The Primary Stage of Grades (4-5)
School Year 2022 - 2023

Name: _____ **Subject:** Science
Study Sheet 1: Electrical circuits

Date: / / **Class:** **Grade Five National (A/B)**

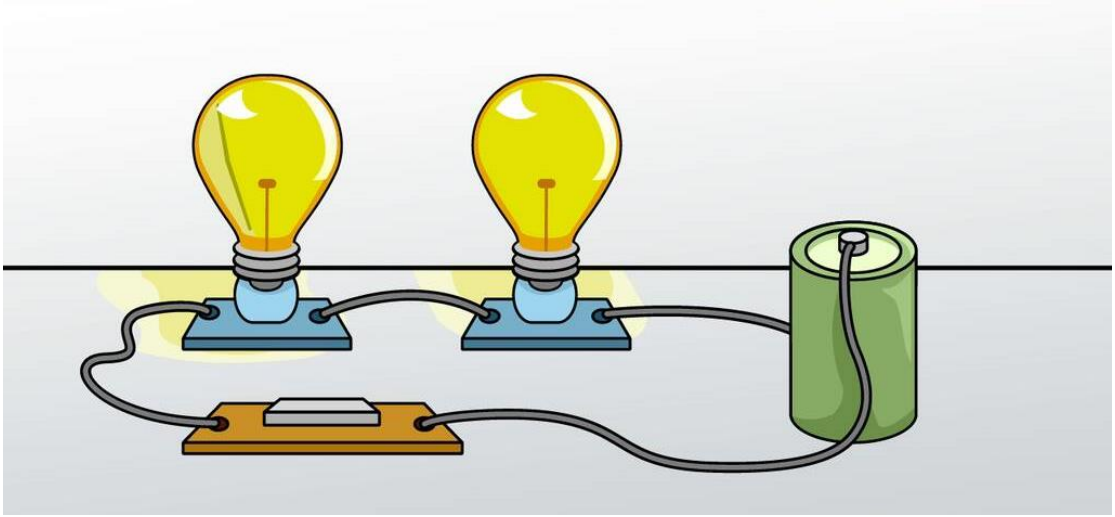
Objective/s
- **Identify electrical circuits and list the components of a circuit.**
- **Identify the different types of electrical circuits.**

Electrical circuits

An Electrical circuit is a closed path in which an electric current can flow.

An electrical circuit consists of simple basic components:

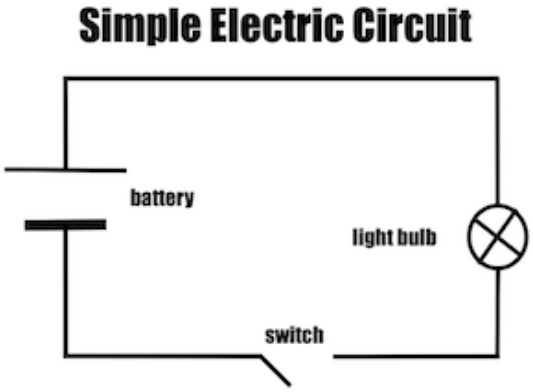
1. A Battery: Provides energy.
2. Wires: conducts electrical current through the circuit.
3. Bulb /motor /buzzer: devices that use current.
4. A switch (optional): turns the circuit on and off easily.

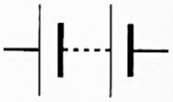
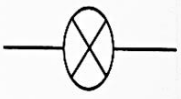
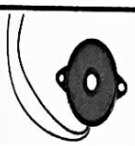
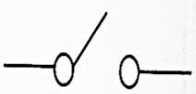
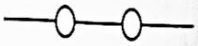


Circuit Diagram:

A circuit diagram uses symbols to show how the components in a circuit are connected to one another.

It is a model that can help us identify the path of electricity in a circuit.



	Component	Symbol
Wire		
Cell The longer line is the positive end (+) and the shorter line is the negative end (−) of the cell.		
Battery of cells		
Lamp		
Buzzer		
Open switch		
Closed switch		

There are two types of circuits:

1- Series circuit.

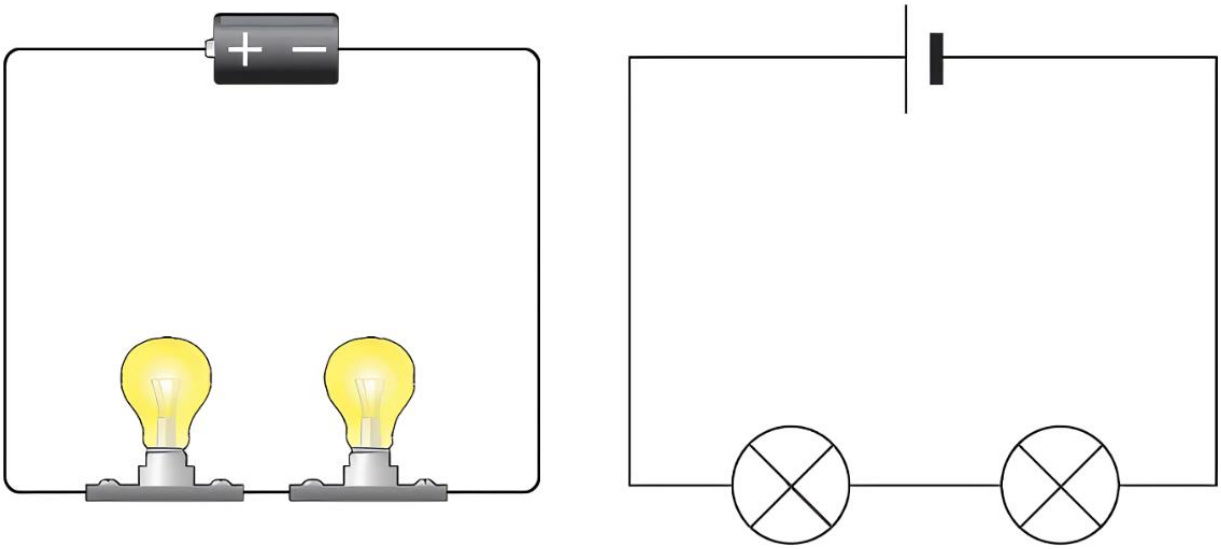
2- Parallel circuit.

1. Series circuits:

In a series circuit, all the components are connected in a **single path**.

Electricity flows from the cell to the parts of the circuit and then back to the cell.

As electricity flows in a single path, a break in any part of the circuit will open the circuit, when this happens none of the lamps in the series circuit will light up.

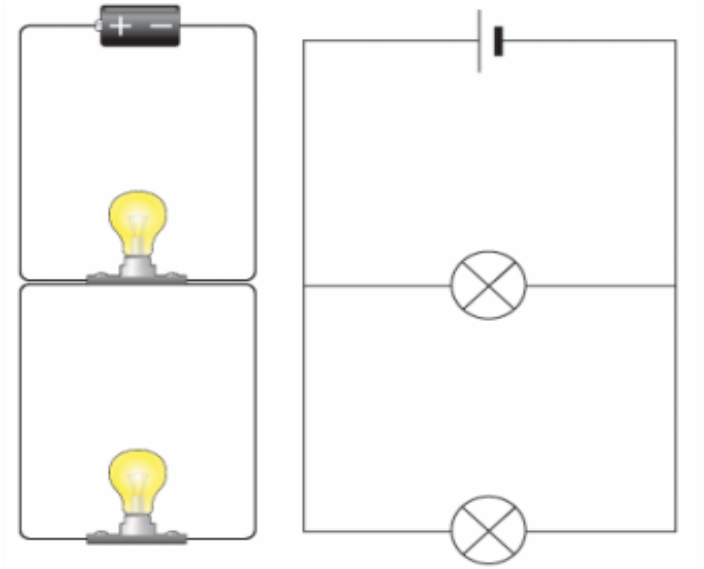


An example of a series circuit.

2. Parallel circuits:

In a parallel circuit, electricity flows through **different paths** before returning to the cell.

Electricity flows in each path separately so a break in one path will not open the whole circuit.



An example of a parallel circuit.

In which circuit are lamps brighter?

Referring to the examples shown above:

For the same number of cells and lamps, **the lamps in the parallel circuit will be brighter than the lamps of a series circuit**.

This is because in a series circuit **the voltage is equally distributed** among all of the lamps. Where in a parallel circuit **the voltage for each bulb is the same as the voltage in the circuit**.

Voltage is **a measure of how strong the current is in a circuit**.