Zedua Experiments

Title: Floating Grape

Challenge: Can you make a grape float in the middle of a glass of water?

Materials Required:

4 drinking glasses masking tape Marker
1 larger glass or measuring cup
Water and sugar
Grapes
A spoon

Note: Before you do this for an audience, you should practice this by yourself. When you are ready to perform, you should have the glasses already prepared.

Procedure:

1. Using the masking tape and marker, label each glass as “#1,” “#2,” “#3,” and “#4.”
2. Fill the measuring cup with water and stir in enough sugar so that a grape will float at the surface of the water. If some sugar remains undissolved, allow it to fall to the bottom of the cup.
3. Fill Glass #1 full of water.
4. Place one grape into Glass #1 and observe what happens to it.
5. Fill Glass #2 with the sugar water solution you already prepared.
6. Place one grape into the sugar water solution. You should see it float at the surface.
7. Now fill Glass #3 half-full of the sugar water solution.
8. Slowly and carefully fill the rest of Glass #3 with plain water, taking care NOT to mix the heavier sugar water below it. You might want to place a spoon just inside the glass and pour the water so it falls onto the spoon before it hits the sugar water. This step may take a few tries to master, but when you are done, you should find that you can’t tell the difference between the two liquids in Glass #3.
9. Place a grape gently into Glass #3 and observe what it does.

What's happening?

The grape is denser than the water, so it sinks immediately to the bottom of the glass. The sugar water solution contains more matter in the same glass, so it is denser than the plain water.
It is also denser than the grape, so the grape floats on top.
The third glass is your "trick" glass.
You know what is in it, but your unsuspecting audience does not.
The grape sinks through the water, as it is denser than the water, but it floats on the surface of the sugar water solution since it is less dense than the solution.
If you prepare the solution far enough in advance, it will be almost impossible to detect the separation between the plain water and the sugar water.

Follow Up:

With the final glass (#4), experiment to see if you can come up with a new sugar water solution that, when fully mixed, will cause the grape to float in the middle just like in Glass #3.

Source: The everything kids