



Battery Tester





Overview

Use your einstein™ Tablet+ along with a Voltage sensor to test your batteries and check out the differences between new batteries, used batteries and those that have worn out.

Equipment

- einstein™ tablet+ or einstein™ LabMate
- TRMS Voltage sensor
- Double AA batteries, one new and a few used (preferably for various amounts of time).

Experiment procedure

1. Connect the Voltage sensor to the einstein™ Tablet+.
2. Launch the MiLAB program .
3. Make sure that only the Voltage sensor is selected.
4. Tap .
5. Set the Sampling rate to 10 samples per second.
6. Set the Duration to 3 minutes.
7. Select play  to begin recording data.
8. Select Meters  for digital readout of the data.
9. Take the new battery and touch the red plug to the positive end of the battery and black end to the negative end.
10. Note the reading (in volts). It should be 1.5 volts or higher
11. Now try the used batteries. Depending on how long they have been in use they will show different results. Make sure to try a “dead” battery and note how much voltage they still produce. You may also want to charge some rechargeable batteries to see if you get different results.

The Science

Batteries contain three main parts – an anode and a cathode separated by an electrolyte. When the anode reacts with the electrolyte electrons are released. These electrons are absorbed by the cathode – a process which produces electricity. In a normal battery these reactions are irreversible and so eventually the reactions slow down and stop generating enough power for the battery to function. Rechargeable batteries are based on chemical reactions that can be reversed allowing the battery to function once more.