Experiment 1

Question: How are voltage and current related in electric circuits?

Hypothesis: voltage and current are related. If Voltage goes up, current goes up, if resistance goes up, current goes down. V=IR

Experiment:

Part 2:
1.   Supplies: Power source, 2 wire leads, light bulb, voltmeter
2.   Set power source to 3.3 volts, and attach wire leads (red to red, black to black)
3.   To measure voltage
a.   Turn on power source
b.   Connect wire leads to voltmeter (red to red, black to black)
c.   Make sure black input is "COM" and red input is "VmA"
d.   Turn on voltmeter to "20 DCV"
e.   Record voltage (V) in your lab report
4.   To measure current
a.   Switch voltmeter to "20m DCA"
b.   Switch red wire lead to "10ADC"
c.   Make a series circuit (one pathway) using the power source, voltmeter & light bulb
d.   Record current (I) in your lab report
5.   Determine the value of the resistance by using Ohm's Law V=IR

Part 3:
1.   Go to Circuit simulator at https://phet.colorado.edu/sims/html/circuit-construction-kit-dc/latest/circuit-construction-kit-dc_en.html
2.   Build a series circuit using a battery, wires & light bulb
3.   Set the voltage of the battery to the same (or as close as you can get) voltage of the power source from Part 1.
4.   Set the resistance of the light bulb to the same (or as close as you can get) resistance as you measured in Part 1.
5.   Use the ammeter to measure the current and record it in your lab report.

Part 4:
1.   Compare the difference in values (if there is one) between the current you measured using the physical supplies, versus the current you measured using the PHET simulator. Use the steps as outlined in Showbie to determine the percent difference.
2.   Ensure all of your data and calculations are recorded in your lab report

Observations:

real circuit: 0.18 amps, 3.22 volts

Phet simulation: 0.18 amps, 3.22 volts

Analysis: Compare expected results (equation and simulation) and actual results, calculate a percent difference

Conclusion: ...

10.0 Ω

Current
0.18 A

3.3 V

Voltage
3.22 V