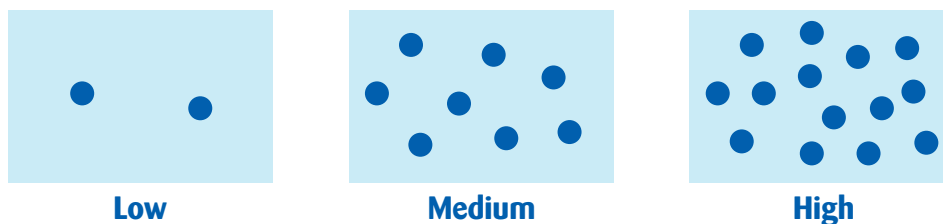


Density Tube

Not everything weighs the same. Sometimes you may have two things that are EXACTLY the same size and take up the EXACT amount of room and yet, one seems to weigh more than the other. That's because they have different amounts of matter in them and that gives them different densities! The more matter an object has in the same volume, the denser that matter is.



Density is defined as mass per unit volume

Here is a little experiment that compares the densities of several different liquids you might have in your home.

What You'll Need

- A clear drinking glass or jar
- Paper towels (for cleanup)
- 1/4 cup measuring cup

And some or all of the following liquids:

- Vegetable oil
- Dish soap
- Water (add a drop or two of food coloring for fun)
- Honey
- Corn syrup
- Rubbing alcohol (with adult assistance)

What You'll Do

1. Before you start, predict which of the liquids above will have the highest density (the most amount of matter in the same space). Record your predictions on the chart provided. Measure 1/4 cup of that liquid and pour it into your glass slowly.
2. Next, choose which liquid you think will be less dense and will float on top of your first liquid. Measure 1/4 cup of that liquid and pour it into your glass slowly. Does it float on top or does it sink to the bottom?
3. Keep adding your liquids until you have used them all.
4. Record the final order of the liquids on the results chart.
5. Did you correctly predict which liquids would float and which would sink? All the liquids in your glass are in order from top to bottom - least dense to most dense.



Try This:

- You can also try adding small objects such as paperclips or marbles to see where they will fall in your density tube. Make sure you predict where you think it will land before you add the object!
- If you have a tight fitting lid for your container, try shaking the container and watching what happens!

Or This:

- Dissolve a variety of amounts of sugar into different 1/4 cup samples of water. For example, 1/2 teaspoon, 1 teaspoon, 1 tablespoon, 2 tablespoons, etc.
- Predict which samples of sugar water would have a greater density than others? Why did you predict that? Make sure to add different colors of food coloring to each concentration of sugar water to see the layers! See if you can layer different densities of water to make a rainbow.
- Try the same thing with saltwater.

Where Can I See Density in Action?

- Ice floats! Ice is less dense than liquid water because it expands as it freezes so it will float to the top of your glass. In lakes and ponds, ice freezes on the surface leaving the body of water below liquid so fish and other animals can survive the winter.
- Helium balloons! Helium has a lower density than normal atmospheric gas, so a balloon filled with it will float.
- Ever notice that the upper levels of a house or apartment building are warmer than the basement or bottom floor in the summer? This is because warm air is less dense than cold air (warm air rises and cold air sinks).
- When you boil water on the stove, the water vapor rises high up into the air. What do you notice when you open the freezer door on a warm, humid day in the summer? Do you ever see what looks like a cloud floating out from the freezer? Water vapor is condensing in the cold air escaping the freezer. It sinks!

My prediction on how the layers will form in the glass	My results