



Lesson: Density

Name:

Teacher:

Date:

Density Rainbow Experiment Guide

www.innovatewithmrbarbado.com | [YouTube: STEM Club](https://www.youtube.com/STEMClub)

Lesson Focus: Understanding density and how differences in density cause liquids to layer without mixing.

What You Need

- Clear glass or plastic container (like a tall glass or beaker)
- Honey or syrup (bottom layer)
- Dish soap
- Water (optional: colored with food dye)
- Vegetable oil
- Rubbing alcohol (optional: colored)
- Dropper or spoon
- Small objects like beads or grapes (optional)

Safety First

1. Do **not** drink any liquids used in the experiment.
2. Be careful with rubbing alcohol—it is flammable.
3. Pour liquids slowly to avoid spills.
4. Keep your container on a stable surface.

What You Will Learn

- What density is and how it affects whether liquids float or sink.
- How to layer liquids by their density.
- How objects behave when placed in liquids with different densities.

Step-by-Step Instructions

1. **Prepare the Container:** Place it on a flat, stable surface.
2. **Make the Layers:**
 - Pour honey or syrup into the bottom of the container.
 - Slowly pour dish soap on top of the honey.



- Carefully add colored water on top of the dish soap.
- Add vegetable oil on top of the water.
- Finish with rubbing alcohol at the top.

3. **Watch Carefully:** Notice how each liquid floats on top of the denser one.
4. **Optional Test:** Drop small objects (like beads or grapes) into the container. Watch where they settle.

Data Table for Observations

Liquid Layer	Layer Number	Observation Notes
Honey / Syrup		
Dish Soap		
Colored Water		
Vegetable Oil		
Rubbing Alcohol		
Small Objects		Where they settled

Questions to Think About

1. Which liquid is the densest? Which is the least dense?
2. Why do the liquids form separate layers instead of mixing?
3. What happened to the small objects you dropped? Why?
4. Can you think of real-life examples where density matters (like oil spills or salad dressing)?

Clean-Up

1. Pour the liquids into a safe container for disposal.
2. Wash your glass or container with soap and water.
3. Wipe your workspace to remove sticky residues.