Name:

Ohms Law Worksheet

Purpose: To investigate Ohm's Law using 100Ω resistors and a 9V power source by connecting the resistors in series and in parallel.

Procedure:

1) Connect the first 100Ω resistor to the 9V battery.

- What is the voltage across the resistor?
- Calculate the current through the resistor.

Connect the second 100Ω resistor to the first *in series*.
- What is the new effective resistance?
- What is the voltage across each resistor?
- Calculate the current through each resistor.

Repeat for 3 resistors in series.

2) Connect the first 100Ω resistor to the 9V battery. Connect the second 100Ω resistor to the first *in parallel*.

- What is the new effective resistance of the 2 resistors?
- What is the voltage across each resistor?
- Calculate the current through each resistor.

Repeat for 3 resistors in parallel.

1) Series Circuit: $V = I \times R \qquad I = I_1 = I_2 = \ldots$

$V = V_1 + V_2 + \ldots$

$R = R_1 + R_2 + \ldots$

One Resistor:

Resistance: R = _____ Ω

Resistance (Ω)	Voltage (V)	Current (A)

V = _____ **V** I = _____A

Two Resistors:

Effective Resistance: R = _____ Ω

Resistor #	Voltage across (V)	Current through (A)
1		
2		

V = _____ V I = _____A

Three Resistors:

Effective resistance: R = _____ Ω

Resistor #	Voltage Across (V)	Current through (A)
1		
2		
3		

V = _____ V I = _____A

2) Parallel Circuit: $V = I \times R$ $\qquad V = V_1 = V_2 = \ldots$

$$I = I_1 + I_2 + \ldots$$

$$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \ldots \Rightarrow R = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2} + \ldots}$$

One Resistor:

Resistance: R = _____ Ω

Resistance (Ω)	Voltage (V)	Current (A)

V = _____ **V** I = _____A

Two Resistors:

Effective Resistance: R = _____ Ω

Resistor #	Voltage across (V)	Current through (A)
1		
2		

V = _____V I = _____A

Three Resistors:

Effective Resistance: R = _____ Ω

Resistor #	Voltage Across (V)	Current through (A)
1		
2		
3		

V = _____V I = _____A