**“Guitar” Lab—Factors that Affect the Resistance of Wires**

**Necessary Info:** Metals are made up of atoms. The atoms are in constant motion. Electricity is when the electrons of the metal atoms move freely along the **surface** of the piece of metal.

Draw a series circuit on the board below showing an ammeter and light bulb:

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**Part 1 Effect of nature of the metal on conductivity**

**Independent Variable \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Dependent Variable \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Constants**

|  |  |  |  |
| --- | --- | --- | --- |
| **Wire Type** | **Gauge #** | **X-Sectional Area (“Thickness”)** | **Current Reading ( )** |
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|  |  |  |  |

**Conclusion**

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**Part 2: Effect of Gauge # / Thickness on the Conductivity of a Wire**

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| **Wire** | **Gauge #** | **X-Sectional Area (“Thickness”)** | **Current Reading ( )** |
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**Independent Variable \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Dependent Variable \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Constants**

**Conclusion re Gauge #**

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**Conclusion re X-Sectional Area (“thickness”)**

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**Part 3: Effect of Length on the Conductivity of a Wire**

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| **Wire** | **Gauge #** | **Length (cm)** | **Current Reading ( )** |
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**Independent Variable \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Dependent Variable \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Constants**

**Conclusion re Length**

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**Part 4 Effect of Temperature of the metal on conductivity**

**↑T = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ because \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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