Lab 11 – series & parallel resistors

Data measured resistance of resistor 1: \_\_\_\_\_\_\_\_\_\_ Ω

round to the

nearest 10 Ω

measured resistance of resistor 2: \_\_\_\_\_\_\_\_\_\_ Ω

Combined resistance

series: measured resistance \_\_\_\_\_\_\_\_\_\_ Ω

round to the

nearest 10 Ω

parallel measured resistance \_\_\_\_\_\_\_\_\_\_ Ω

Sketch the two circuits and label the circuit elements.

series

parallel

Voltage

series: voltage across the combination \_\_\_\_\_\_\_\_\_\_ volts

round to the

nearest 0.1 V

voltage across resistor 1 \_\_\_\_\_\_\_\_\_\_ volts

voltage across resistor 2 \_\_\_\_\_\_\_\_\_\_ volts

parallel: voltage across the combination \_\_\_\_\_\_\_\_\_\_ volts

round to the

nearest 0.1 V

voltage across resistor 1 \_\_\_\_\_\_\_\_\_\_ volts

voltage across resistor 2 \_\_\_\_\_\_\_\_\_\_ volts

Current

series: current through the combination \_\_\_\_\_\_\_\_\_\_ mA 🡪 \_\_\_\_\_\_\_\_\_\_ A

current through resistor 1 \_\_\_\_\_\_\_\_\_\_ mA 🡪 \_\_\_\_\_\_\_\_\_\_ A

round to the

nearest 0.1 mA

current through resistor 2 \_\_\_\_\_\_\_\_\_\_ mA 🡪 \_\_\_\_\_\_\_\_\_\_ A

parallel: current through the combination \_\_\_\_\_\_\_\_\_\_ mA 🡪 \_\_\_\_\_\_\_\_\_\_ A

current through resistor 1 \_\_\_\_\_\_\_\_\_\_ mA 🡪 \_\_\_\_\_\_\_\_\_\_ A

round to the

nearest 0.1 mA

current through resistor 2 \_\_\_\_\_\_\_\_\_\_ mA 🡪 \_\_\_\_\_\_\_\_\_\_ A

Calculations

1. Using the measured resistances of the two resistors, calculate the combined resistance of the two resistors connected in ***series***. How does the measured resistance compare to the calculated resistance?

2. How does the measured voltage across the ***series*** combination compare to the voltages across the individual resistors?

3. How does the measured current through the ***series*** combination compare to the currents through the individual resistors?

4. Using the measured resistances of the two resistors, calculate the combined resistance of the two resistors connected in ***parallel***. How does the measured resistance compare to the calculated resistance?

5. How does the measured voltage across the ***parallel*** combination compare to the voltages across the individual resistors?

6. How does the measured current through the ***parallel*** combination compare to the currents through the individual resistors?

7. Using the measured currents through each combination, how much current does the power supply produce for each circuit?

8. Using the measured voltages across each combination, what is the voltage of the power supply for each circuit?

9. Using the calculated source voltages from question 8 and the measured combined resistance of each combination, calculate how much current each circuit should draw from the power supply.

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3. How does the measured current through the ***series*** combination compare to the currents through the individual resistors?

4. Using the measured resistances of the two resistors, calculate the combined resistance of the two resistors connected in ***parallel***. How does the measured resistance compare to the calculated resistance?

5. How does the measured voltage across the ***parallel*** combination compare to the voltages across the individual resistors?

6. How does the measured current through the ***parallel*** combination compare to the currents through the individual resistors?

7. Using the measured currents through each combination, how much current does the power supply produce for each circuit?

8. Using the measured voltages across each combination, what is the voltage of the power supply for each circuit?

9. Using the calculated source voltages from question 8 and the measured combined resistance of each combination, calculate how much current each circuit should draw from the power supply.