**Investigation: Prove Ohm’s Law!!**

*The mathematical relationship comparing voltage (V), current (I), and resistance (R) is called Ohm’s law and is written as:* ***R = V/I****, or more commonly as* ***V = IR****. Your task is to design an experiment (using the circuit equipment) to prove this relationship is correct!*

**a)Purpose:** In your own words, explain what the purpose of your investigation is. **/2**

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**b)Designing the Investigation:**

**Variables**

* **Independent Variable**: Choose which variable you will manipulate and be specific on how you will change it. Circle one of the following options. **/2**

a) voltage of source

b) voltage rating of lightbulb

c) value/number of resistors

*How* will you ‘manipulate’ this variable and *how many* different variations/trials will you have (minimum 3)?

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* **Dependent Variable:** *What* will you be measuring for your dependent variable and *how* will you measure it**? /2**

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* **Controlled Variable:** What is one variable that is staying consistent throughout your investigation?

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**c)Hypothesis**: This should be written as an “if” “then” statement. In order to write your hypothesis, you need to refer to your independent and dependent variables(see below for an example of how the different variables appear in an if/then hypothesis!): **/3**

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| ***\*\*EXAMPLE OF HYPOTHESIS AND VARIABLES\*\*:*** ***Hypothesis****:* ***If*** *I raise the temperature of a cup of water,* ***then*** *the amount of sugar that can be dissolved in it will be increased.* ***Independent variable:*** *temperature of the water****Dependent variable:*** *the amount of sugar that gets dissolved****Controlled variables:*** *amount of water used, type of sugar used etc.*  |

**d)Data/Results/Calculations:**

1. Use the **Data Table** to record your Results. Don’t forget to list your independent and dependent variable in the table. You should have gathered ***at least*** 3 data points meaning that you are manipulating your independent variable 3 times. **/2**

**Table 1:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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| --- | --- | --- |
| **Trial** | **Independent Variable:**  | **Dependent Variable:**  |
| **1** |  |  |
| **2** |  |  |
| **3** |  |  |
| **4** |  |  |
| **5** |  |  |
| **6** |  |  |

**Calculations:** Use the data you gathered to prove the relationship between voltage, current and resistance expressed in Ohm’s law: V = IR. **BE THOROUGH IN YOUR CALCULATIONS!**  **/4**

**e)Conclusion:**

In a paragraph, include the following: a) state whether your hypothesis was correct or incorrect b) provide evidence from your calculations show if your hypothesis was correct or incorrect c) describe some possible errors in your data that may have kept you from getting more accurate results. **/4**

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