

EXPERIMENT—

Water Doesn't Always Mix

MATERIALS

- 4 drinking glasses
- 4 colors of food coloring
- 3/4 cup (170 g) of sugar
- A tablespoon measuring spoon
- 1 cup (240 ml) of water

EXPERIMENT

Put 6 tablespoons (90 ml) of water in each glass. Add 4 tablespoons (50 g) of sugar to the first glass, 3 tablespoons (37 g) to the second glass, and 2 tablespoons (25 g) to the third and stir until all of the sugar is dissolved. If the sugar will not dissolve, add 1 more tablespoon (15 ml) of water to each of the four glasses.

Now add three drops of food coloring to each glass, a different color for each glass.

Layering the different water solutions is a delicate process, so you need to add the water carefully. If it doesn't work the first time, you may want to try the experiment again. Begin with the glass containing the most concentrated solution—that is, the glass with 4 tablespoons of sugar.

Now comes the tricky part. Very carefully add the colored water containing 3 tablespoons of sugar to the glass of water containing 4 tablespoons of sugar. Just pouring it in will cause the two solutions to mix without forming layers. A good way to add water is to tilt the glass and very slowly and gently pour the new solution down the side of the glass. You may also try using a medicine dropper (free at most pharmacies if you ask for one) to add new water right at the surface. The goal is to cause as little turbulence as possible.

Repeat the process with the water containing 2 tablespoons of sugar and again with the water containing only food coloring.

The 4-tablespoon sugar water is the densest solution because it has the most sugar. That's why we put it on the bottom. The less dense solutions float on top of the denser solutions. Try moving the glass in a circular motion. How vigorously can you move the glass without causing the different colors to mix? It's a delicate balance, but water in large quantities, as in the ocean, can take months to fully mix. This may be a way God provided for the needs of freshwater fish during Noah's Flood.

