

Layers of Density (and BEYOND!)

Summary

Students will work in small groups to demonstrate the effect of density on the layering of liquids and will calculate the density of each layer to look for patterns.

Main Core Tie

SEEd - Grade 7

[Strand 7.2: CHANGES TO EARTH OVER TIME Standard 7.2.4](#)

Time Frame

1 class periods of 60 minutes each

Group Size

Small Groups

Materials

- 10 mL water (colored red)
- 10 mL alcohol (colored blue)
- 10 mL vegetable oil (already a yellow color)
- calculators
- 10 mL graduated cylinder
- triple beam balance
- 250 mL beaker for waste
- [Student worksheet](#)

Student Prior Knowledge

mass, volume, density

Instructional Procedures

It will take less equipment if you give the groups their liquids in 10 mL graduated cylinders. This will allow them to use it to measure the volume for pouring and for density. Make sure they remember to tare out the mass of the cylinder when they find the mass of the liquid for density. Introduce the lab by showing the students a bottle of Italian salad dressing (preferably the regular kind, not the fat-free kind). Have the students discuss why the dressing is in layers. Brainstorm other things that make layers when you put them together (ice in water, oil on vinegar, wood on water, etc.) What is the property that is causing this?

Demonstrate how to pour the liquids down the side of the graduated cylinder so they do not mix. At the end of the experiment, have the students pour their mixtures into the waste beaker and then pour the waste into a class waste bucket or beaker. Dispose of the mixture as your school policy dictates. The oil will come out of the graduates if washed in hot, soapy water immediately after use.

Tie this experiment into the discussion of the different elements and how they are arranged in Earth's layers. Keep in mind that most of the elements in the layers are not in elemental form, but in general, the least dense matter is at the top (or in the crust) and the most dense matter is at the "bottom" (in the core).

Assessment Plan

Check for accurate illustration of layers and analysis/conclusion statements.

Bibliography

Lesson Design by Jordan School District Teachers and Staff.

Authors

[Utah LessonPlans](#)