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| **Worksheet for Lab on Inverse Square Law** | **Name** |  |
|  |  |  |
|  | **Date** |  |

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|  | **Partner #1** |  |
|  |  |  |
|  | **Partner #2** |  |

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| **Experiment #1 – Visible Light** |
|  |
| **Complete and fill in Data Table 01** |
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| --- | --- | --- | --- | --- |
| **Location of Light Source (m)** |  |  |  |  |
|  |  |  |  |  |
| **Location of Light Sensor (m)** | **Distance (m)** | **Light Intensity (%)** | **Ln(d)** | **Ln(I)** |
|  |  |  |  |  |
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 |
| **From the data above produce a plot of Intensity vs. Distance, with no trendline added. Be sure the plot has properly formatted axis labels and a plot title.** |
|  |
| **From the data above produce a plot of Ln(Intensity) vs. Ln(Distance) with a properly formatted trendline added. Be sure the plot has properly formatted axis labels and a plot title.** |
|  |
| **Complete the table Data Table 02 below.** |
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|  |  |  |  |  |
| **Slope from Ln-Ln Plot** |  |  | **% error slope** |  |
|  |  |  |  |  |
| **y-intercept (b) from Ln-Ln Plot** |  |  |  |

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| **Experiment #2 – Theoretical Determination of Electrical Charge** |
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| **Complete and fill in Data Table 03** |
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| --- | --- | --- | --- |
| **d (m)** | **Force (N)** | **Ln(d)** | **Ln(F)** |
| 0.15 | 2.70 |  |  |
| 0.23 | 1.15 |  |  |
| 0.41 | 0.36 |  |  |
| 0.49 | 0.25 |  |  |
| 0.55 | 0.20 |  |  |
| 0.7 | 0.12 |  |  |
| 0.76 | 0.11 |  |  |
| 0.84 | 0.09 |  |  |
| 0.96 | 0.07 |  |  |

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|  |
| **Produce a plot of Electric Force vs. Distance, with no trendline added. Be sure the plot has properly formatted axis labels and a plot title.** |
|  |
| **above produce a plot of Ln(Force) vs. Ln(Distance) with a properly formatted trendline added. Be sure the plot has properly formatted axis labels and a plot title.** |
|  |
| **Complete the table Data Table 04 below.** |
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|  |  |  |  |  |
| **Slope from Ln-Ln Plot** |  |  | **% error slope** |  |
|  |  |  |  |  |
|  |  |  |  |  |
| **Q used to create data** |  |  |  |
|  |  |  |  |  |

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| **Below Show your work for how you solve for Q from the ln-ln plot and its trendline:** |
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