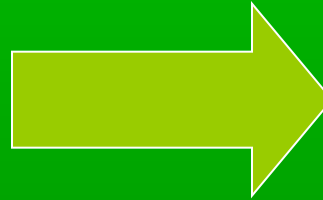
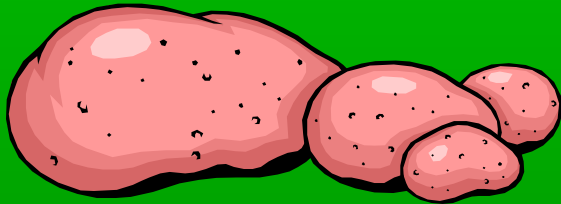
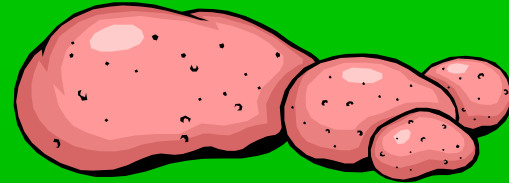


Potato Battery Activity



Potato Battery Activity



■ Part 1: Engage

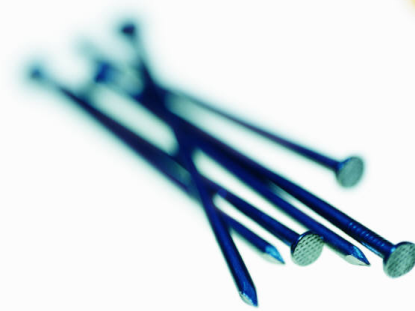
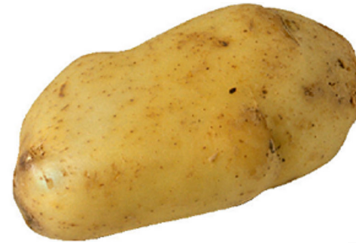
- How does a battery power something?
- What is a battery made of?
- What happens inside the battery that allows the electricity to come out of it?
- Why does a battery stop working? What gets used up?
- What kind of energy does a battery contain and what kind does it create?
 - Chemical, electrical, mechanical?

Potato Battery Activity

■ Part 2: Explore

■ Supplies:

- 2 potatoes
- 2 pieces of copper wire
- 2 nails
- 3 alligator clips
- 1 LED

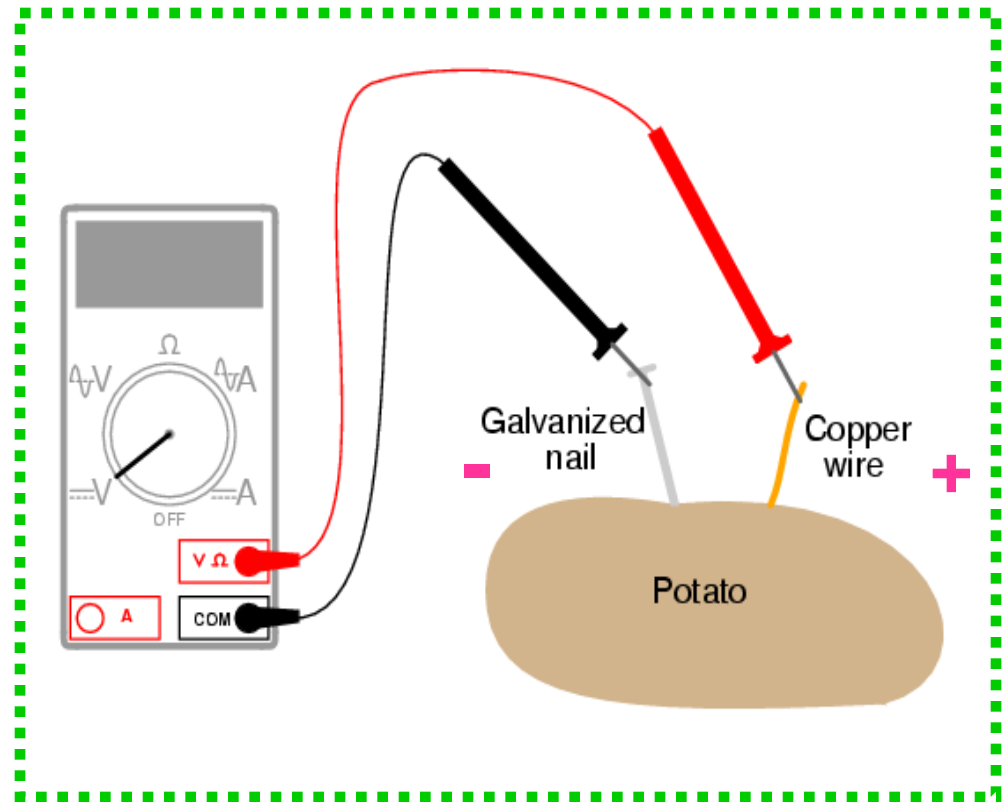


Potato Battery Activity

■ Part 2: Explore

■ Set-up:

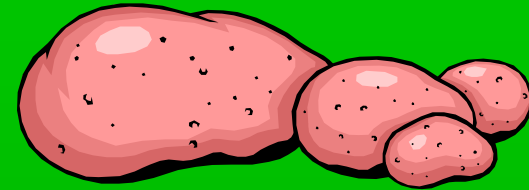
- Connect copper wire to + end and nail to - end of LED
- Does the LED light up?



→ How can we get more voltage?

Potato Battery Activity

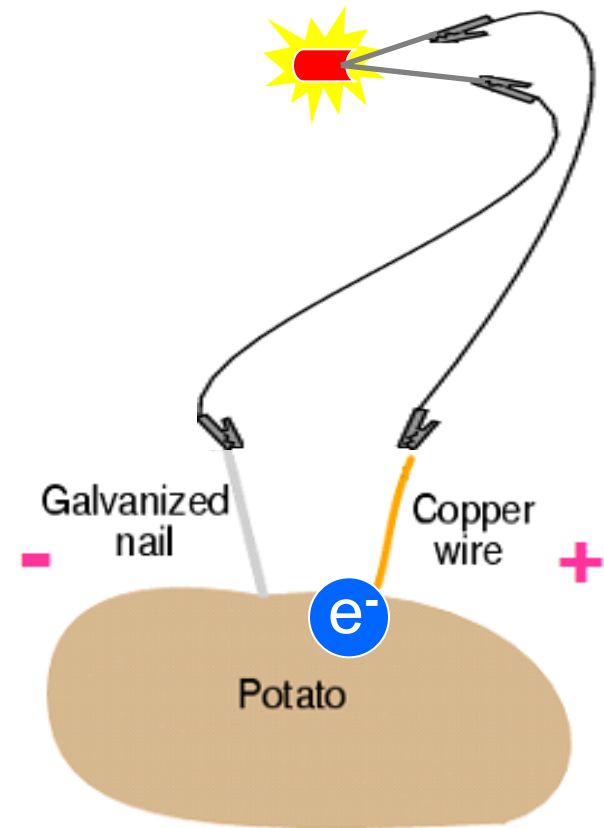
■ Part 2: Explore



- Now make a series of connected batteries
 - How many potatoes do you need to power the LED?
- What happens when you:
 - Change the direction of the LED?
 - Use only nails or only pennies?
 - Connect the potatoes in parallel?

Potato Battery Explanation

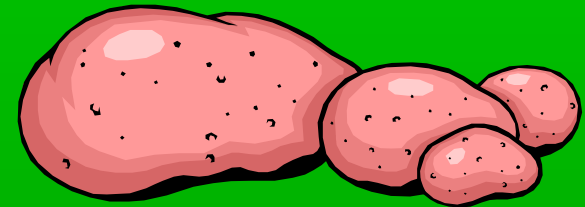
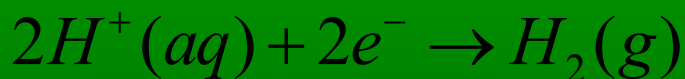
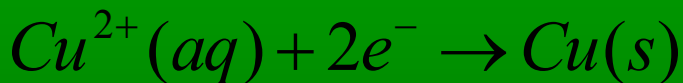
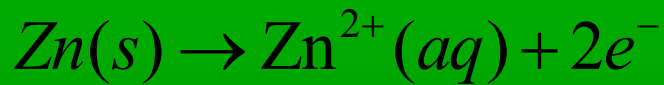
- **Part 3: Explain**
- Does the potato actually power the clock?
- What happens to the copper wire and zinc nail over time?



Potato Battery Explanation

■ Part 3: Explain

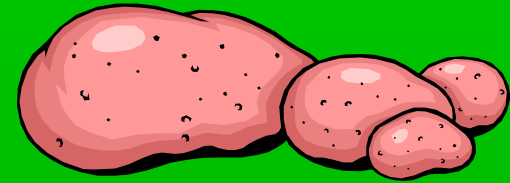
- What is the chemistry behind the reaction?
 - Oxidation at the zinc electrode:
- Reduction at the copper electrode:



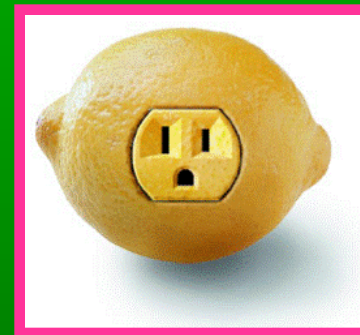
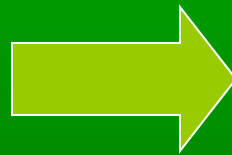
Potatoes contain mild
phosphoric acid
(H_3PO_4)!

Potato Battery Activity

■ Part 4: Evaluate

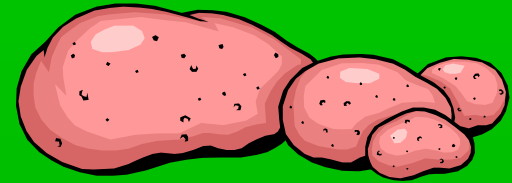


- Could this work with other vegetables or fruits?
- Is a potato a good alternate energy source?



Potato Battery Activity

■ Part 5: Elaborate

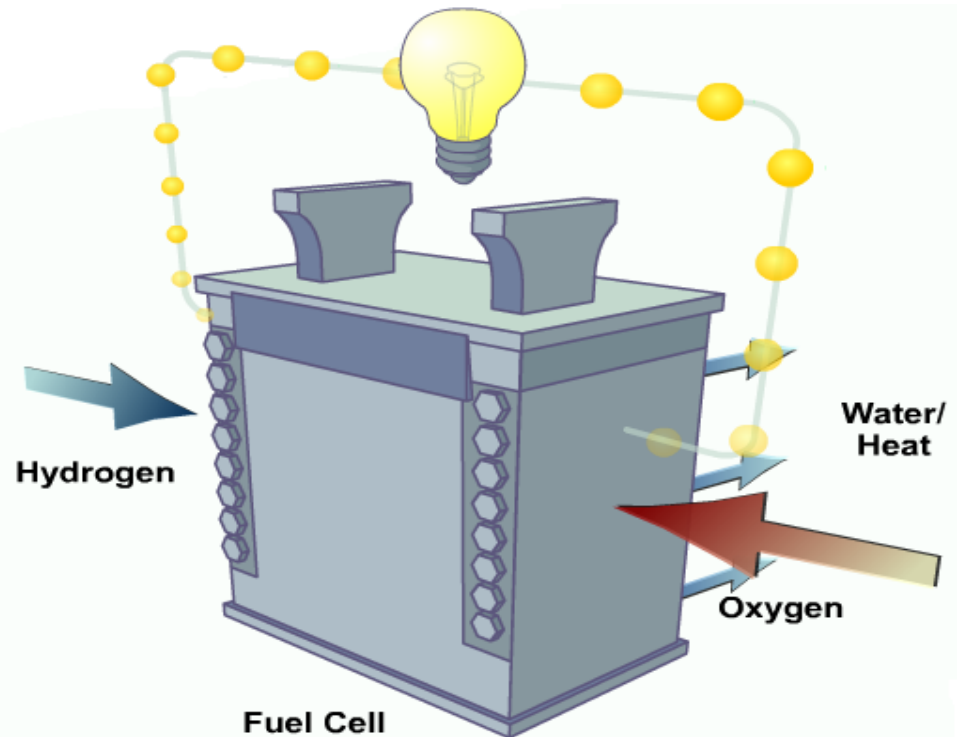


- What makes a battery stop working?
What gets used up?



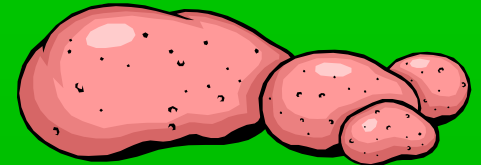
Potato Battery Activity

- **Part 5: Elaborate**
- What else uses this type of chemical energy?
 - All batteries
 - Fuel cells



<http://www2.wwnorton.com/college/chemistry/gilbert/tutorials/ch17.htm>

Potato Battery Activity



■ Part 6: Summarize

- Describe the energy transformation

