15 Electrodynamics

Name_____

Worksheet A: SERIES CIRCUIT PROBLEMS

Inquiry Physics

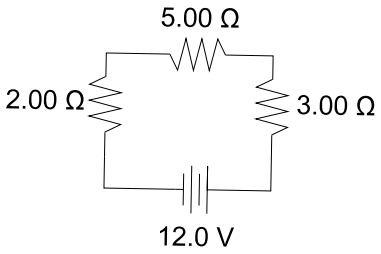
BE CAREFUL TO USE PROPER SIGNIFICANT FIGURES ON ALL ANSWERS

1. What would be the required voltage of an energy source in a circuit with a current of 10.0 A and a resistance of 11.0 Ω?

2. **Three** 1.50 V batteries are connected to form the energy source of a series circuit. The total resistance in the circuit is 100 Ω. How much current moves through the circuit?

3. What is the total resistance of the circuit shown in the diagram at right?

4. How much current moves through the 5.00 Ω resistor in that circuit?



5. How much voltage is dropped across the 5.00 Ω resistor? (Remember, you **must** use Ohm's Law to get the correct voltage drop.)

6. How much voltage is dropped across the 2.00 Ω resistor?

7. How much voltage is dropped across the 3.00 Ω resistor?

8. Show the **total** of the above three answers in the space below. It should match the battery voltage. If it doesn't, you need to go back and rework problems 5, 6, and 7.

9. The circuit shown below has three numbered resistors, three voltmeters, and an ammeter positioned as shown. Use Ohm's Law and the properties of series circuits to complete the table. (Hint: One way to avoid rounding errors is to place any unrounded numbers outside the table near the rounded ones you place in the boxes. **Make sure your box entries have 3 significant figures.**)

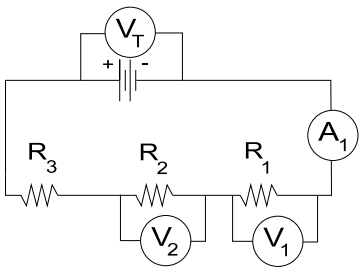


Diagram Position	Voltage (V)	Current (A)	Resistance (Ω)
1	6.00	0.0100	
2	4.00		
3			
Total	15.0		