

Make a Density Layer Cake

What happens when you mix oil and water? Do different objects float in different liquids? Explore the answers to these questions and more in this colorful experiment, all within the walls of a recycled soda bottle!

At the end of this activity, your child will be able to rank liquids by density and will be able to engage with new vocabulary and concepts like density, buoyancy, and hydrophobia. Plus, she'll end up with a really cool-looking "layer cake" of colorful substances!

What You Need:

- Soda pop bottle
- Scissors
- Water
- Objects to test: a grape, a paper clip, a cork, a pop bottle cap, a penny, and any other small objects you wish
- Measuring cup
- 1/2 cup light corn syrup
- Food coloring (yellow and blue are good colors to use)
- 1/2 cup olive oil or other cooking oil
- 1/2 cup rubbing alcohol (have an adult help with this)
- Paper and a pen



What You Do:

1. Cut the top off of the soda bottle so that you have a nice wide opening.
2. Fill the bottle about two-thirds full with water.
3. Have your child drop various small objects in the water. Which ones float and which ones sink? Remind your child to write this down so she'll remember!
4. Let your child empty out the bottle and pour the corn syrup in.
5. Measure 1/2 cup water and add a drop or two of food coloring.
6. Slowly pour the water on top of the syrup, being careful not to mix the two.
7. Pour the oil on top of the water. Explain to your child that oil is "hydrophobic," or afraid of water. They don't like to mix.
8. Let your child choose a different color for the rubbing alcohol. Remind her that she should only use alcohol with an adult present!
9. Add a couple of drops of food coloring to the rubbing alcohol and pour it into the pop bottle
10. Now, your child can drop the small objects into the bottle again! Do they float? Which "layer" does each one settle in? Why does she think that's so?

This experiment also makes a great science fair project. It also looks excellent in the science lab!

Adapted from "Pop Bottle Science" by Lynn Brunelle. (Workman, New York, Copyright 2004).

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