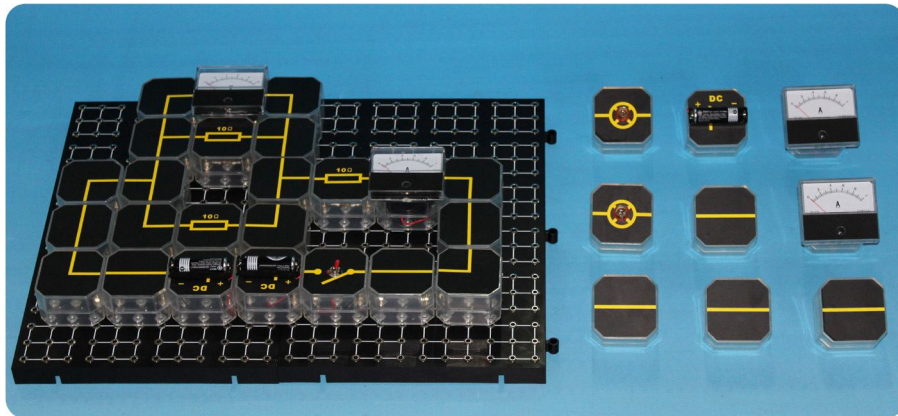


Experiment: Electricity Demonstration Kit A

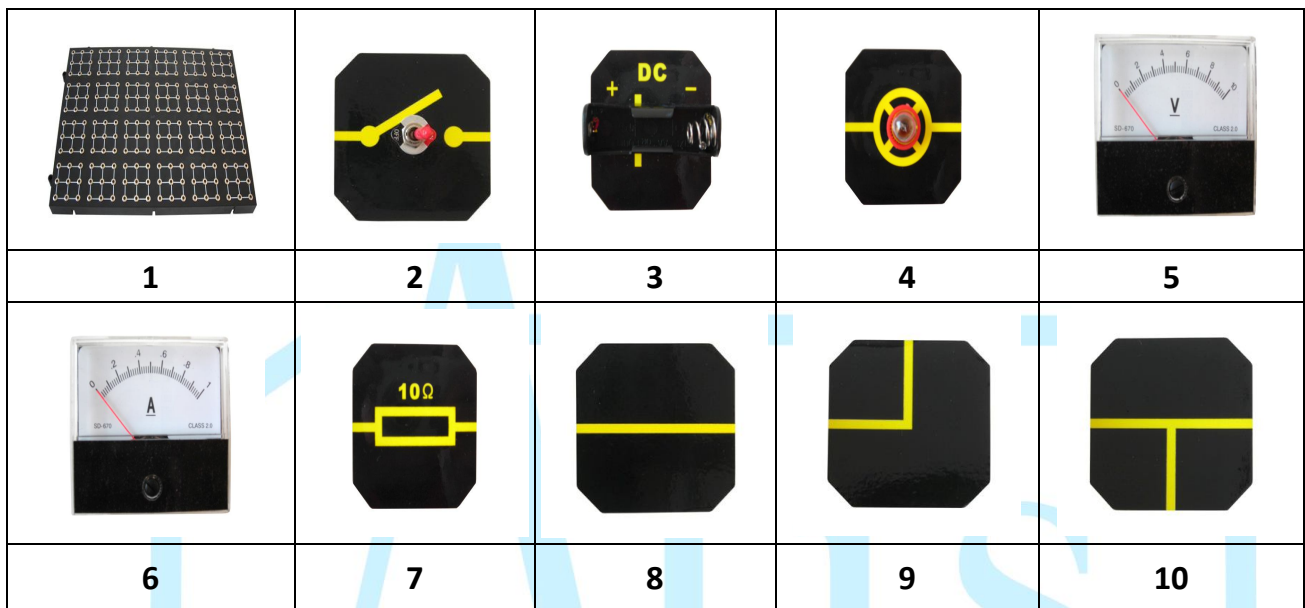


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Instrument

NO	Accessory	Qty	NO	Accessory	Qty
1	Bread Board	2	2	Circuit Switch	1
3	Battery Seat	3	4	Bulb	2
5	Voltmeter	1	6	Galvanometer	3
7	10 Ω Resistor	3	8	I-shaped Line	8
9	T-shaped Line	4	10	L-shaped Line	8



Notice

1. Do not insert and remove the electronic components too hard in order to avoid the damage of breadboard contacts.
2. Please contact us if the components are damaged. Do not change the components by yourself.

Experiment 1: Introductory of the bread board

Purpose

Study the basic fundamentals of the circuit bread board and learn how to use the circuit bread board.

Instrument

NO	Accessory	Qty	NO	Accessory	Qty
1	Bread Board	1	2	Circuit Switch	1
3	Battery Seat	1	4	Bulb	1
8	I-shaped Line	1	10	L-shaped Line	4

Theory

The circuit elements must be cross-connected between the square because we connect the circuit elements by the characteristics of each squared group (9 metal holes from the extension of one point) Therefore, if the circuit elements are not cross-connected, then the circuit will not be able to form a complete channel.

Procedure

1. Check if there are 24 sets of square on the bread board as shown in Figure 1.

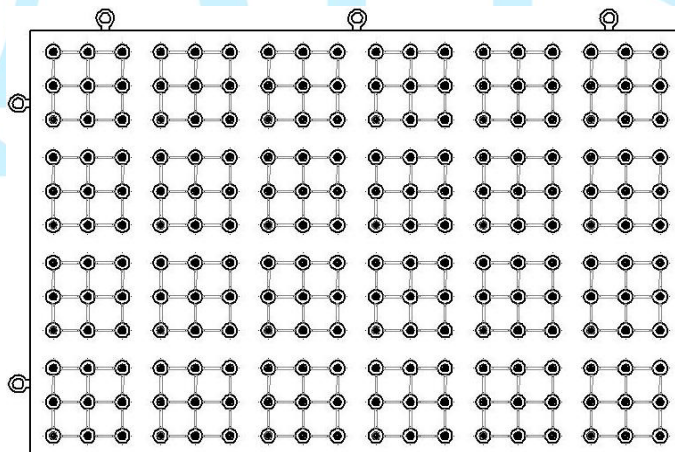


Figure 1

2. Check the back of circuit bread board; we can see each square linked by a piece of metal plate as shown in Figure 2; so we know that each square is the extension of one point.

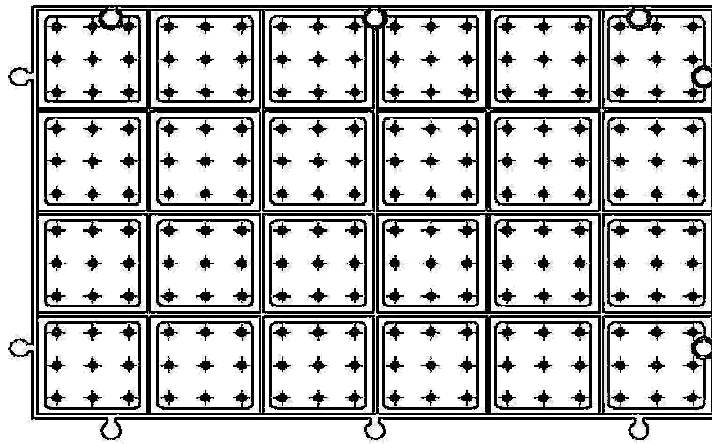


Figure 2

3. When connecting the circuit, be aware of the relative position of the metal hole and the circuit elements. The circuit elements must be connected in between two squares as shown in Figure 3.

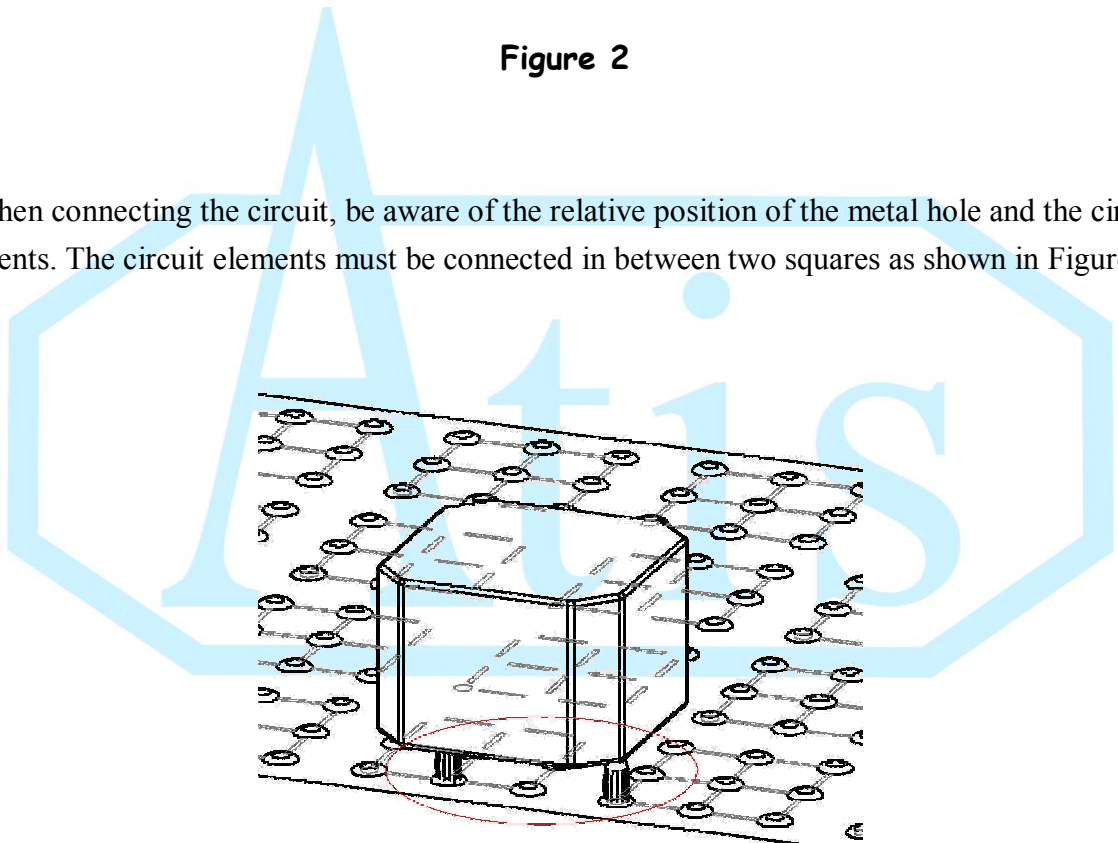


Figure 3

4. Connect the components on the circuit board in the way as shown in Figure 3 and 4. Then, turn the switch on. If the bulb doesn't work, check if the components connected in the right way.

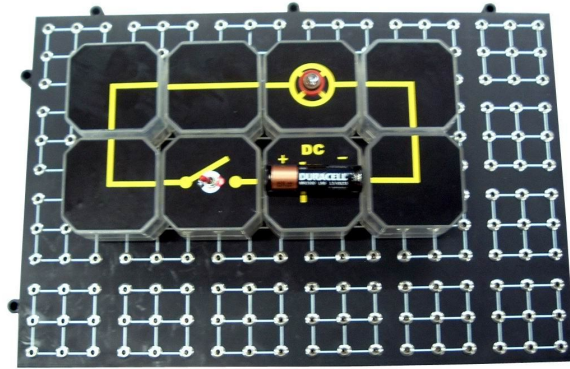


Figure 4

Questions and Discussions

Result:



Experiment 2: Basic circuit principle experiment

Experiment A : Open circuit and broken circuit

Purpose

Study the definition of open circuit and broken circuit on a bread board.

Instrument

NO	Accessory	Qty	NO	Accessory	Qty
1	Bread Board	1	2	Circuit Switch	1
3	Battery Seat	2	4	Bulb	1
8	I-shaped Line	2	10	L-shaped Line	4

Theory

When the circuit forms a complete circuit, the battery sends the current to the circuit. So, when turning the switch on, the bulbs works because the current flows through the circuit.

Procedure

1. Connect the components on the bread board as shown in Figure 5. (Pay attention to the battery poles.)
2. Check if the bulb turns on when the switch is on.
3. Check if the bulb turns off when the switch is off.

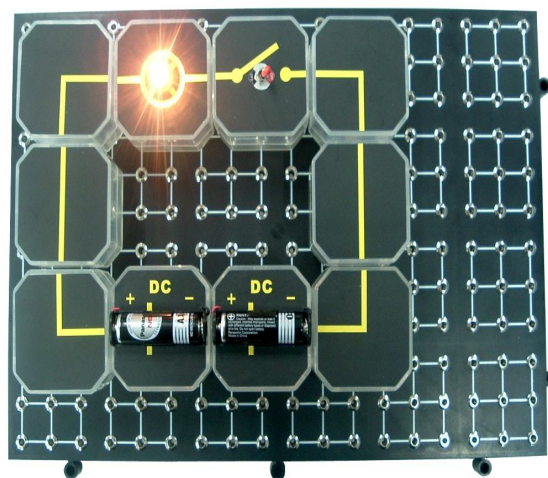


Figure 5

Questions and Discussions

	Switch On	Switch Off
Is the bulb lit?		

1. If we remove the connecting line in this experiment, will the bulb turn off when the switch is on? Is it the same as turning the switch off? Why?

Result:



Experiment B : Short circuit

Purpose

Study the definition of short circuit.

Instrument

NO	Accessory	Qty	NO	Accessory	Qty
1	Bread Board	1	2	Circuit Switch	1
3	Battery Seat	2	4	Bulb	1
8	I-shaped Line	2	9	T-shaped Line	2
10	L-shaped Line	4			

Theory

When there are two or more paths in the circuit, if the resistance value of one of two paths is close to zero, the current will pass through the path of least resistance. If the switch is on, the current passes through the path with no bulbs, the bulb doesn't work because there is no flow of current through the bulb; if the switch is off, the path of the bulb will be the only path, so the bulb works.

Procedure

1. Connect the components on the bread board as shown in Figure 6. (Pay attention to the battery poles.)
2. Turn the switch off to see if the bulb works
3. Turn switch is on to see if the bulb doesn't work.

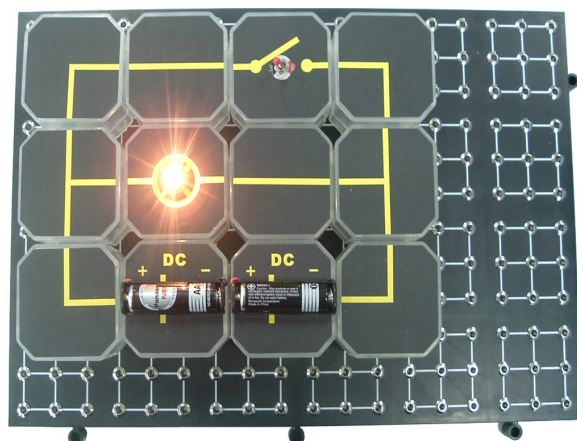


Figure 6

Questions and Discussions

	Switch On	Switch Off
Is the bulb lit?		

1. If we replace the switch by an I-shaped line, will the bulb light? Why?



Experiment 3: Bulbs in series connection experiment

Purpose

Study the advantages and disadvantages of the light bulb in series.

Instrument

NO	Accessory	Qty	NO	Accessory	Qty
1	Bread Board	1	2	Circuit Switch	1
3	Battery Seat	2	4	Bulb	1
8	I-shaped Line	2	10	L-shaped Line	4

Theory

Series connection means that components connected in series are connected along a single path, the current through each component are equal to the total loop current. The current will flow through the bulbs in series, so the bulbs work. But a damage of any component will cause a short circuit, so the bulbs can't work.

Procedure

1. Connect the components on the bread board as shown in Figure 7. (Pay attention to the battery poles.)
2. Turn the switch on to observe the brightness of the bulb.
3. Take one bulb off and turn the switch on to see if the other bulb works.

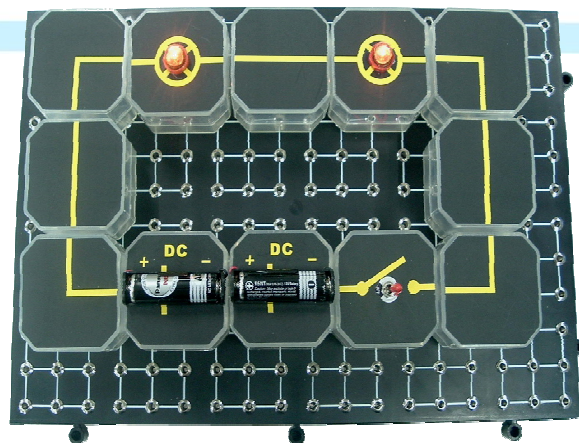


Figure 7