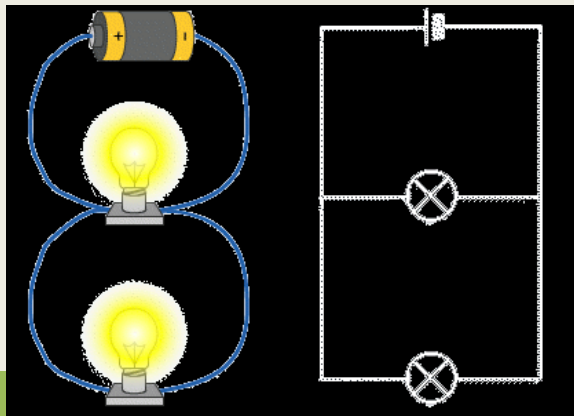
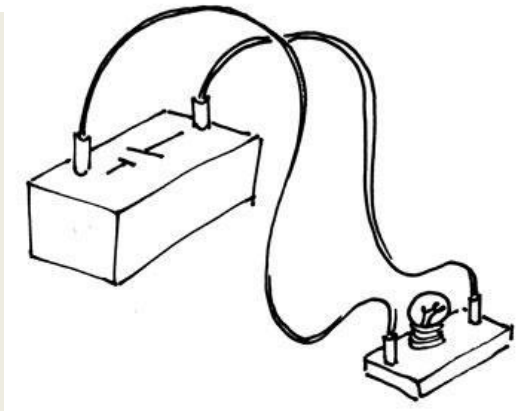


CURRENT ELECTRICITY



Static Electricity



- **Charge** builds up on an object.
- This charge is '**discharged**' in an uncontrolled way (when you rub your feet on the carpet and then shock someone, or like lightning).

Current Electricity



- Charge is used in a **controlled** way – by allowing it to travel through a **circuit**.
- A circuit is a **path** for **electricity** to flow through.
- The charges flow from an energy source such as a **battery** to a device that uses the energy.



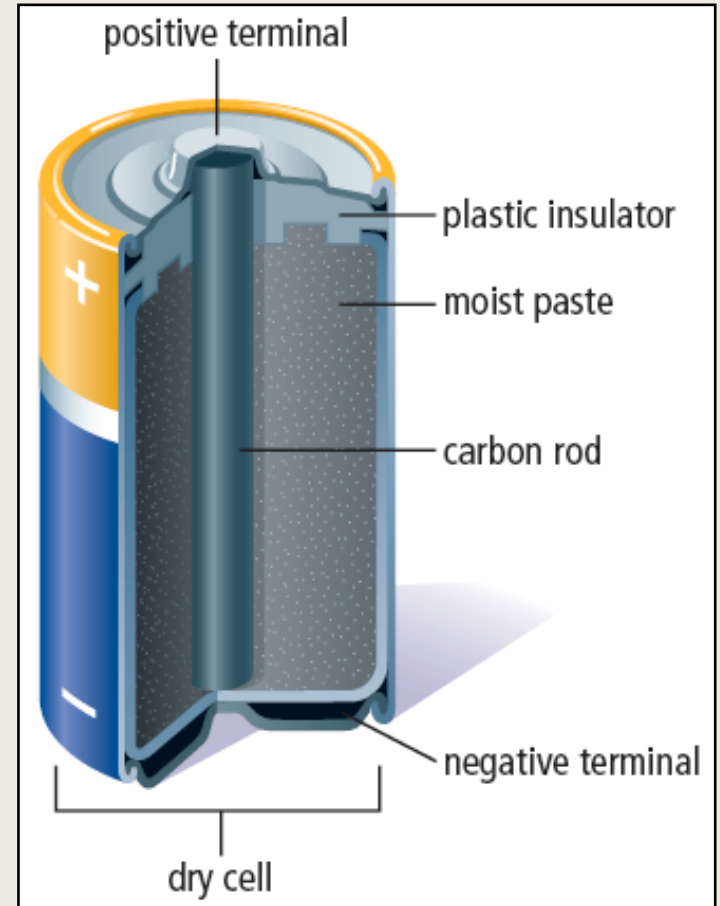
PARTS OF A CIRCUIT



Source

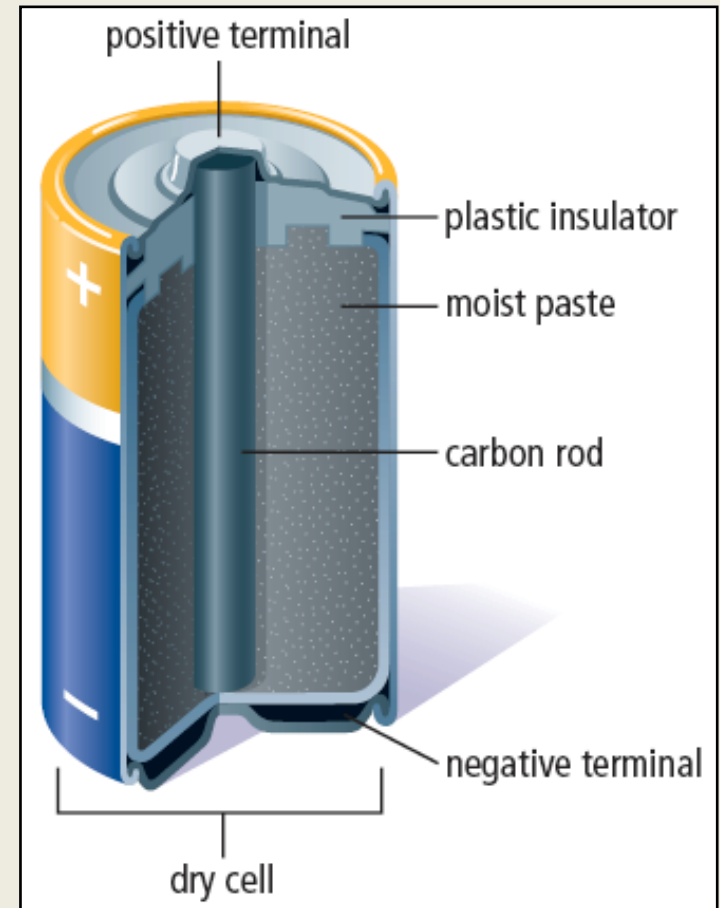


- The energy source in a circuit provides **electrical energy** to the circuit.

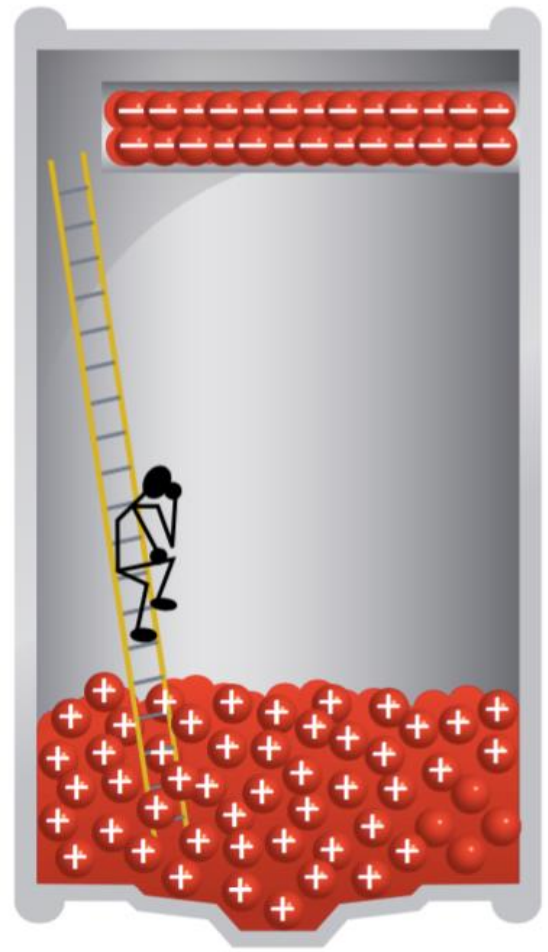


Source

- Wall plugs: electrical energy is delivered by **power lines**.
- **Electrochemical cell:** energy from **chemical reactions** is turned into electrical energy.
- A **battery** is a combination of one or more cells.



Source: Elaborations



Source: Elaborations



- The energy from chemical reactions is used to move electrons from one terminal to another.
- The separated electrons are attracted to the positive terminal and 'want' to return, but lack a pathway.
- When you plug in a device, you give the electrons a pathway...that is, if they do **work** for you.
- When all the chemical energy is expended, the cell is dead and must be disposed of.

Source: Elaborations



What does an electrochemical cell look like? How does it work?

https://www.youtube.com/watch?v=qpFC_Ecu_yQ

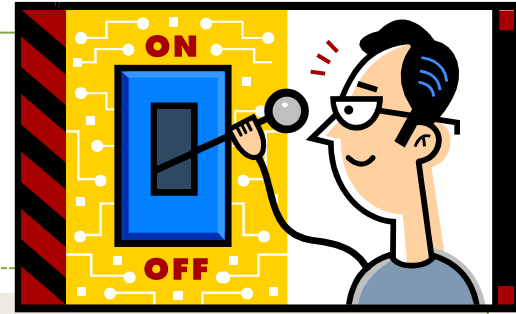
Load



- A load is a device that **converts** electrical energy into **another form**.
 - A toaster converts electrical energy into **heat** energy.
 - A motor converts electrical energy into **mechanical** energy (the energy of movement).
 - A light bulb converts electrical energy into **heat** energy and **light** energy.



Switch


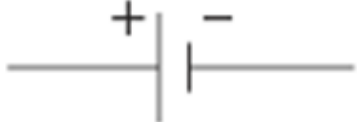









- The switch controls the **flow** of **electric charges**.
- When a switch is **open**, the pathway is **not complete** so no charge flows through the circuit.
- When a switch is **closed** the path is **complete** and current does flow through the circuit.

Drawing Circuit Diagrams



- When we draw diagrams of circuits, the different parts are represented by these different symbols.

PART OF CIRCUIT	SYMBOL
Conducting Wire	
Cell	
Two-Cell Battery	
Open Switch	
Closed Switch	
Light Bulb (lamp)	
Ammeter	
Voltmeter	
Resistor	

Exercise

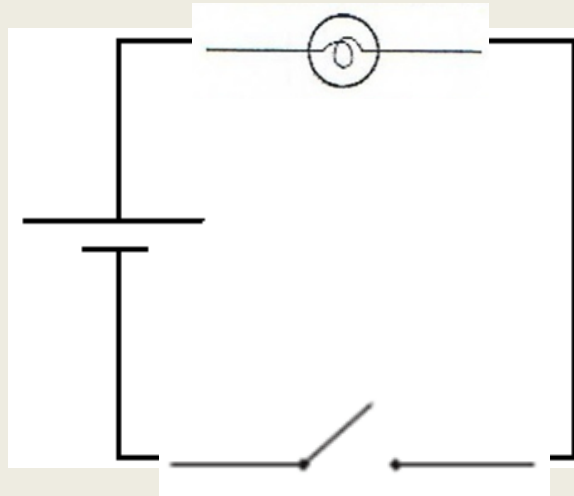


- Go back to the first page of notes and draw in the proper symbols for each of the following where appropriate:
 - Cell
 - Two-cell battery
 - Open switch
 - Closed switch
 - Light bulb
 - Resistor*

Example #1



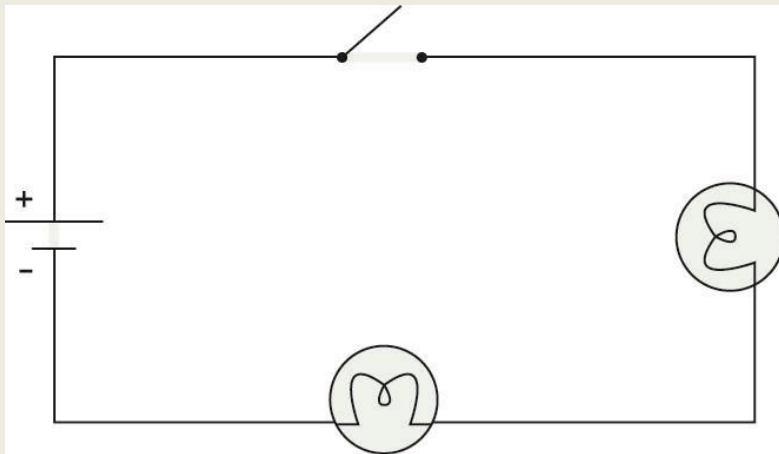
- A simple circuit with a single cell, a switch and a light bulb.



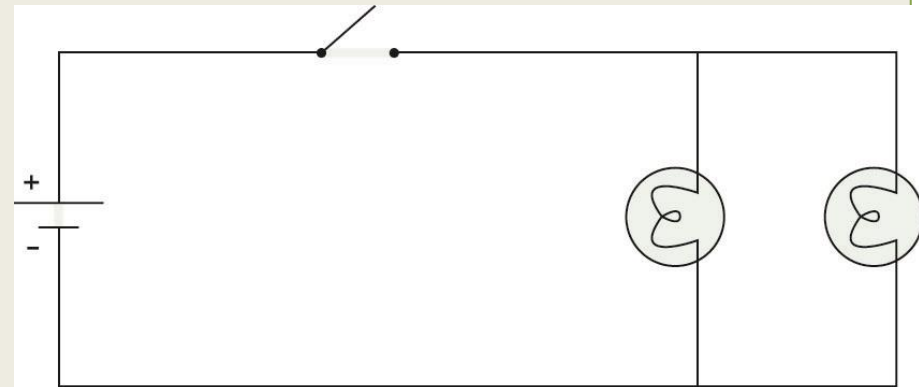
Series & Parallel Circuits

In circuits, it is possible to have 2 different pathways:

- **Series:** current must travel through **every device** in circuit
- **Parallel:** current **splits** and some will go through each device



Circuit 1



Circuit 2

Example #2



- A circuit consisting of a battery of **2 cells** in series, an open **switch**, and **2 lamps** in parallel.

