Fundamentals of Electronics and Electrical

Introduction to -
- Types of the electrical circuit
- Electrical component
- Symbols of the electrical circuit
- Circuit architecture

Where do Electrical circuits come from?

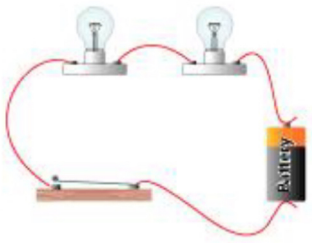
Why do we need measurements in drawing?

What does an electric circuit mean?

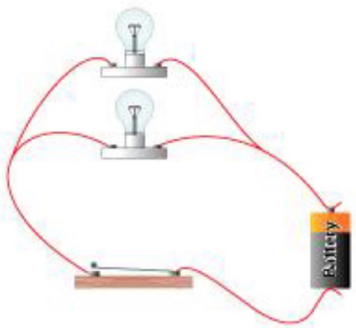
The first component in an electric circuit is the source of electrical energy that allows electrons to move. This source could be a battery, a solar cell, or a hydroelectric plant—a place where there's a positive terminal and a negative terminal and from where charge could flow from one to the other.

Lesson Aims:
1. Associate fundamentals of electrical circuits
2. Differentiate types of electrical circuits and their component
3. Formulate electrical circuits

Series Circuit



Parallel Circuit



Watch the circuit animation at home. Think about the circuit we read in class. Compare and contrast the two types of circuits using the template given by the teacher.

About **Electrical Concept**

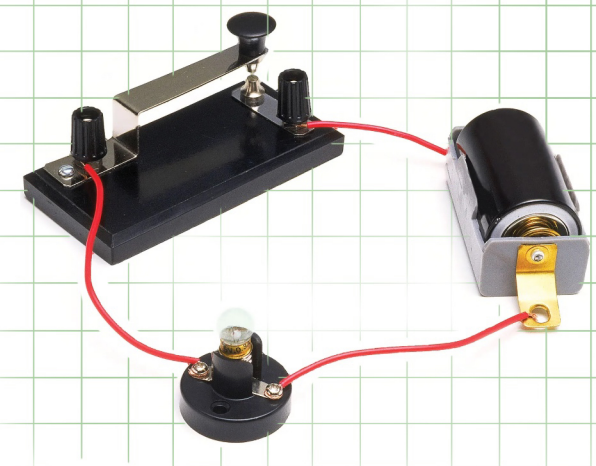
The idea of power emerges from a perception of nature. We notice power between objects that, similar to gravity, acts a good way off. The wellspring of this power has been given the name charge. A truly perceptible thing about electric power is that it is enormous, far more noteworthy than the power of gravity.

About **Electrical Circuits**

An electric circuit incorporates a gadget that gives energy to the charged particles comprising the flow, like a battery or a generator; gadgets that utilize flow, like lights, electric engines, or PCs; and the interfacing wires or transmission lines.

1) What are the basic electrical laws?
2) How do we apply Electrical laws and formulas?
3) What do you think about the measurement of circuits?

Circuit measurement is used to monitor the operation of an electrical or electronic device, or to determine the reason a device is not operating properly.



Types of Electrical Circuits

The circuit is a combination of individual electronic components such as resistors, transistors, capacitors, inductors, and many of which are connected by wires through which current flows.

There are the following 5 main types of the electric circuit:

Close Circuit: A closed circuit is an electrical circuit in which electrons flow.

Open Circuit: An open circuit is an electrical circuit that will be discontinuous/ circuit is not closed, due to which the current doesn't flow across that circuit. Or The circuit in which the two ends are free is called an open circuit. In the open circuit, the current will be zero and resistance will be infinite

Short Circuit: A short circuit is an electrical circuit in which both ends are connected that is the circuit will be closed form. In the short circuit, the resistance will be 0, and also the voltage will be 0.

Series Circuit - A series circuit is a simple circuit that allows electrons to pass between one or more resistors.

Parallel Circuit - A parallel circuit comprises branches so that the current divides and only part of it flows through any branch

Activity

Making Circuits

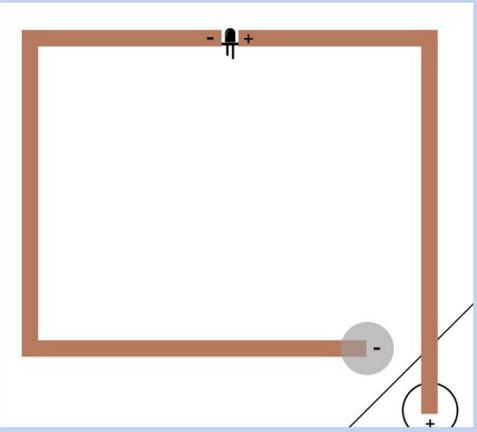
Material requirement -
a) Copper tape/ Aluminum tape (1/4") with conductive adhesive transparent tape
b) Coin cell battery (3v)
c) CR2032 LED – 5mm or 10mm
d) Paper clip or binder clip

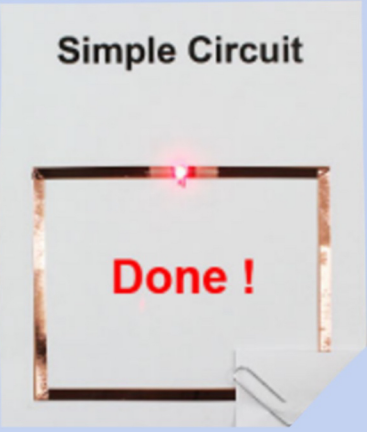
Step 1 – Apply Copper Tape: Continue to apply the copper tape to all of the trace lines marked in brown on the template Make sure to leave a gap in the copper tape where the LED is to be mounted.

Step 2 – Score and Fold Corner Use a scoring tool to make folding the corner more accurate. It's important that the two circles line up. Once the corner is creased, fold it at a 45' angle.

Step 3 – Mount LED to Copper Tape Mount the LED to the copper trace using clear tape. To do this, bend both legs of the LED at a 90' angle and then tape the legs down securely. Make sure that the long leg of the LED goes to the positive (+) side of the copper tape. This image shows how to tell which leg of the LED is positive (+). If the legs have been cut, you can determine which is negative by looking for the flat side of the LED casing. Flat Side = Negative.

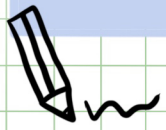
Step 4 – Attach Battery to Circuit The last step is to place the coin-cell battery on top of the copper. Make sure the battery (-) is facing down. The corner flap which is (+) should then be able to contact the battery (+) when folded. Optional – Secure the corner flap using a paper clip or binder clip. Makerspaces.com/paper-circuits Conductive Ink & Paint You don't always need copper tape to help form a circuit.





Reflection

1) What circuits are typically used in homes?
2) What are the different sources to get energy?
3) What elements and compounds are found in your home?



For more information scan the qr code