

Name: _____ Partner: _____ PH2223 - ____

Experiment Sheet for Simple Circuits

Part 1: “The Simplest of Circuits” $I_{in} =$ _____ A $I_{out} =$ _____ A

The current coming into the resistor was _____ (much greater, approximately equal, much less) than/to the current coming out of the resistor.

Measured voltage across resistor: $V_{measured} =$ _____

Calculated current through the resistor: $I_{calc} =$ _____

Was your calculated current different than your measured current? _____ If so, why?

Part 2: “A Series Circuit”

Resistor	Predicted		Measured	
	ΔV (V)	I (A)	ΔV (V)	I (A)
Series 1: 100 Ω				
Series 1: 100 Ω				
Series 2: 100 Ω				
Series 2: 200 Ω				
Series 3: 100 Ω				
Series 3: 300 Ω				

Sample calculations: Show your calculations for the “Series 2” circuit for both current and voltages.

Questions:

1. You should have gotten different voltages for different values of resistance in your series circuits. Explain why.

2. You should have measured the same current everywhere in your series circuits. Explain why.

Part 3: “A Parallel Circuit”

$$I_{\text{upstream}} = \text{_____ A} \quad I_{\text{branch } 100} = \text{_____ A} \quad I_{\text{branch } 200} = \text{_____ A}$$

$$\Delta V_{100\Omega} = \text{_____ v} \quad \Delta V_{200\Omega} = \text{_____ v}$$

Questions:

1. Did $I_1 + I_2$ approximately equal I_{upstream} ? _____ If not then you've done something wrong and you need to re-do it.

2. Why was the current different in the two branches? Furthermore, how can you predict which branch should have the most and least resistance just by looking at the circuit (without needing to measure)?

3. Was the potential difference across the 200Ω resistor greater than, less than, or approximately equal to the potential difference across the 100Ω resistor? Explain why?

Parallel circuit potential difference and current values

Resistor	Predicted		Measured	
	ΔV (V)	I (A)	ΔV (V)	I (A)
Para. 1: 100 Ω				
Para. 1: 100 Ω				
Para. 2: 100 Ω				
Para. 2: 300 Ω				

Sample Calculations: Show your calculations for the currents from the last circuit in the table above (the 100 and 300 Ω parallel circuit).

Part 4: “A More Complex Circuit”

Resistor (Ω)	Predicted		Measured	
	ΔV (V)	I (A)	ΔV (V)	I (A)

Sample Calculations: Show your calculations for the currents and voltages from this “more complex circuit.”