Name _____ Date _____ Period _____

LAB: Voltage in Electrical Circuits (Ohm Zone)

CHAPTER 35: ELECTRIC CIRCUITS

Objective: Construct a Series Circuit with four loads (lamps) and measure voltage and current in the circuit. Identify the Series Circuit rules for current and voltage.

Procedure:

1. Log on to the following web site: http://www.article19.com/shockwave/oz.htm
2. Make sure to complete each section and questions before you move on.

Part I: SERIES CIRCUITS: Construct a **series circuit** with four lamps, a single battery, connecting wires, and a single switch. Draw a **schematic diagram** of the circuit you built - BE SURE TO USE SCHEMATIC SYMBOLS! .

Have your instructor view and stamp your circuits before continuing and initial your worksheet.

Measurements: Voltage : Place the **voltmeter** to measure the source voltage from the battery. Record the total voltage below. Move the voltmeter to each lamp and record the voltage drop across each lamp.

Vs = total Voltage from the battery = _____ Volts		
Location	**Voltage (Volts)**	
Lamp #1		V_1
Lamp #2		V_2
Lamp #3		V_3
Lamp #4		V_4
V_t = Sum of Voltage drops across each lamp $(V_1 + V_2 + V_3 + V_4)$ = _____Volts		

Question 1: What is the relationship between the Source Voltage (***Vs***) and the Sum of voltage drops across each lamp (***Vt***)?

Question 2: Do you agree for a series circuit that ***Vs = V1 + V2 + V3 + V4 + ……***?

Part II: PARRALLEL CIRCUITS: Construct a **Parallel circuit** with four lamps, a single battery, connecting wires, and a single switch. **Draw** a schematic diagram of the circuit you built - BE SURE TO USE SCHEMATIC SYMBOLS!

 *Have your instructor view and stamp your circuits before continuing and initial your worksheet.*

Measurements: Voltage: Place the **voltmeter** to measure the source voltage from the battery. Record the total voltage below. Move the voltmeter to each lamp and record the voltage drop across each lamp.

Vs = total Voltage from the battery is _____ Volts		
Location	**Voltage (Volts)**	
Lamp #1		V_1
Lamp #2		V_2
Lamp #3		V_3
Lamp #4		V_4
$\boldsymbol{V_t} = V_1 = V_2 = V_3 = V_4 = \ldots.$		

Question 3: What is the relationship between the Source Voltage (**Vs**) and the voltage drops across each lamp (**Vt**)?

Question 4: Do you agree for a series circuit that $Vs = V_1 = V_2 = V_3 = V_4 + \ldots\ldots$?

Summary Questions:

Question 5: How is a **voltmeter** inserted into a circuit to measure voltage?

Question 6: How are the **voltage** measurements different when bulbs are connected in **series** or in **parallel** circuits?

Question 7: Parallel circuits are used in homes to connect lamps. State two reasons why.