

Electric Circuit Sketch – Draw the circuit you are to build by using the symbols for electric circuits.

Part I

Part II

Part I

1. Build the above circuit for part I.
2. Observe the light bulbs in the circuit. Why are R_2 and R_3 dimmer than R_1 ?

3. Unscrew R_1 . What happens to the remaining bulbs? Why?

4. Unscrew R_2 . What happens to the remaining bulbs? Why?

5. Compare the brightness of R_1 when R_2 is connected and then unconnected? Provide a reason for your observation.

6. Compare the brightness of R_1 with R_3 when R_2 is unscrewed? Provide a reason for your observation.

7. Connect all the bulbs. Now unscrew R_3 . What happens to the remaining bulbs? Why?

8. Compare the brightness of R_1 when R_3 is connected and then unconnected? Provide a reason for your observation.

9. Compare the brightness of R_1 with R_2 when R_3 is unscrewed? Provide a reason for your observation.

10. Measure V_T , V_1 , V_2 , and V_3 with a voltmeter and record below. Remember that the voltmeter is not a part of the circuit.
 $V_T =$ _____
 $V_1 =$ _____
 $V_2 =$ _____
 $V_3 =$ _____
 - a) How does V_2 and V_3 compare?

 - b) Add V_1 and V_2 , then add V_1 and V_3 . How do both compare to V_T ?

11. Measure I_T , I_1 , I_2 , and I_3 with an ammeter and record below. Disconnect the front of the bulb. The bulb will be out until you put the ammeter in the circuit. If the ammeter is connected properly the bulb will go back on.

$I_T =$ _____

$I_1 =$ _____

$I_2 =$ _____

$I_3 =$ _____

- a) Add I_2 and I_3 and compare it to I_1 .

Part II

1. Build the above circuit for part II.
2. Observe the light bulbs in the circuit. Compare the brightness of the bulbs. What explanation can you provide for your observations?

3. Unscrew R_1 . What happens to the remaining bulbs? Why?

4. Unscrew R_2 . What happens to the remaining bulbs? Why?

5. Unscrew R_3 . What happens to the remaining bulbs? Why?

6. Measure V_T , V_1 , V_2 , and V_3 with a voltmeter and record below. Remember that the voltmeter is not a part of the circuit.

$V_T =$ _____

$V_1 =$ _____

$V_2 =$ _____

$V_3 =$ _____

- a) How does V_T and V_3 compare? Why?

- b) Add V_1 and V_2 . How do both compare to V_T ? Why?

7. Measure I_T , I_1 , I_2 , and I_3 with an ammeter and record below. Disconnect the front of the bulb. The bulb will be out until you put the ammeter in the circuit. If the ammeter is connected properly the bulb will go back on.

$I_T =$ _____

$I_1 =$ _____

$I_2 =$ _____

$I_3 =$ _____

- a) Compare I_1 and I_2 . Provide an explanation for your observation.

- b) Add I_2 and I_3 and compare it to I_T . Provide an explanation for your observation.