

Name _____ # _____

Date _____

Name _____ # _____

Section # _____

Name _____ # _____

Parallel Circuit Lab

Check off each procedure upon completion ✓

Part A – Drawing a parallel circuit (Use a pencil)

____ Draw a parallel circuit with a voltage source and the following resistors - 10 ohms, _____ ohms and _____ ohms. (3 pts) (Use the symbols from your reference table)

1. ____ Draw a voltmeter into the circuit drawn above where it would be able to measure the voltage of the second resistor. (2 pts)
2. ____ Now draw an ammeter into the circuit drawn above where it would be able to measure the current of the third resistor. (2 pts)

Part B – Circuit Construction

3. ____ Construct a parallel circuit with the following resistors - 10 ohms, _____ ohms and _____ ohms. (IN THAT ORDER) Connect the source to the 10-ohm resistor.

Important tips -

- **Spread out your wires - use one full table of space**
- **Connect your meters LAST!**

4. ____ Measure the following voltages using your voltmeter (2 pts each)

V₁ (Volts)	V₂ (Volts)	V₃ (Volts)

5. ____ Use one of your parallel circuit equations to find V_T (Total Voltage)

Equation (2 pts)
Answer (3 pts)

6. ____ Measure the following currents using your ammeter (3 pts each)

I_T (Amperes)	I₂ (Amperes)	I₃ (Amperes)

7. ____ Use a parallel circuit equation from your reference table to find **I₁**.

Show all work for full credit.

Equation (2 pts)

Answer (3 pts)

Accuracy of Written Resistance Values checked against Ohm's Law

8. ____ Use the information from the other tables to fill in the first two columns of this chart.

9. ____ Calculate the values of each resistors using Ohm's Law (Column 3) (4 pts each)

*** Ohm's Law $R = V/I$ ***

V₁ (Volts)	I₁ (Amperes)	Calculated Value of Resistor from Ohm's Law	Printed Value of Resistor
			10 ohms
V₂ (Volts)	I₂ (Amperes)	Calculated Value of Resistor from Ohm's Law	Printed Value of Resistor
			_____ ohms
V₃ (Volts)	I₃ (Amperes)	Calculated Value of Resistor from Ohm's Law	Printed Value of Resistor
			_____ ohms

10. ____ Name a part of your circuit that had resistance that was never discussed in this lab? (4 pts)

11. ____ Find the total resistance of this circuit using two different equations. Show all work for full credit. (Note: Use the **printed** values of the resistors)

Equation 1 (5 pts)

Equation 2 (5 pts)

Answer _____

Answer _____

Summary Questions

1. If you added a 54-ohm resistor in parallel to your circuit, what would its potential difference would be? **(4 pts)**

Would that 54-ohm resistor have more or less current than your 27-ohm resistor? **(4 pts)**

2. If you attached the three resistors you were given today in a series circuit, would your new circuit produce more or less total current? ***Support your answer with a drawing and calculations.*** **(4 pts)** (Assume the source voltage does not change)

3. If you had a stronger voltage source how would that effect the size of the total current in your parallel circuit? **(4 pts)**

4. Suppose you were given a resistor without markings on it to tell you its value. Describe how you could you use the supplies you were given today to find the value of the unknown resistor. **(4 pts)**

Power in a Light bulb

1. Construct a parallel circuit with your **3 light bulbs**. Find the power in each light bulb. **(3 pts each)**

2nd Light bulb

Equation **$P = VI$** Substitution with units _____ Answer _____

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3rd Light bulb

Equation _____ Substitution with units _____ Answer _____

2. Construct a series circuit with your 3 light bulbs. Find the power in each light bulb.

(3 pts each)

1st Light bulb

Equation _____ Substitution with units _____ Answer _____

2nd Light bulb

Equation _____ Substitution with units _____ Answer _____

-

-

3rd Light bulb

Equation _____ Substitution with units _____ Answer _____

3. Which of the two circuits you created made the lights shine brightest? Series or Parallel? (circle)
(4 pts)

4. What would happen to the total current of your series circuit if a fourth light bulb was added to your circuit? **(3 pts)**