NAME: _____

Series and Parallel circuits

The goal of this exercise is to illustrate the concepts of Ohm's Law, Kirchoff's Voltage Law and Kirchoff's Current Law in series and parallel circuit elements.
Use the DC Circuit Construction Kit at the Phet website to help answer the following problems:

Part I

Assemble a circuit of $R_1 = 60\ \Omega$, $R_2 = 20\ \Omega$ and $R_3 = 10\ \Omega$ all in series with a 9.0 V battery. Use voltmeters and ammeters in the series circuit record the following information:

	R_1 =	R_2 =	R_3 =
Vo =	V_1 =	V_2 =	V_3 =
Io =	I_1 =	I_2 =	I_3 =

1. Calculate the total resistance in this series circuit R_{total} =

2. How does the value in #1 compare with R_{total} found using Ohm's Law with Vo and Io.

3. Sum the voltages and record the total.

4. Compare this sum and Vo.

5. Explain the observations of the voltage.

6. Explain the observations of the current in this circuit.

Part II

Assemble a circuit of 2 1.5 Vcells in series and R_1 and R_2 in parallel. Record the following information:

$R_1 =$ 20 Ω $R_2 =$ 60 Ω

Vo = $V_1 =$ $V_2 =$

Io = $I_1 =$ $I_2 =$

1. Calculate the total resistance in this parallel circuit $R_{total} =$

2. How does the value in #1 compare with R_{total} found using Ohm's Law with Vo and Io.

3. Sum and record the currents.

4. Compare #3 with Io.

5. Explain the observations of the current.

6. Explain the observations of the voltage in this circuit.