**OHM’S LAW AND LED**

WORKSHEET

**GOALS**

To confirm

* that Ohm’s Law is not valid on a LED

**DISTANT ACTIVITY**

* Connect with the site: http:// e-science.web.auth.gr/circuits
* Click on the tab “Experiment” and connect with your own username and password (if you do not have you can sign in)
* Choose experiment 1 or 3 (Blue or Red LED)
* Fill in the matrix I

Matrix I

|  |  |  |  |
| --- | --- | --- | --- |
| # | Voltage(Volt) | Electric Current(mA) | Ratio($\frac{V}{I}$) |
| 1 | 0.1 | I1= | ($\frac{V}{I})$1= |
| 2 | 0.2 | I2= | ($\frac{V}{I})$2= |
| 3 | 0.3 | I3= | ($\frac{V}{I})$3= |
| 4 | 0.4 | I4= | ($\frac{V}{I})$4= |
| 5 | 0.5 | I5= | ($\frac{V}{I})$5= |
| 6 | 0.6 | I6= | ($\frac{V}{I})$6= |
| 7 | 0.7 | I7= | ($\frac{V}{I})$7= |
| 8 | 0.8 | I8= | ($\frac{V}{I})$8= |
| 9 | 0.9 | I9= | ($\frac{V}{I})$9= |
| 10 | 1 | I10= | ($\frac{V}{I})$10= |
| 11 | 1.1 | I11= | ($\frac{V}{I})$11= |
| 12 | 1.2 | I12= | ($\frac{V}{I})$12= |
| 13 | 1.3 | I13= | ($\frac{V}{I})$13= |
| 14 | 1.4 | I14= | ($\frac{V}{I})$14= |
| 15 | 1.5 | I15= | ($\frac{V}{I})$15= |
| 16 | 1.6 | I16= | ($\frac{V}{I})$16= |
| 17 | 1.7 | I17= | ($\frac{V}{I})$17= |
| 18 | 1.8 | I18= | ($\frac{V}{I})$18= |
| 19 | 1.9 | I19= | ($\frac{V}{I})$19= |
| 20 | 2 | I20= | ($\frac{V}{I})$20= |
| 21 | 2.1 | I21= | ($\frac{V}{I})$21= |
| 22 | 2.2 | I22= | ($\frac{V}{I})$22= |
| 23 | 2.3 | I23= | ($\frac{V}{I})$23= |
| 24 | 2.4 | I24= | ($\frac{V}{I})$24= |
| 25 | 2.5 | I25= | ($\frac{V}{I})$25= |
| 26 | 2.6 | I26= | ($\frac{V}{I})$26= |
| 27 | 2.7 | I27= | ($\frac{V}{I})$27= |
| 28 | 2.8 | I28= | ($\frac{V}{I})$28= |
| 29 | 2.9 | I29= | ($\frac{V}{I})$29= |
| 30 | 3 | I30= | ($\frac{V}{I})$30= |
|  |  |

**DATA ANALYSIS**

* Place the (V,I) values from Matrix I on the diagram below
* Draw the V – I curve which better fits the points.

**THINK**

α. The ($\frac{V}{I}) $ratio as you can observe from Matrix I seem to be

 i. constant ii. no constant

b. The diagram V-I that we constructed for a LED (does / does not) ……………………… seem to be a straight line. On the contrary for an ohmic element the same diagram ……………………… (is / is not) a straight line. That means that LED do not follow ……………………… law.

**Help us to improve ourselves!**

**Answer to the questionnaire!**