Was your hypothesis correct or incorrect? Explain your answer.