



**SNS COLLEGE OF TECHNOLOGY**  
**An Autonomous Institution**  
**Coimbatore-35**



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Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

**DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING**

**23ECB101-CIRCUIT ANALYSIS AND DEVICES**

I YEAR/ II SEMESTER

**UNIT 1 – MESH AND NODE ANALYSIS OF ELECTRIC CIRCUITS**

**TOPIC – SERIES AND PARALLEL CONNECTED CIRCUITS**

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# Series and Parallel Connected Circuits



- When there are two or more electrical devices in a circuit with an energy source, there are a couple of basic ways by which we connect them.
- They can either be connected in series or in parallel combinations. A series circuit is a circuit in which two components share a common node and the same current flows through them.
- However, in a parallel circuit, components share two common nodes. In this article, let us look at more differences between series connection and parallel connection circuits.



# Series and Parallel Connected Circuits



## What is a Series Circuit?

A circuit is said to be connected in series when the same current flows through all the components in the circuit. In such circuits, the current has only one path. Let us consider the household decorative string lights as an example of a series circuit. This is nothing but a series of multiple tiny bulbs connected in series. If one bulb fuses, all the bulbs in the series do not light up.



# Series and Parallel Connected Circuits



## What is a Parallel Circuit?

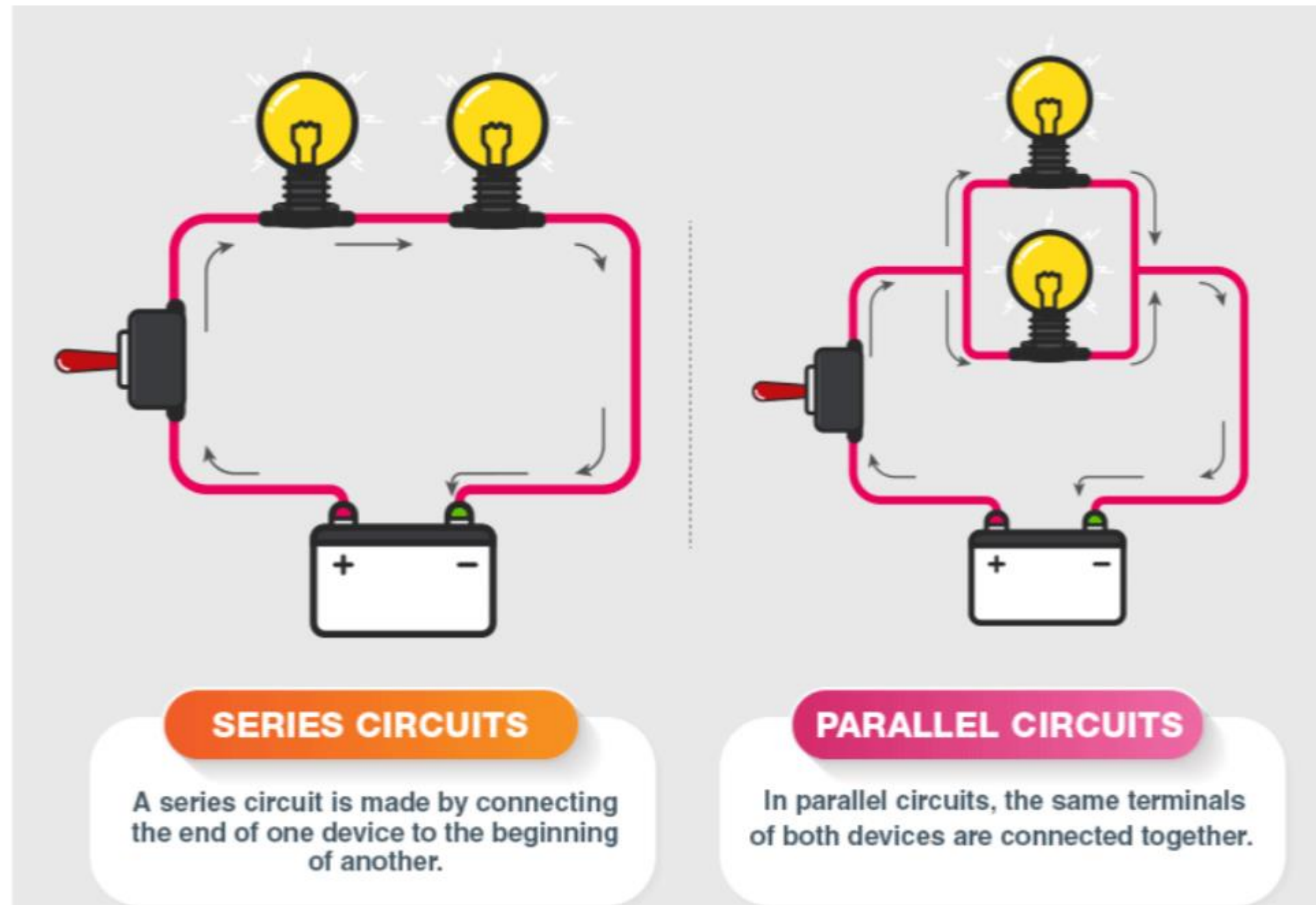
- A circuit is said to be parallel when the electric current has multiple paths to flow through.
- The components that are a part of the parallel circuits will have a constant voltage across all ends.



# Series and Parallel Connected Circuits



## Difference Between Series and Parallel Circuits





# Series and Parallel Connected Circuits



## Difference Between Series and Parallel Circuits

- The major difference between series and the parallel circuit is the amount of current that flows through each of the components in the circuit.
- In a series circuit, the same amount of current flows through all the components placed in it. On the other hand, in parallel circuits, the components are placed in parallel with each other due to which the circuit splits the current flow.
- The current flowing from the source will be divided into the current flowing through each of these components.



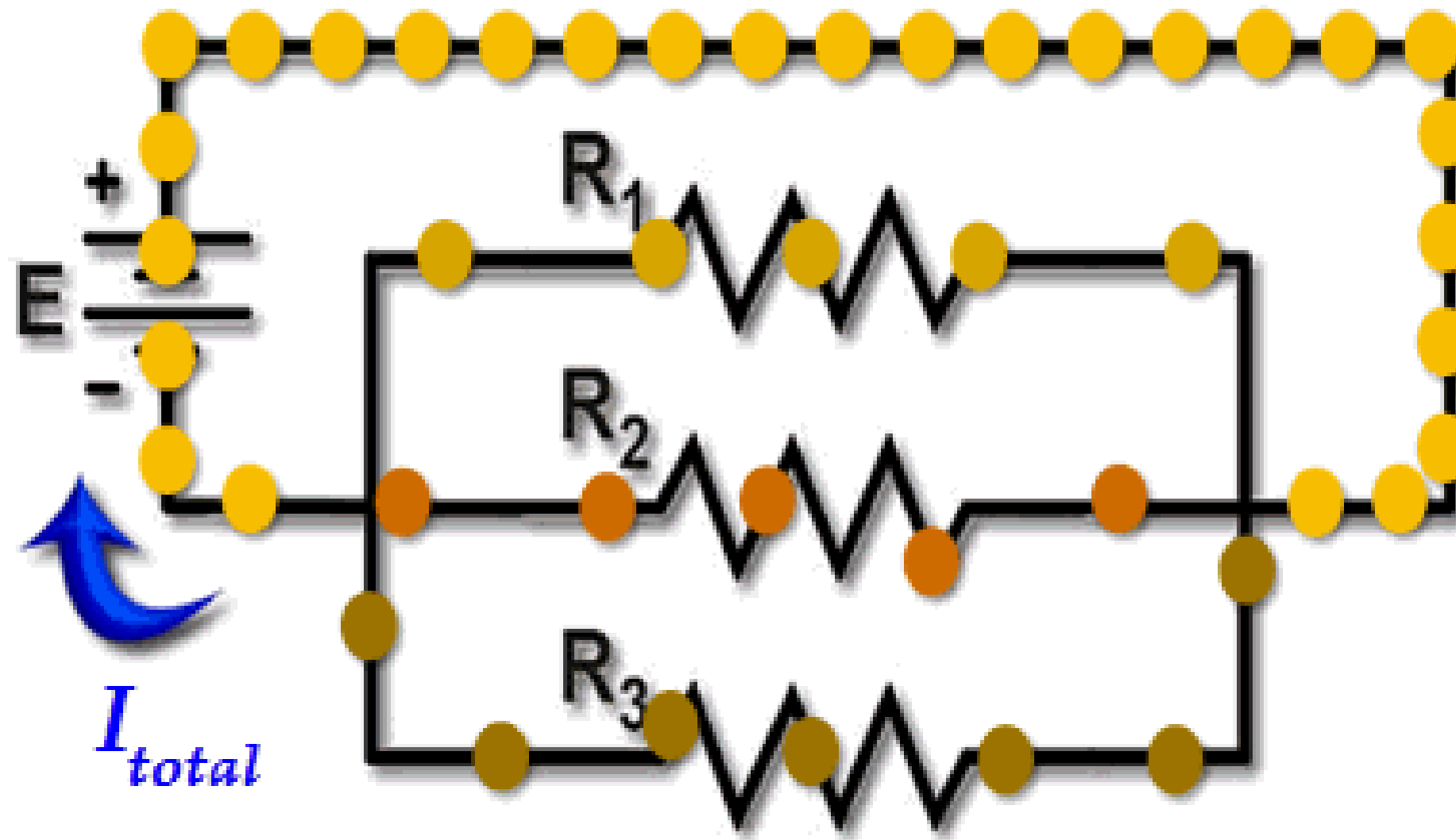
# Series and Parallel Connected Circuits



Difference Between Series and Parallel Circuits	
Series	Parallel
The same amount of current flows through all the components	The current flowing through each component combines to form the current flow through the source.
In an electrical circuit, components are arranged in a line	In an electrical circuit, components are arranged parallel to each other
When resistors are put in a series circuit, the voltage across each resistor is different even though the current flow is the same through all of them.	When resistors are put in a parallel circuit, the voltage across each of the resistors is the same. Even the polarities are the same
If one component breaks down, the whole circuit will burn out.	Other components will function even if one component breaks down, each has its own independent circuit
If $V_t$ is the total voltage then it is equal to $V_1 + V_2 + V_3$	If $V_t$ is the total voltage then it is equal to $V_1 = V_2 = V_3$



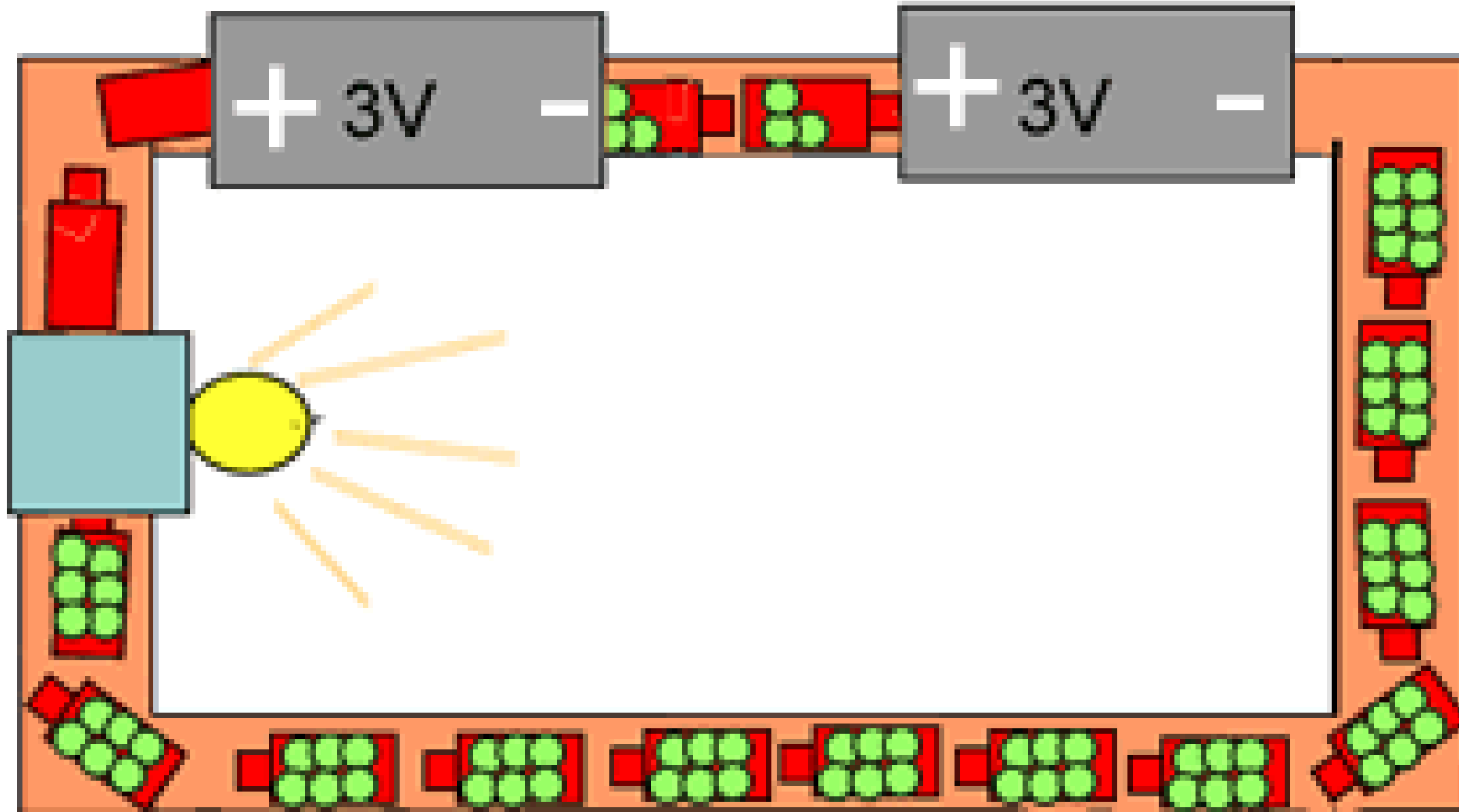
# Series and Parallel Connected Circuits







# Series and Parallel Connected Circuits





**THANK YOU**