

Parts of an Electric Circuit

1. Read the following paragraphs and highlight **each part of an electric circuit** in one color.
2. Choose a different color and highlight what **each part is used for** in a circuit.
3. Label the diagram of a simple circuit.
4. Highlight closed circuit and open circuit in one color and how electricity flows/does not flow through then in another color.

Simple circuits are made up of 4 basic parts: source of electrical energy, electrical load, switch, and connectors. Simple circuits may look very different from one another; however they basically work in the same manner. Here are a few examples of some simple circuits you may have at home; desk lamp, flashlight, mp3 player and cell phone. A circuit is closed when it

is considered “on” and electricity is able to flow through it. When electricity is not able to flow through the circuit it is considered to be “off” and is called an open circuit.

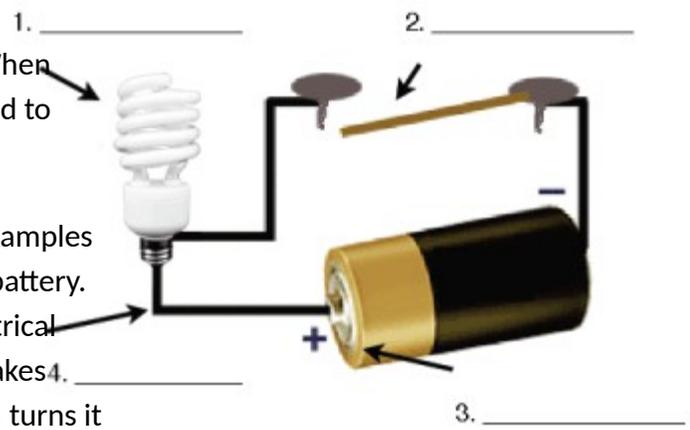
An electrical energy source creates electrical energy. Some examples of electrical energy sources are generators, windmills, dams, battery. The electrical load is the part of the circuit that takes the electrical energy and turns it into a useful form of energy. Light bulbs takes electricity and turns it into light; a toaster takes electricity and turns it into heat; a fan takes electricity and turns it into movement. The

switch comes in many forms and shapes but it is the part of the circuit that you can use to turn it on and off. Finally, the connectors are the wires that connect all of the pieces of the circuit together to allow the electricity to flow from one part of the circuit to the next. A circuit will run as long as the current of electricity can flow in a loop from the cell and back to the cell and contains each part of a circuit listed above, the electric load will work.

5. Fill in the chart below by placing the examples in the correct column.

Energy Sources	Electrical Loads	Switches	Connectors

Copper wire --- car ignition --- power cord --- windmill --- camera --- nuclear power plant --- lawn mower --- gasoline --- power bar --- alarm clock --- light switch --- computer button --- knob on stove --- wii --- mp3 player --- solar panels



Drawing Circuit Diagrams (Schematics)

6. Using one color highlighter highlight the words schematic circuit diagram and with another color highlight the definition of it.

To simplify the drawing of electric circuits, a special set of symbols are used. This is more convenient because we need to draw only one symbol for a switch, instead of different symbols for each kind of switch that exists or will be invented. Drawings of circuits using these symbols are called **schematic circuit diagrams**. Current in a circuit will always flow from the negative part of the cell to the positive part of the cell.

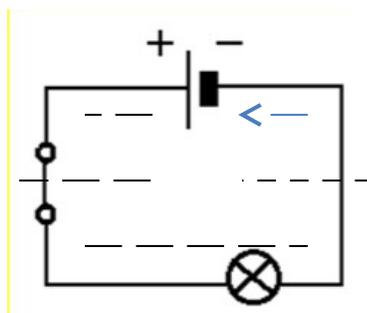
Electric Circuit Symbols:

Cell	
Lamp	
Wires	

Open Switch	
Closed Switch	
Resistor	
Where wires join	

Example for a schematic circuit diagram

A battery cell is connected to a light bulb which is then connected to a closed switch. This circuit will be able to work and have the light bulb turn on because it has all the parts that are needed as well the switch is closed allowing for electricity to run through it. The direction of the electricity is shown by the dotted line.



7. Using the list of circuit symbols as well as the example diagram above, create a circuit schematic diagram for the following questions.

- A) A single cell, light bulb and switch are placed together in a circuit, the circuit is open.
- B) Three cells are placed in a battery pack to power a circuit containing three light bulbs and a closed circuit.
- C) A cell is connected to two light bulbs each with their own closed circuit.

8. State if each of the above circuits will light the light bulb and have electricity flow through them.

9. Show the direction of the electricity in the circuit.