



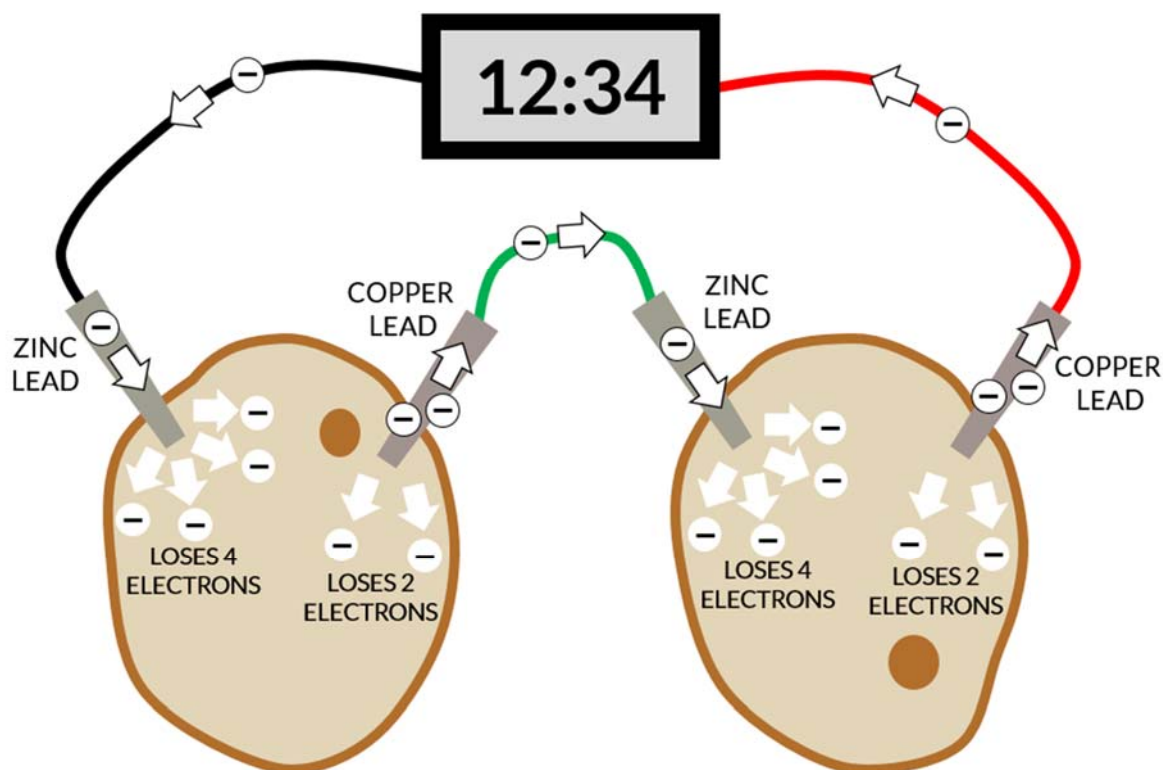
TWO POTATO CLOCK

PTCLK



INSTRUCTION GUIDE

GENERAL BACK GROUND OR THEORY ON THE EXPERIMENT:



When a chemical reaction takes place there is a conversion of chemical energy to electrical energy in which electrons move. This is the guiding principle to how this potato clock works. The chemical reaction is called a redox reaction. There is a transfer of electrons between the zinc and copper that is inserted into potato. The potato conducts electricity, yet keeps the zinc ions and copper ions separate, so then the electrons in the copper wire are forced to move (generate current) which is what powers the clock. The path of the generated current is shown above.

REQUIRED COMPONENTS INCLUDED:

Potato Clock (Holder, Digital clock, and 2 connected leads)

Connecting Wire

Instruction manual

REQUIRED COMPONENTS NOT INCLUDED:

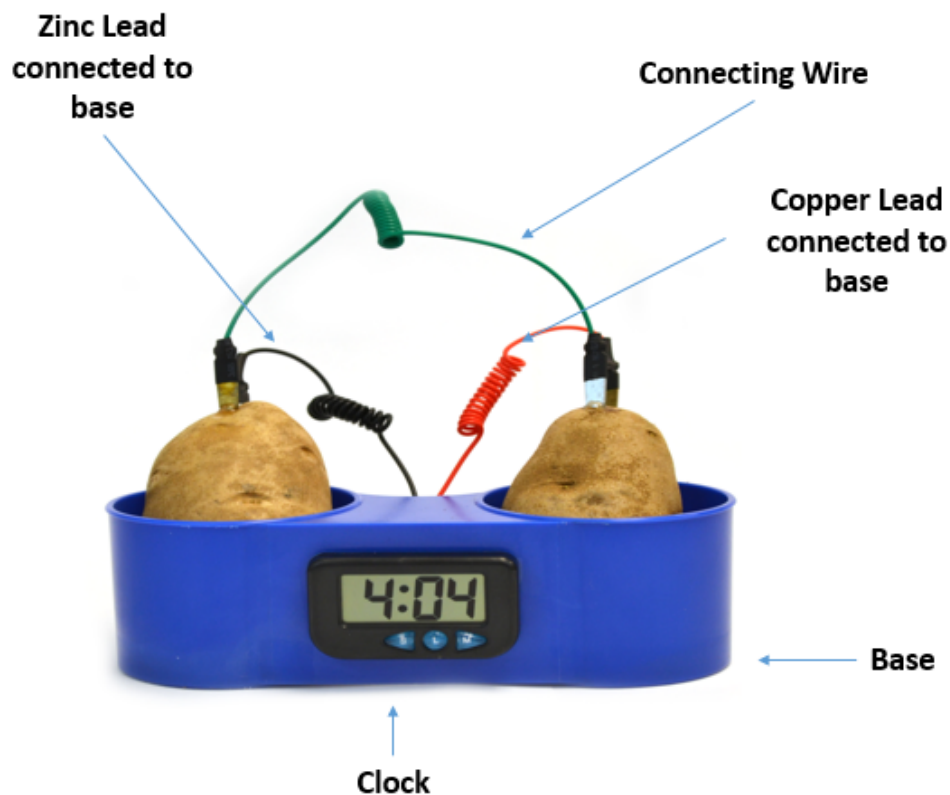
2 Good Sized Potatoes (Potatoes can be no more than 3 inches in diameter)

ACTIVITY POWERING THE CLOCK:

The goal of this activity is to build an electrochemical battery using 2 potatoes.

1. Select 2 potatoes that are no larger than 3 inches in diameter.
2. Put 1 potato in each holder
3. Insert the zinc lead (silver in color) coming from the clock base into one potato and connect the copper lead (orange in color) coming from the clock base into the OPPOSITE potato.
4. Take the connecting wire (the wire not connected to the base) and put the copper end into the potato that has the zinc wire from the base. Take the other end of the connecting wire (zinc) and put it into the potato that has the copper wire from the base.

Note different fruits can be used instead of potatoes, such as lemons, tomatoes, oranges, limes, etc. A nice extra experiment to try is to use different fruits to experimentally determine which fruits create the most powerful and most efficient electrochemical cell.



SETTING THE CLOCK:

To first activate the clock press M once. The S button is used to select the parameter you wish to change, and then to S to set the parameter. For example:

1. Press M to begin activation of the clock
2. To then set the Month press S twice.
3. Press M to change the month.
4. Once you arrive to the month desired press S.
5. Press M repeatedly to set the day, then press S.
6. Press M repeatedly to set the hour, then press S.
7. Press M repeatedly to set the minute, then press S.
8. Then press M to reactivate the clock.
9. To display the date press D once.

Once the electrochemical cell runs low and the potato's need to be replaced you will need to reset the clock. For best results after the first use we recommend cleaning the coating on the strips that have been oxidized. The coating can be removed with sand paper. The potato clock holder should be cleaned with a paper towel or cloth, not submerged in water.