BE LAB TASK # 03

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Topic: Series Resistive Circuit.

Task:

Observations/Calculations:

Objectives:

A, Identify Series Circuit.

B, Calculate and Measure the resistance of a series circuit.

C, Measure the Current Flow in a Series Circuit using an ammeter.

D, Measure the Voltage Drop in a series circuit using Volt Meter.

Objective A:

Identify Series Circuit;

EXERCISE PROCEDURE:

OBJECTIVE A: Identify series circuit

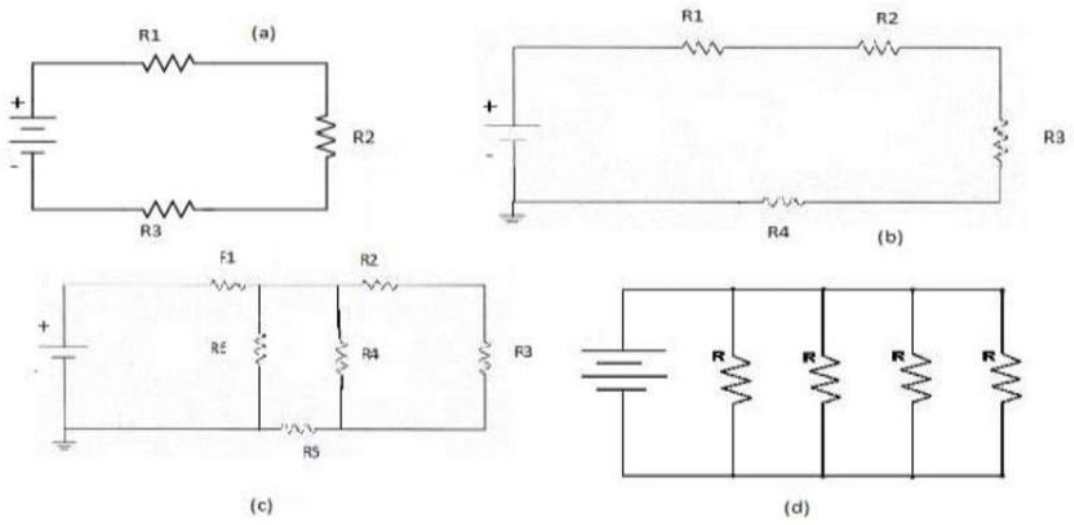


FIG-1

Answer: a and b.

Objective B:

Calculate and Measure the resistance of a series circuit.

RESISTOR	COLOR CODE (COLORS)	INDICATED VALUE (OHMS)	TOLERANCE (PERCENT)	MEASURED VALUE (OHMS)
R1	Brown, Black, Red, Gold.	1000	5	1000
R2	Brown, BLACK, BROWN, Gold.	100	5	100
R3	Brown, GREEN, Red, SILVER.	1500	10	1500

*Record in Table, the color code, indicated value and tolerance and each resistor R1 through R3.

*Use multi-meter to measure of each resistor and enter them in Table.

*Adding the indicated value together, calculate total resistance,

$R_{T\ (INDICATED)}$.

$$R_{T\ (INDICATED)} = 2600 \text{ Ohms.}$$

*Adding the measured value together, calculate total resistance,

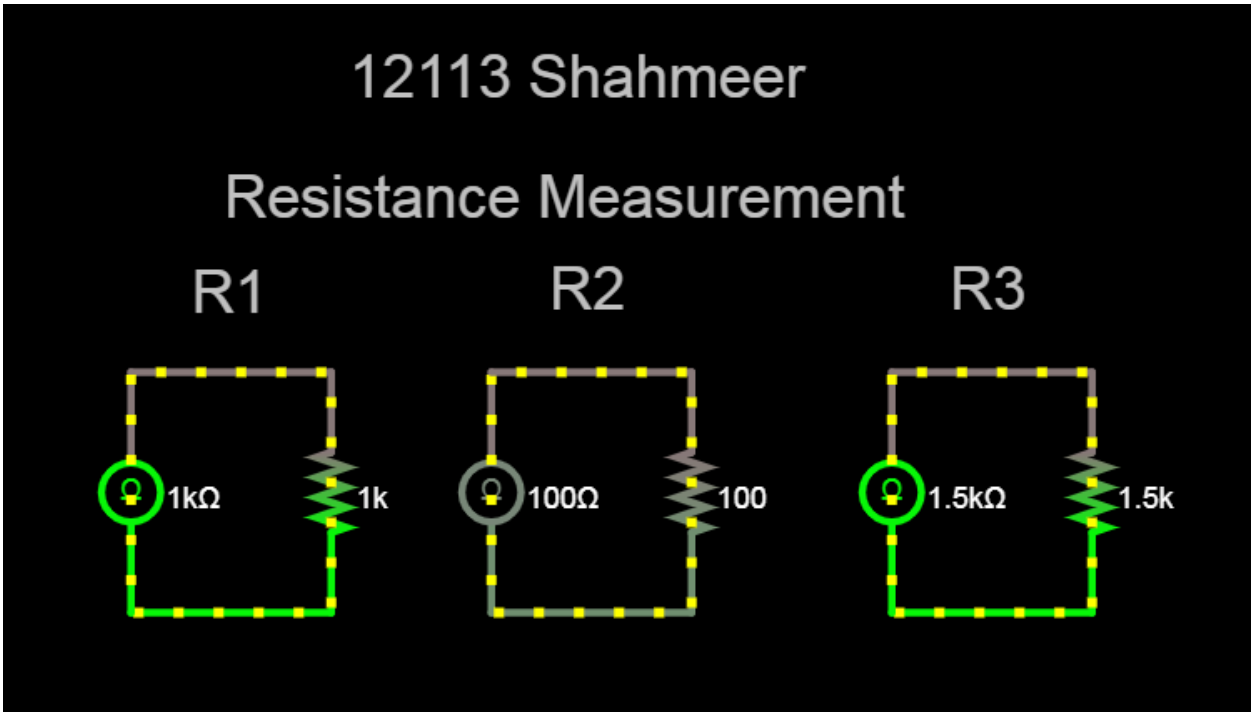
$R_{T\ (MEASURED)}$.

$$R_{T\ (MEASURED)} = 2600 \text{ Ohms.}$$

*Is the indicated resistance value $R_{T\ (INDICATED)}$ the same as the total measured value $R_{T\ (MEASURED)}$?

Answer: Yes.

SS of above work:



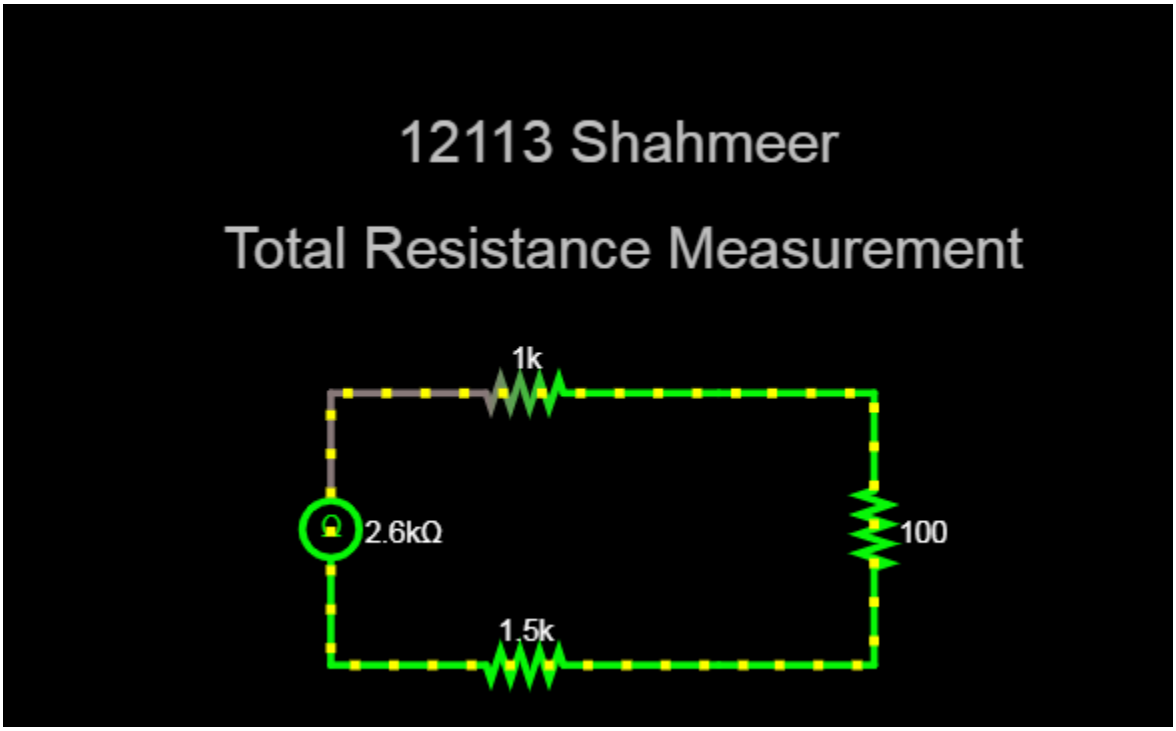
*Connect resistor R1 through R3 in series. Measure the total circuit resistance R_T with ohmmeter.

$R_{T\ (Circuit)}$ = 2.6K Ohms.

Or

$R_{T\ (Circuit)}$ = 2600 Ohms.

SS of above work:



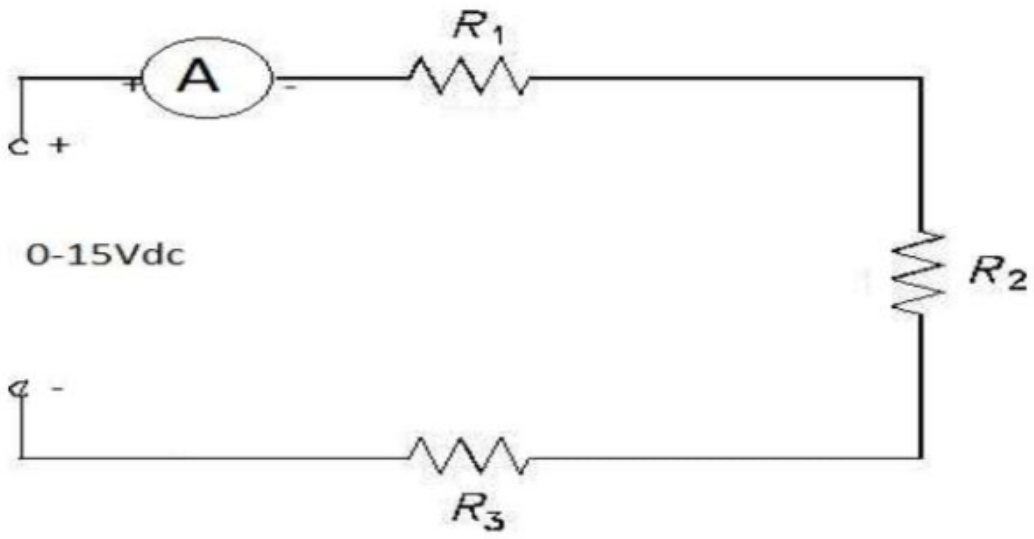
*Does the total resistance value, $R_{T\ (CIRCUIT)}$ agrees with the result of above exercise?

Answer: Yes.

Objective C:

Measure the Current Flow in a Series Circuit using an ammeter.

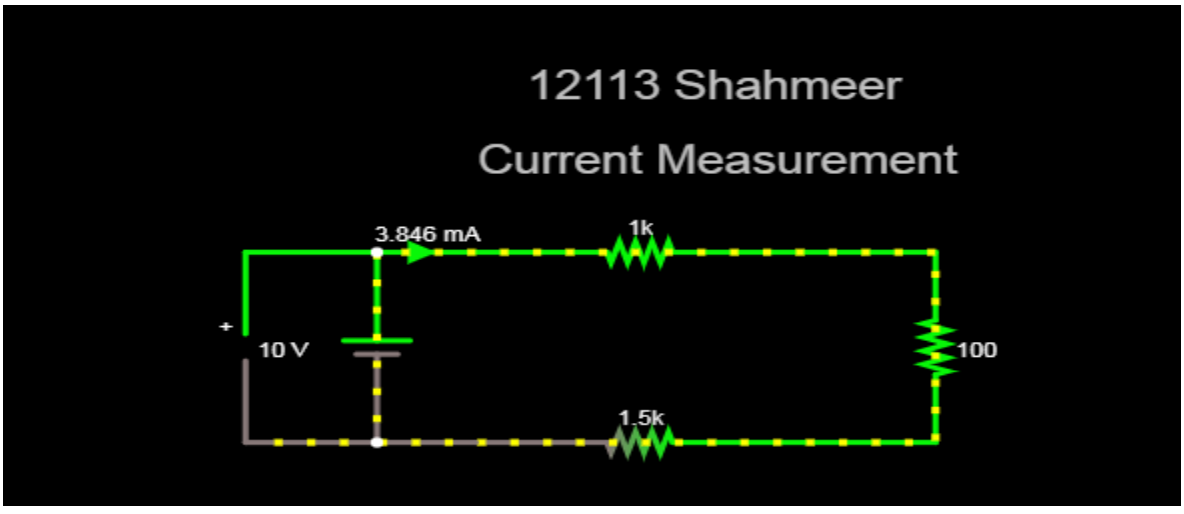
*Connect the circuit shown in Figure. Note that the ammeter, set to the 0-10mAdc range, is connected in series with the resistor R1 and the power source.



*Adjust the power supply to 10vdc. How much circuit current is indicated by the milli ammeter?

$I_{(Circuit)}$ = 3.846 mA DC.

SS of above work:



*Return the voltage to zero.

*You can also find total circuit resistance by using ohm's law. Substitute the applied voltage and the circuit current measured above into Ohm's Law formula R=V/I to calculate the total circuit resistance,

$R_{T\ (Circuit)}$

Answer:

R=??

V=10 vdc.

I=3.846 mA dc.

R=V/I.

R=10/ 0.003846.

R=2600.104004 Ohms.

R=2600 Ohms. (Final Form after rounding off).

*Does the total calculated circuit resistance value, $R_{T\ (CALCULATED)}$ agrees with the result of above calculated value?

Answer: Yes but a little bit not perfect but after rounding off it will be.

*List the possible factors that could account for the results not being in perfect argument.

Answer: *Tolerance.

*Human Error.

*Instrumental error/issue.

*Now measure the current at different locations, throughout the series circuit. Connect the milli-ammeter between R1 and R2.

*Adjust the power source to 10Vdc.

*Measure and record the current flowing between R1 and R2

$I_{(R1-R2)}$ = 3.846 mA DC.

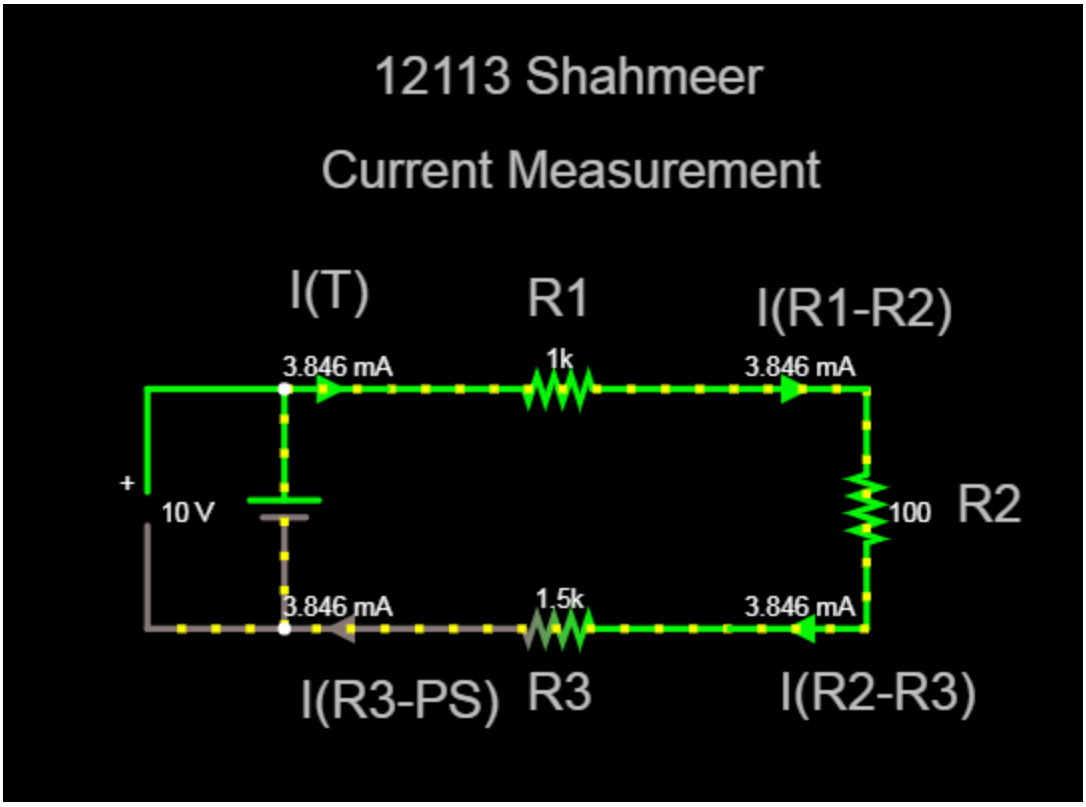
*Repeat last step with the mill ammeter connected, in turn to the following circuit positions:

$I_{(R1-R2)}$ = 3.846 mA DC.

$I_{(R2-R3)}$ = 3.846 mA DC.

$I_{(R3-PS)}$ = 3.846 mA DC.

SS of above work:



Compare the current values at different locations. Are they the same?

Answer: Yes.

Objective D:

Measure the Voltage Drop in a series circuit using Volt Meter.

V_{R1} = 3.846 VDC.

V_{R2} = 0.384615 VDC.

V_{R3} = 5.769 VDC.

Compare the Voltage values at different locations. Are they the same?

Answer: NO.

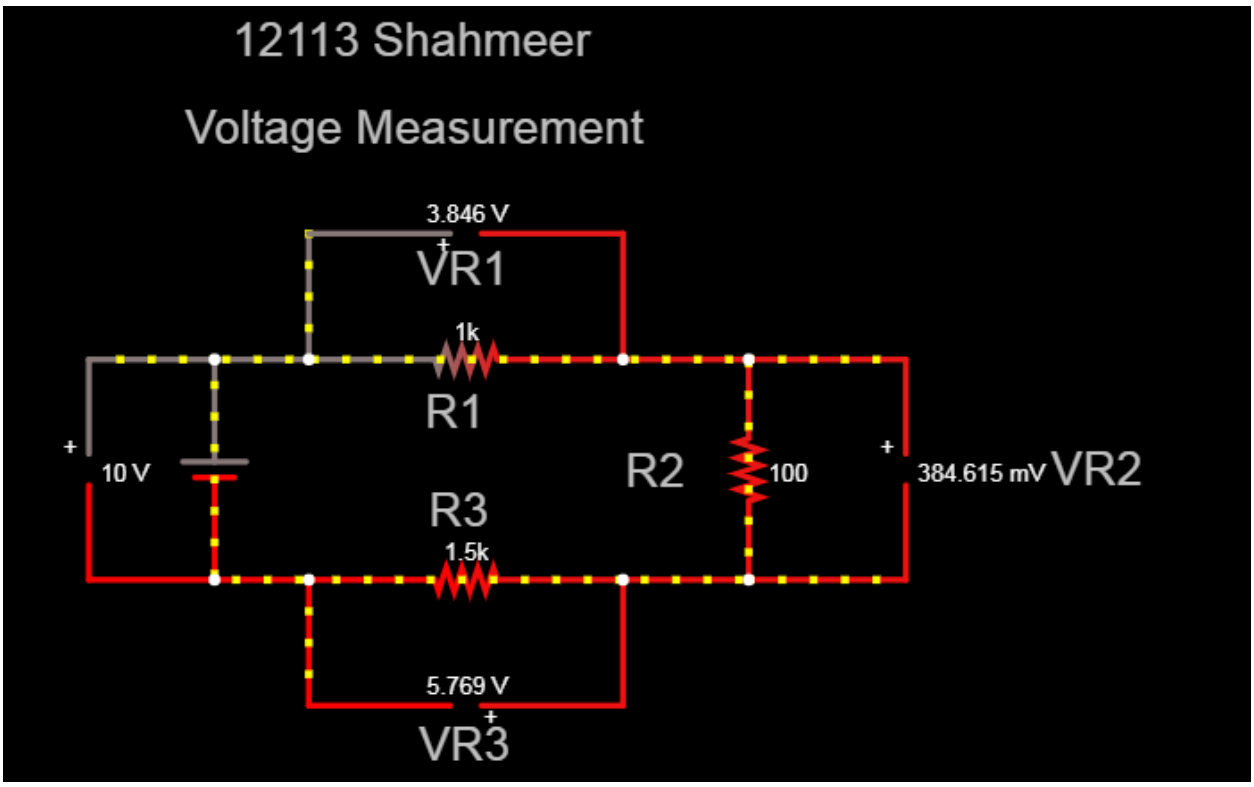
*What important rule of the series circuit have you verified?

Answer: *Voltage changes with respect to the resistors in series at different points.

*Current (I) remains the same in series circuit.

*Resistance increases.

SS of above work:



LINK:

https://tinyurl.com/yxfxdl8b