

Lab C242: Simple Circuits, Week 2

For this section, you need only fill out the accompanying data sheet. No other write-up is needed.

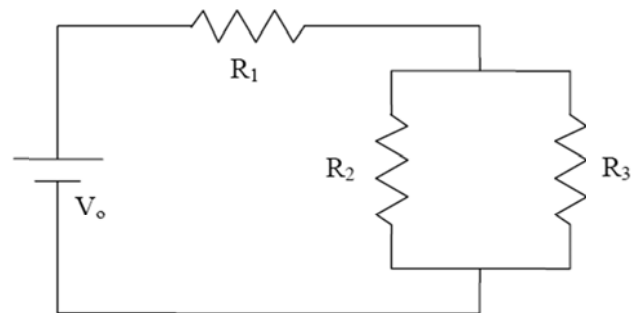
At your position, you will find 3 carbon resistors, mounted in double-banana mounts.

Measure and record on the data sheet, the resistances of the 3 resistors with your DMM.

Build the following circuit, using the 3 resistors and the DC power supply (which acts like a battery). Set the voltage V_0 to about 10 V and measure V_0 with the DMM. You can put the three resistors in any order in the circuit, just be sure to record which is which.

Measure the voltages across each of the three resistors. ($V_1 =$ voltage across R_1 , etc)

Compute the currents through each of the three resistors, and record answers in mA ($I_1 =$ current thru R_1 , etc.)



Verify Kirchhoff's voltage law (the loop law) and Kirchhoff's current law (the junction law). Is there any discrepancy? If so, explain.

Compute I_{bat} the current through the battery. Does this agree with your earlier measurements?

NAME _____ DATE _____

PARTNER'S NAME(S) _____

Record all results with a reasonable number of sig. figs!

$V_o =$ _____

$R_1 =$ _____ $R_2 =$ _____ $R_3 =$ _____

$V_1 =$ _____ $V_2 =$ _____ $V_3 =$ _____

$I_1 =$ _____ $I_2 =$ _____ $I_3 =$ _____

How is I_1 computed?

Check that Kirchhoff's voltage law (loop law) is obeyed:

Check that Kirchhoff's current law (junction law) is obeyed:

Compute R_{total} (show how you computed it):

$R_{total} \text{ (computed)} =$ _____ $R_{total} \text{ (measured)} =$ _____

Compute I_{bat} (show how you computed it):

$I_{bat} =$ _____

What do you expect to happen to I_1 when the resistor R_3 is removed from the circuit? Explain in writing, and then check your prediction experimentally with your circuit.

Experimental Result: