**Science 9 – Resistors, Resistance, Ohm’s Law (Current Electricity Notes 4)**

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| **What are Resistors?*** A resistor is part of an electric circuit that \_\_\_\_\_\_\_\_\_\_\_\_\_\_ the flow of electric **current**.
* Symbol for a resistor:
* We put resistors in a circuit in order to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the amount of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ going into different parts of a device.
* As current flows through a device/resistor, some of the electrical energy is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ into another form, such as \_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_ energy.
* Every device in a circuit has some amount of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, even the \_\_\_\_\_\_\_\_\_\_\_\_\_!!!
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| **Resistance and the Ohm (Ω)Diagram  Description automatically generated*** Resistance is expressed using **\_\_\_\_\_\_\_\_\_ (Ω).**
* The higher the value, the greater the resistance. (E.g. 10 Ω will resist current more than 2 Ω.)
* When a resistor is connected to an electric cell, the amount of **\_\_\_\_\_\_\_\_\_\_\_** that flows through the circuit depends on **the amount of resistance**
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| **Resistor Colour Code*** **Table  Description automatically generated**Each resistor has a 4-band colour code that indicates resistance.
* Resistance can be determined from the three \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ colours.

Example: Determine the resistance of the resistor below with **Brown**, **Green** and **Red** colour bands.**Calendar  Description automatically generated** |
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| The value of a resistor is 230 Ω. What are the first three bands of colour on this resistor?  | The value of this resistor is 6400 Ω. What are the first three bands of colour on this resistor?  |

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| **Ohm’s Law*** The relationship between **voltage, current and resistance** is given by Ohm’s Law: $V=IR$
* **Voltage** (V) = **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** (I) x **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** (R)

 Volts (V) amps (A) ohms (Ω)* The greater the resistance, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the current.
* The lower the resistance, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the current.
* $resistance=voltage÷current$ or $R=\frac{V}{I}$
* $current=voltage÷resistance$ or $I=\frac{V}{R}$

Practise with Ohm’s Law:  |
| Example 1)A current of 2.5 mA flows through a resistor when connected to a 16 V power supply.What is the value of this resistor?  |
| Example 2)What is the current produced by a potential difference of 240 volts through a resistance of 0.2 ohms? |