

# Multi-Meter Worksheet

## Measuring Voltage

### Battery Measurements

9 Volt: \_\_\_\_\_

AA: \_\_\_\_\_

AAA: \_\_\_\_\_

Explain your results (ie did the 9 Volt Battery actually measure 9 Volts) Why or Why Not?

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What was the result when the black and red leads were reversed? Could this lead to errors later on? Why/Why Not?

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### Wire Setup 1

Measured the voltage: \_\_\_\_\_

Did the voltage increase, decrease or remain the same? Why?

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Research the cause of the result from the above question and explain.

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### Wire Setup 2

Measured the voltage: \_\_\_\_\_

Did the voltage increase, decrease or remain the same? Why?

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Research the cause of the result from the above question and explain.

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# Measuring Resistors

1. Using the color Code Chart state what each resistor is from the kit

- Colors Size in Ohms
- a. Resistor 1: \_\_\_\_\_
- b. Resistor 2: \_\_\_\_\_
- c. Resistor 3: \_\_\_\_\_

**4-Band-Code**

2%, 5%, 10% 560k Ω ± 5%

COLOR	1 <sup>ST</sup> BAND	2 <sup>ND</sup> BAND	3 <sup>RD</sup> BAND	MULTIPLIER	TOLERANCE
Black	0	0	0	1Ω	
Brown	1	1	1	10Ω	± 1% (F)
Red	2	2	2	100Ω	± 2% (G)
Orange	3	3	3	1KΩ	
Yellow	4	4	4	10KΩ	
Green	5	5	5	100KΩ	± 0.5% (D)
Blue	6	6	6	1MΩ	± 0.25% (C)
Violet	7	7	7	10MΩ	± 0.10% (B)
Grey	8	8	8	100MΩ	± 0.05%
White	9	9	9	1GΩ	
Gold				0.1Ω	± 5% (J)
Silver				0.01Ω	± 10% (K)

**5-Band-Code**

0.1%, 0.25%, 0.5%, 1% 237 Ω ± 1%

Using a Multi-Meter Measure the three resistors and record the size

- a. Resistor 1: \_\_\_\_\_
- b. Resistor 2: \_\_\_\_\_
- c. Resistor 3: \_\_\_\_\_

2. Photoresistor

- a. Set the Multi Meter to Variable Setting
- b. Measure the Photoresistor with the end NOT Covered  
Value: \_\_\_\_\_
- c. Cover the Photoresistor end and measure  
Value: \_\_\_\_\_

d. Were you able to get a value of 0 Ohms when the Photoresistor end was covered? If so how did you do it? If not why do you think you were not able to get a value of 0 Ohms?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

e. Describe a current application of Photoresistor currently.

\_\_\_\_\_

## Measuring Current

Calculate the current for a circuit with a 9Volt Battery and a 220 Ohm Resistor: \_\_\_\_\_

Calculate the current using a measured value from the Multi-Meter of the 9Volt Battery and 220 Ohm Resistor: \_\_\_\_\_

Measured the Current using a Multi-Meter: \_\_\_\_\_

Did the Current Value measure up on the three options or were they different? Explain your answer? \_\_\_\_\_

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## Series Circuit

Calculate the Current for a circuit that has a 9Volt battery and a 220 Ohm and 430 Ohm Resistor in series: \_\_\_\_\_

Multi-Meter: Build the circuit and Measure the current using a Multi-Meter: \_\_\_\_\_

Were the measurements the same? Why/Why Not? \_\_\_\_\_

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Measure the following electrical components independently using a Multi-Meter

9 Volt Battery: \_\_\_\_\_ V

220 Ohm Resistor: \_\_\_\_\_ Ohms

430 Ohm Resistor: \_\_\_\_\_ Ohms

Calculate Current of the Circuit based on these values: \_\_\_\_\_

How does this new calculated value compare to the measured value: (Explain your answer) \_\_\_\_\_

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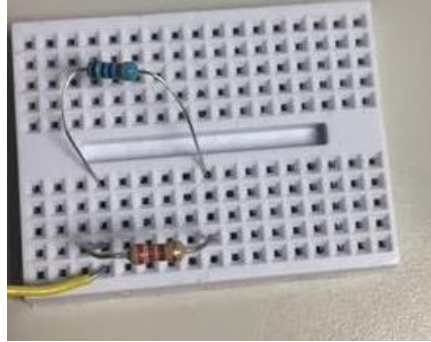
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## Parallel Circuit

Calculate the Current for a circuit that has a 9Volt battery and a 220 Ohm and 430 Ohm Resistor in Parallel:

- 220 Ohm Resistor: \_\_\_\_\_
- 430 Ohm Resistor: \_\_\_\_\_
- Total Current of Circuit: \_\_\_\_\_



Multi-Meter: Build the circuit and Measure the current at each resistor using a Multi-Meter:

- 220 Ohm Resistor: \_\_\_\_\_
- 430 Ohm Resistor: \_\_\_\_\_
- Total Current (Add the Two together): \_\_\_\_\_

Were the measurements the same? Why/Why Not? \_\_\_\_\_

Measure the following electrical components independently using a Multi-Meter

9 Volt Battery: \_\_\_\_\_ V

220 Ohm Resistor: \_\_\_\_\_ Ohms

430 Ohm Resistor: \_\_\_\_\_ Ohms

Calculate Current of the Circuit based on measured values above:

- 220 Ohm Resistor: \_\_\_\_\_
- 430 Ohm Resistor: \_\_\_\_\_
- Total Current (Add the Two together): \_\_\_\_\_

How does this new calculated value compare to the measured value: (Explain your answer) \_\_\_\_\_

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