A hydrometer is a tool that measures the concentration of a solution. It is simple and easy to make. It's even simpler to use. Here’s hydrometer that you can use to measure the relative concentration of all sorts of solutions.

**Materials**
- A drinking straw
- A pair of scissors
- A marker
- A ruler
- Waterproof clay
- 3 tall containers
- Salt
- A measuring cup

**To Do**
To make the hydrometer, cut a section of drinking straw that is about 4 inches (10 cm) long. Use a ruler to place marks every 1/4 inch (6.4 mm) along the length of the segment. Place a small lump of waterproof clay (about the size of a pea) in one end of the straw. Fill all three containers three-quarters full with water. Add about 1/4 cup (60 mL) salt into one container and mix thoroughly. Add about 1/2 cup (120 mL) salt to another container and mix thoroughly. Make sure that all the salt dissolves. Place the hydrometer, clay end down, into the pure water. Observe and record the mark that the water level reaches on the hydrometer scale. Remove and rinse the hydrometer in water. Place it into the solution that contains 1/4 cup (60 mL) of salt. Again, observe and record the water level. Remove and rinse the hydrometer in water. Place the hydrometer into the solution that contains 1/2 cup (120 mL) of salt. Observe and record the water level.

**The Science**
This experiment explores the relationship between dissolved material and buoyant effect. The more material (in this case, salt) that is dissolved in water, the greater the solution’s buoyant force. The increase in buoyancy is measured by the height at which the hydrometer floats. A large amount of dissolved salt produces a strong buoyant effect. The extra lift pushes more of the hydrometer out of the water. In contrast, plain water produces the least lift.

**Check It Out!** The battery in your car contains a dangerous acid. Mechanics measure its concentration by using an acid-resistant hydrometer that works in the same way as the one you just constructed. When the device is placed in battery acid, the height at which the indicator floats specifies the acid’s concentration.