FLOATATION

By Richard Sorokin

Why and how do some thing float and other do not?

Things float because they displace water. That's the answer but it doesn't explain why.

Explanation: Gravity exerts a pull on pure water of 55 pounds per cubic foot. Water is heavy.

When you get into the tub for you bath you notice that the water level rises against the pull of gravity. Your body volume that is in the water is the amount of water you made rise. You should also feel lighter in the tub. How much lighter? The weight of the water you displaced is pushing you up. From this we can draw the conclusion that the floatation force equals the weight of the water displaced. The more water is displaced the stronger is the floatation force which is really gravity acting on the water.

What makes thing float in other terms is their density; their volume compared to their weight. Anything that weighs more than the volume of water it displaces will sink. Dense thing like stones & metals, sink. Things less dense like wood, cloth, sponges and foam all will float.

Another factor to consider in floatation is the water itself. Some waters weigh more than others. Sea water with so many things dissolved in it weighs more. I can float in sea water. In pool water I sink. In the Dead Sea, where the minerals dissolved content is very high thus making the water very heavy, you can actually sit up in the water I'm told.

So in order to float two things must be considered. The weight of the object and the weight of the water displaced.

We can increase the displacement of objects by making them hollow. This increases their displacement and even steel will float.

Water density is also relative to its temperature. Water gets more dense as it gets colder, down to 4 degree C. from 4 degrees to 0 it expands. Thus ice floats. It is less dense due to it expansion than water.