



## Assembling an electrical circuit and measuring the current and voltage in its various sections

### Purpose of the work:

Purpose of the work: to demonstrate that the current strength in different sections of the circuit is the same; learn to measure voltage.

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### Equipment:

043 - current source,  
040 - ammeter,  
041 - voltmeter,  
099 - lamp,  
044 - resistor,  
042 - key,  
connecting wires.

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### Theory:

The current strength in different parts of the circuit, where all devices are connected in series, is the same. The voltage at the ends of some sequential electrical circuit is equal to the sum of the voltages in its sections. What we have to be convinced of in practice.

Remember! The ammeter cannot be connected directly to a current source, since an exorbitantly large current flows through it, which incapacitates it.

Note: remember the polarity of the ammeter! (+ to +). The voltmeter terminal with the + sign must be connected to the conductor terminal, which comes from the pole with the + sign of the current source.

While the ammeter is connected in series with the section of the circuit where the current is to be measured, the voltmeter is connected in parallel with the section of the circuit where the voltage needs to be measured.

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## On the board

The current strength in different parts of the circuit, where all devices are connected in series, is the same. The voltage at the ends of some sequential electrical circuit is equal to the sum of the voltages in its sections.

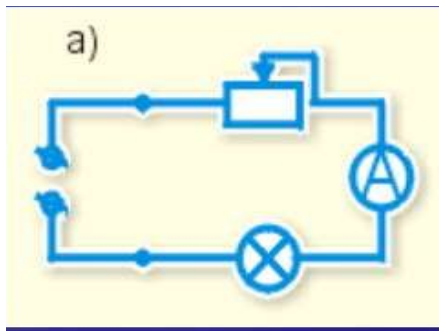
## 6 diagrams

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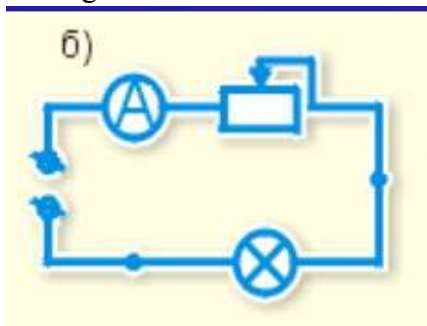
### Work progress:

1. It is necessary to collect 6 electrical diagrams. After assembling the circuit, run the simulation. Voltage will appear in the voltage source and the measuring instruments will show the corresponding data.

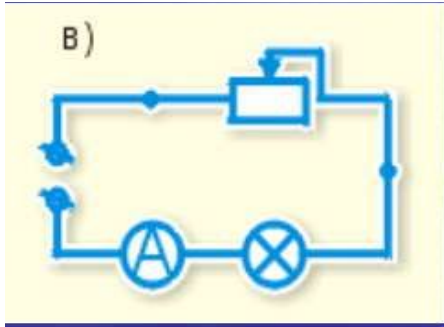
2. Start simulation. Enter the ammeter readings in table # 1.



3. Assemble the electrical diagram # 2 shown in the figure. Start simulation. Enter the ammeter readings in table # 1.



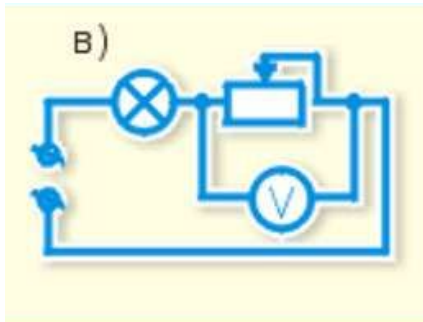
4. Assemble the wiring diagram # 3 shown in the figure. Start simulation. Enter the ammeter readings in table # 1.



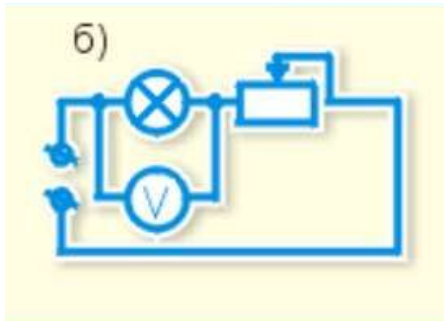
5. Table №1:

№ Scheme	Amperage (I, A)
Scheme 1	
Scheme 2	
Scheme 3	

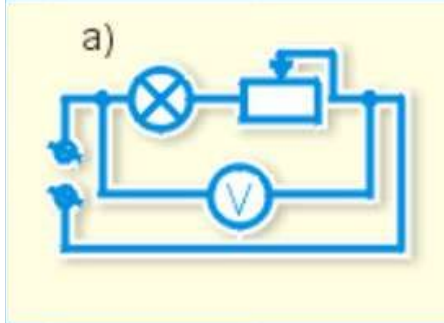
6. Collect the illustration diagram №4. Start simulation. Enter the voltmeter readings in table # 2.



7. Assemble shown in the figure electrical circuit number 5. Start simulation. Enter the voltmeter readings in table # 2.



8. Assemble the wiring diagram # 6 shown in the figure. Start simulation. Enter the voltmeter readings in table # 2.



9. Table # 2

Scheme No.	Voltage (U, V)
<b>Scheme 4</b>	
<b>Scheme 5</b>	
<b>Scheme 6</b>	

10. Make a conclusion.

**A.** With a series connection, the current strength in different sections of the circuit is the same, and the voltage is the sum of the voltages in each section of the circuit.

**In.** With a series connection, the current strength in different sections of the circuit is different, and the voltage on each section of the circuit is the same.

**C.** With a series connection, the current and voltage in different parts of the circuit are the same.