Resistance prelab preparation

Worksheets, videos and all other lab-related content is located at:

`http://www.physics.brocku.ca/Courses/1P92/lab-manual`

The following simulation allows you to explore the relationship between the variables in Ohm's Law:

`https://phet.colorado.edu/en/simulation/ohms-law`

You can construct your own electrical circuits with the PhET electric circuit simulator and monitor their electrical behaviour:

`https://phet.colorado.edu/sims/html/circuit-construction-kit-dc-virtual-lab/latest/circuit-construction-kit-dc-virtual-lab_en.html`

- To get a feel for how including more resistors in a series and parallel circuit changes the current flow in a circuit, begin by simulating a circuit with a single resistor and record the current flow for a set voltage.

? If you were to add a second resistor in series with the first resistor, how would you expect the current in the circuit to change? Why?

- Keeping the voltage fixed, add a second simulated resistor in series with the first resistor.
- Use Equation 3.2 for two resistors in series and your two resistor values form the simulation to calculate the effective resistance of the two resistors in series resistors in series, then
- use Ohm's Law to calculate the expected circuit current at your fixed voltage.

? Did the current change as predicted by Ohm's Law?

- Try adding a third resistor in series. Does the current change as expected?
- Use Equation 3.3 to calculate an equivalent resistance for the three resistors in series.

? How does your result for the circuit current compare with the result from the simulation?

- Now, repeat the above exploration for a circuit with two and three resistors in parallel, using Equations 3.4 and 3.5.
- Read through the rest of the lab instructions for this experiment in this document.
- Login to Turnitin and submit your file in your prelab assignment before the "Due" time and date shown. Do not wait until the last minute to submit your report. Turnitin will not accept submissions after the set due date/time. Note that overdue prelab reports are assigned a grade of zero.

☐ Print a copy of this experiment to bring to your scheduled lab session. The data, observations and notes entered on these pages will be needed when you write your lab report. Compile these printouts to create a lab book for the course.

CONGRATULATIONS! YOU ARE NOW READY TO PROCEED WITH THE EXPERIMENT!