

Making a Density Column

Density Formula: Density= Mass/ Volume or $D = m/V$

Mass is measured in grams. Volume of a solid is measured in cm^3 . Density is measured with a derived unit g/cm^3

*** Density of water is $1\text{g}/\text{cm}^3$.

Materials

- Cup
- Water
- Red food coloring
- Spoon
- Jar
- Turkey baster
- Corn syrup
- Glycerin
- Dish washing liquid
- Vegetable oil
- Rubbing alcohol
- Various small objects

Directions

1. Fill the cup with water. Then add red coloring and stir
2. Set a tall narrow jar on a table then using a turkey baster slowly add the following to the jar in this order: Corn syrup, glycerin, dish washing liquid, colored water, vegetable oil, rubbing alcohol
3. Add enough of each to fill $1/6$ of the jar.
4. When adding the substance, put the tip of the baster on the side of the jar and squeeze the bulb gently so the liquid slid down the side of the jar (don't squirt it in).
5. The liquids you added will stay separate from each other
6. Take a cork, marble, a paper clip, and several other small objects and add them to the jar. The objects will float at different levels
7. **Draw a picture** of your density column and label the substances and objects.

Less dense liquids float on top of more dense liquids, and the objects float at different levels.

Which objects/liquids have a density of less than $1\text{g}/\text{cm}^3$?

Which objects/liquids have a density of more than $1\text{g}/\text{cm}^3$?

Significant Figures

Materials:

- Bathroom scale, any object weighing 5 lb, and a pencil

Directions

1. Step on the scale & record your weight.
2. Now weigh yourself holding the 5 lb weight, record your new weight.
3. Put down the 5 lb object, pick up the pencil, and weigh yourself again, record your new weight.

Your weight _____ lbs.

Your weight + 5lb. object _____ lbs

Your weight + pencil _____ lbs.

- The pencil's weight is insignificant compared to the precision of the scale. The pencil does weigh something, but the scale is not capable of detecting it. So if you add the weight of the pencil to your own using the bathroom scale to measure, the recorded weight does not change. When adding, subtracting, multiplying, or dividing, precision is limited by the least precise measurement.

Additional for Chemistry Honors

You will be required to conduct an independent research project for the Science Fair (February of 2010). Deciding on a sufficiently challenging yet approachable topic can be difficult. While your teacher can help you refine your idea, they will not assign your experiment unless you understand that you coming up with your own creative, complex problem is a factor in your teacher's evaluation. Students should develop their own original ideas. You may use experimental procedures found on the internet and in books in new ways, in new applications, or with modifications, but you should not run "canned" experiments from "science fair" type websites as they are found. And you must reference all your sources!

We suggest that this summer you read journals such as Science News, Current Science, and peruse the Science Daily Website <http://www.sciencedaily.com/> to look for topics that pique your interest and compile a list. You will need to decide on a topic by 4 weeks into the first quarter. It is absolutely essential that you look for a topic that you really do find interesting, since you will be spending months working on it!