

Electricity

Open and Closed Circuit

NCF and/or NCERT Learning Outcomes:

- To learn the concept of open and closed circuits.
- To learn to draw a labeled circuit diagram of open and closed circuits.

Why should you learn this?

- By learning about open and closed circuits, you can identify the basic problems with any simple circuit. It will also help in troubleshooting and designing basic electrical solutions.

(Students should know the concept of a simple electrical circuit before performing this activity)

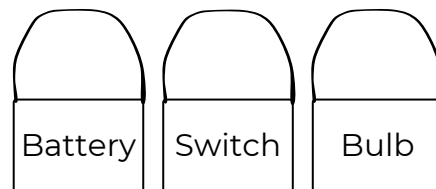
Let us play a game

Material

10 marbles or small stones



Tags of Battery, Switch, and Bulb



Divide the class into two teams. Both teams will take turns playing the game.

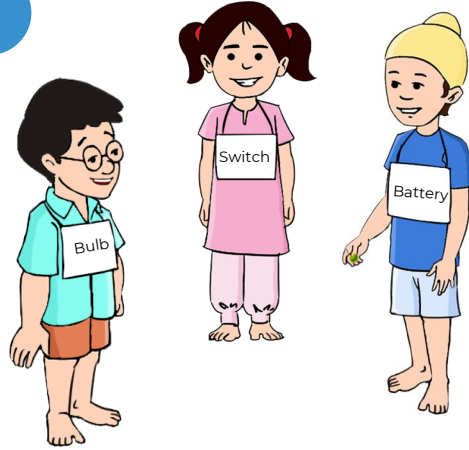


Open and Closed Circuit

Team 1

1

Team members should stand shoulder to shoulder in a circle.

2

Choose any three members from each team and put a badge or tag labeled 'Battery,' 'Switch,' or 'Bulb' around their necks.

3

The student who is the Battery should pass one marble forward. The other students will continue passing the marbles until all the marbles return to the starting point.

4

Note: While passing the marbles, students should not lose their contact with others. If it is lost the marbles cannot go forward.



One member of team 1 suddenly ran to drink water. Now what would happen?

Open and Closed Circuit

Team 2

1



Team 2 will form a similar circle. But the member with the Switch tag will stand two steps inside or outside the circle breaking or losing contact.

Discussion points

- 1 What is the difference in the arrangement between Team 1 and Team 2?
- 2 Is it possible for the members of team 2 to pass the marbles among them? Why?
- 3 Why did the first team's marbles return to the starting position whereas the second team's marbles did not?
- 4 What is the difference in the arrangement between Team 1 and Team 2?

Open and Closed Circuit

What happens here



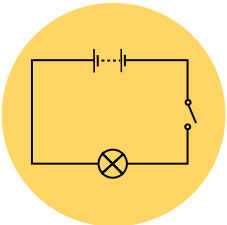
- In this game, the circle created by the students, represents an electrical circuit.



- The marbles represent the electric current.



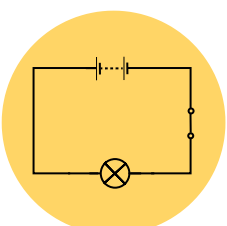
- As soon as students lose contact with one another the connection breaks, meaning the circuit opens, which prevents the marbles, or electric current, from flowing.



- Such a circuit is called an Open Circuit.



- Conversely, when there is no loss in contact, the circuit remains connected, and the marbles, or electric current, continue to flow.



- Such a circuit is called a Closed Circuit.

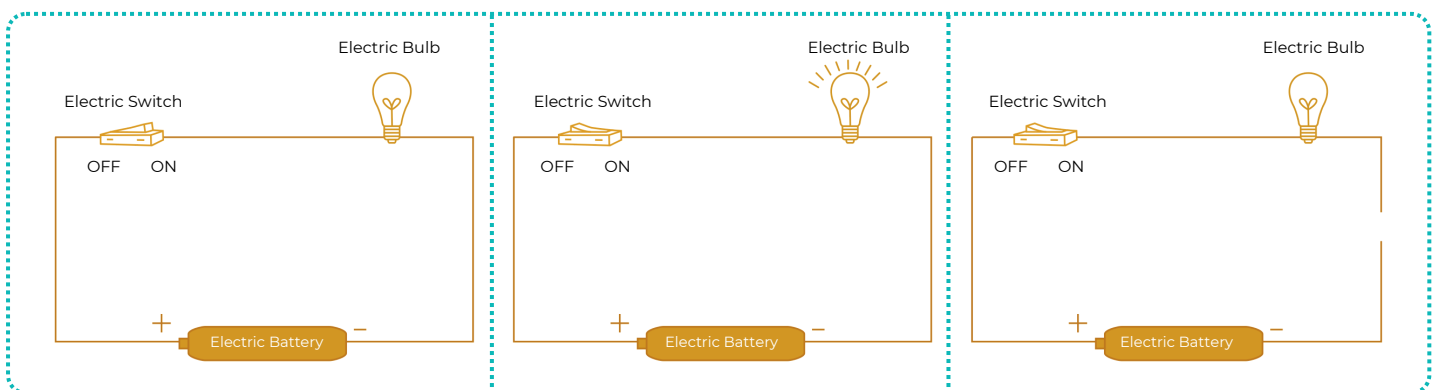


If we use the buzzer in place of a bulb in a circuit. What happens if the circuit is closed?

Open and Closed Circuit

Challenge

- Can you find more examples of open and closed circuits at home? Check your toys, TV, even your refrigerator.
- Please recreate these images in your notebook and write the type of circuit below those images.



- Please recreate the above images in your notebook using the symbols of components.

This resource is aligned with competencies outlined in the National Curriculum Framework (NCF) and National Council of Educational Research and Training (NCERT).

(Grade 6, Electricity and Circuit)

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