

The zinc and copper should not touch each other.

**2.** Clip the negative end of the battery tester to the exposed piece of zinc, and clip the positive end of the battery tester to the copper. Or, if using lightbulbs, attach a piece of copper wire to each piece of metal and the lightbulb. The zinc is the negative pole and the copper is the positive pole, as electrons leave the zinc and travel through the circuit to reenter the cell through the copper.

**3.** Record the reading on the battery tester in your journal. If using lightbulbs, record the highest watt bulb you can light when hooked to the circuit.

**4.** Disconnect the fruit or vegetable from the circuit. Slice it open and wet a strip of pH paper with its juice. Follow the instructions on the package of pH paper for determining the pH value, and record the pH in your notebook.

**5.** Repeat this procedure for each of the remaining pieces of produce.

## CONCLUSION

Which fruit or vegetable produced the strongest reading for current? How did the more acidic foods (lower pH values), such as lemons and tomatoes, compare with less acidic foods (higher pH values)?

## TAKE A CLOSER LOOK

● The metals copper and zinc have a loose hold on their electrons (the

negatively charged particles that help make up atoms), and so they pass them back and forth when there's a conducting material between them. This movement of electrons is what's known as "electric current." The acid in lemons and tomatoes also reacts with zinc, and a transfer of electrons will take place between them. In this way, a lemon performs as a cell, which is the proper scientific term for what we commonly think of as a battery. When copper is introduced into the fruit or vegetable, a complete circuit is created, with the electrons moving from the positive pole to the negative pole. You measured this flow with the multimeter or lightbulbs.

● Technically, a "battery" is defined as a group of cells that are connected together.

## WHAT ELSE YOU CAN DO

● Compare different sizes of the same fruit or vegetable to see how that affects the amount of current that's generated through the circuit.

**"When I do another science fair project, I'll definitely plan ahead and not procrastinate. I encourage anyone who's doing a science fair project not to put everything off until the last minute because you might get so interested in the topic that you'll wish you had more time!"**

—Julie Claire Guest, 6th grader

**"Set time goals and stick to them. The most important thing, though, is to pick a project that interests you."**

—Penn Tarleton, 6th grader