



What's the pH of Cola?

Overview

pH is a measure of the acidity or basicity of a solution. Solutions with a pH less than 7 are acids and solutions with a pH greater than 7 are basic.

Learning about pH is a basic building block for further studies in both chemistry and biology. With this simple experiment using the Einstein tablet+™ students can take their first steps in this subject and see real-world implications in their studies.

Equipment

- einstein™ tablet, MiLAB
- pH Sensor
- 1 glass of mineral water
- 1 glass of Cola

Experiment procedure

1. Connect the pH sensor to your einstein™ Tablet+.
2. Launch the MiLAB program .
3. Make sure that only the pH sensor is selected
4. Tap  and Set the Rate to 10 Samples per Second and the Duration to 1 minute.
5. Insert the electrode into the glass of water, tap the Run button  and wait 1 minute.
6. Insert the electrode into the glass of Cola, tap the Run button  and wait 1 minute.
7. Remove the electrode and rinse with mineral water.

(Note: For greater accuracy you can easily calibrate the pH sensor beforehand. You'll need pH 4 and pH 7 buffer. Tap the Settings button  next to Setup. This will bring up the calibration menu. Insert the electrode into the pH 4 buffer, wait for the readings to stabilize, enter 4 as the Real Reading on the first line and click the lock button . Repeat this procedure using the pH 7 buffer, entering 7 as the Real Reading on the second line. Then tap Calibrate)

The Science

Note the substantial difference between the readings of the water and the Cola. Why so acidic? In order to produce carbonated beverages carbon dioxide is dissolved in the liquid. This produces carbonic acid. Lots of sweetener is needed in order to counteract this acidity. That is why carbonated beverages contain such high levels of sugar. It should be noted, however, that contrary to a popular urban myth, a tooth will not dissolve overnight in a glass of Cola.