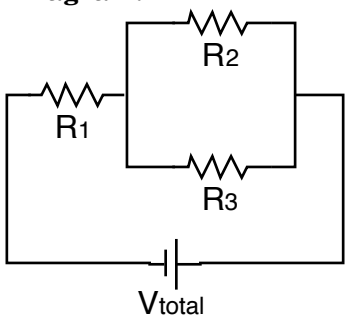
Lab 35-3: **Compound Circuits**

Purpose:
1. To calculate the voltages and currents for individual resistors in a compound circuit.
2. To calculate the actual equivalent resistance of a compound circuit.
3. To calculate the ideal equivalent resistance of a compound circuit.
4. To determine what happens to voltage, current and resistance in a compound circuit.
5. To apply the ideas of conservation of charge and conservation of energy to a compound circuit.

Procedure:
1. Hook up the circuit shown in the diagram below.
2. Set the power supply for about 1 volt.
3. Measure the current and voltage for each resistor in the circuit and record in the data table.
4. Measure the total voltage and total current using your portable meters.

Remember: Ammeters are connected in series. Voltmeters are connected in parallel.

Circuit 1 Diagram:



Data:

	R	V	I
R_1	2 Ω		
R_2	5 Ω		
R_3	2 Ω		

$V_{power\ supply}$	
$I_{power\ supply}$	

Questions:
1. The current in R_1 should have been the same as the current leaving the power supply. Why?

2. The current going through R_1 should have been equal to the sum of the current in R_2 and R_3. Why?

3. The voltages of two resistors should be the same. Which two are they and why should they be the same?

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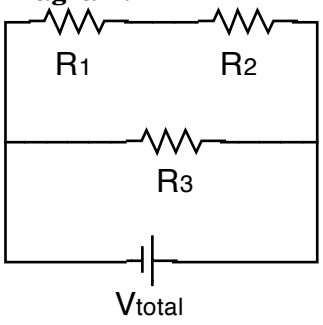
Circuit 2 Diagram:



Data:

	R	V	I
R_1	2 Ω		
R_2	5 Ω		
R_3	2 Ω		

$V_{power\ supply}$	
$I_{power\ supply}$	

Questions:

1. The voltage of R_3 should be the same as the voltage of the power supply. Why?

2. The currents through R_1 and R_2 should be the same. Why is that?

3. How does the current leaving the power supply compare to the currents through the top branch and the bottom branch of the circuit?