

## Density/Buoyancy Illustration Discussion

1. Pull up the frame with the wood block and the brick from the True and Matter powerpoint.
2. Ask the class, "If I tried to fool you by cutting a wood block to the exact length, width, and height of a brick and then painted my block a brick color, would I be able to convince you that the block was a brick?"
3. "Would you agree that the block and the brick take up the same amount of space in the room (same volume)"?
4. Have class raise hands to explain how they could prove that the block and brick are not the same.
5. When someone answers, "put them on a balance scale and get their mass", ask them,  
" How can 2 objects take up the same amount of space, but have a different mass?"

At this point many of the students are looking at the density block pictured on the powerpoint, and will be able to tell you that the particles must be packed closer together in the brick than in the block of wood.

Stop and discuss the density block on the powerpoint picture. Define density as, "how closely packed together the particles in matter are. This picture might represent the particles in the brick. There would be fewer particles in the wood block and the particles would have more spaces between them.

6. Discuss other examples of matter that must have different densities. (i.e. – iron vs. wood, cement block vs. Styrofoam block, etc)
7. "Can liquids have different densities? Have them name examples (water, syrup, oil, etc)
8. Have class turn to text p. 346. Use the two tables to compare the densities of the various substances compared to that of water. Explain that if the object's density is less than the liquid's density, it will float. If the object's density is

greater than the liquid's density, it will sink. Define buoyancy as the capacity of an object to float.

9. "Could one liquid float on another liquid?" Allow them to share what they know.
10. Use the powerpoint to teach the formula for finding density. Explain to the class that they now already have the mass and the volume for their wood block. Using a calculator have them find the block's density. Explain how to round their final number to the hundreds place and to use the unit, **g/cm<sup>3</sup>**.
11. If time, do the CanTeach density demonstration under the document camera (layering liquids of different densities in a cup). Before layering have the class make predictions about the order of the layers in the cup.