Hooke’s Law Exploration

Purpose: Kind the spring constant, “k”.

Data:

|  |  |  |
| --- | --- | --- |
| Force (N) | Displacement (m) | Mass (g) |
| 0.00098 | 0.25 | 25 |
| 0.00294 | 0.5 | 50 |
| 0.00686 | 0.75 | 75 |
| 0.01176 | 1 | 100 |
| 0.01862 | 1.25 | 125 |
| 0.02744 | 1.5 | 150 |
| 0.0343 | 1.75 | 175 |
| 0.0441 | 2 | 200 |
| 0.05096 | 2.25 | 225 |
| 0.0588 | 2.5 | 250 |

Graph:

Conclusion:

After conducting the exploration and measuring the displacement of the spring with various weights ranging from 25 grams to 250 grams, I was able to determine the spring constant “k” using Hooke’s Law, F= -kx, and the slope of a graph of force vs. displacement. When we fit a best fit line to the data we obtained, we found that the slope of the line, or the spring constant, is equal to 36.077 N/m.