Build an Electric Circuit

As you work through the steps in the lab procedure, record your experimental values and the results on this worksheet. Use the exact values you record for your data to make later calculations. Do not enter negative numbers for voltage, current, or power even though you may have negative numbers as a result of doing the experiment. Convert all negative values of voltage, current, and/or power to positive values before entering data in the lab report. Do not include units in your answers.

Series Circuit – Data

Record your data for scenario 1 in the following table.

Table 1: Series Scenario 1 (Battery Voltage = 9 V)

Resistor	Resistance (ohms)	Observed Current (amps)	Observed Voltage (volts)	Power (watts)
R_1	3.0			
R_2	3.0			
R_3	3.0			

Enter the total values for voltage and power.

Table 2

$\boldsymbol{R_{total}}$	9.0 ohms
$\boldsymbol{V_{total}}$	volts
$\boldsymbol{P_{total}}$	watts

Record your data for scenario 2 in the following table.

Table 3: Series Scenario 2 (Battery Voltage = 9 V)

Resistor	Resistance (ohms)	Observed Current (amps)	Observed Voltage (volts)	Power (watts)
R_1	3.0			
R_2	6.0			
R_3	9.0			

Enter the total values for voltage and power.

Table 4

$\boldsymbol{R_{total}}$	18.0 ohms
$\boldsymbol{V_{total}}$	volts
$\boldsymbol{P_{total}}$	watts

Parallel Circuit – Data

Record your data for scenario 1 in the following table.

Table 5: Parallel Scenario 1 (Battery Voltage = 9 V)

Resistor	Resistance (ohms)	Observed Current (amps)	Observed Voltage (volts)	Power (watts)
R_1	3.0			
R_2	3.0			
R_3	3.0			

Enter the total values for current and power.

Table 6

$\boldsymbol{R_{total}}$	1.0 ohm
$\boldsymbol{I_{total}}$	amps
$\boldsymbol{P_{total}}$	watts

Record your data for scenario 2 in the following table.

Table 7: Parallel Scenario 2 (Battery Voltage = 9 V)

Resistor	Resistance (ohms)	Observed Current (amps)	Observed Voltage (volts)	Power (watts)
R_1	3.0			
R_2	6.0			
R_3	9.0			

Enter the total values for current and power.

Table 8

$\boldsymbol{R_{total}}$	1.64 ohms
$\boldsymbol{I_{total}}$	amps
$\boldsymbol{P_{total}}$	watts

Questions

In the series scenario 1 circuit, the resistor that would feel the hottest to the touch is which of the following?

- R_1
- R_2
- R_3
- None, they are all the same.

In the series scenario 2 circuit, the resistor that would feel the hottest to the touch is which of the following?

- R_1
- R_2
- R_3
- None, they are all the same.

The phenomenon that is responsible for the resistor feeling hot is called

_____.

In the parallel scenario 1 circuit, the resistor that would feel the hottest to the touch is which of the following?

- R_1
- R_2
- R_3
- None, they are all the same.

In the parallel scenario 2 circuit, the resistor that would feel the hottest to the touch is which of the following?

- R_1
- R_2
- R_3
- None, they are all the same.

If we placed a 6-amp fuse in any of the four circuits you tested, the fuse would fail in

_____.