\Procedure: Open the *Circuit Construction Kit* from the PhET web site.

1. Put three resistors on the work area. Right-click on each to change the resistances. Use a different value for each resistor. Use a battery voltage of 12 volts. Record the individual resistances you selected in the data table.

|  |
| --- |
| **Calculations** |
| Resistor | Individual resistance(ohms) | Current(amps) | Voltage (Volts) |
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |
|  | TotalResistance (calculated) | Battery Current | Battery Voltage |



2. Use the procedures learned in this topic to calculate: the total resistance of the circuit, the current delivered by the battery, and the current and voltage for each resistor. Show your work below and record your results in the table above.

3. Build the circuit given using the *Circuit Construction Kit.* Complete the table below by measuring the voltages and currents using the voltmeter and ammeter. Find the total resistance of your circuit using Ohm’s Law. Show your work.

|  |
| --- |
| **Measurements** |
| Resistor | Individual resistance(Ω) | Current(A) | Voltage (V) |
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |
| Battery |  |  |  |



4. Provide evidence that your table information is reasonable. Before you take apart your experiment, take a screenshot of your circuit and insert it into this document. Use Kirchoff’s Loop Rule and Kirchoff’s Junction Rule to justify your results. Refer to the Developmental Module for instructions on how to take screenshots.

5. Use the same three resistor values as in the first circuit. Use a battery voltage of 12 volts. Record the individual resistances you selected in the data table.

|  |
| --- |
| **Calculations** |
| Resistor | Individual resistance(ohms) | Current(amps) | Voltage (Volts) |
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |
|  | TotalResistance (calculated) | Battery Current | Battery Voltage |



6. Use the procedures learned in this topic to calculate: the total resistance of the circuit, the current delivered by the battery, and the current and voltage for each resistor. Show your work below and record your results in the table above.

7. Build the circuit given using the Circuit Construction Kit. Complete the table below by measuring the voltages and currents using the voltmeter and ammeter. Find the total resistance of your circuit using Ohm’s Law. Show your work.

|  |
| --- |
| **Measurements** |
| Resistor | Individual resistance(Ω) | Current(A) | Voltage (V) |
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |
| Battery |  |  |  |



8. Provide evidence that your table information is reasonable. Before you take apart your experiment, take a screenshot of your circuit and insert it into this document. Use Kirchoff’s Loop Rule and Kirchoff’s Junction Rule to justify your results.