Hooke’s Law Exploration

Purpose: To find K Value (the spring constant stiffness).

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:

During my exploration to find K, I used weights ranging from 0 grams to 250 grams increasing in intervals of 25 grams. Each time I lowered the weight attached to the spring I measured the displacement from the spring’s initial position. The weight held by the spring equaled the force (N) which could be used with the displacement (m) to find K through graphical analysis. Therefore, I graphed F=-Kx with force vs. displacement in order to find the slope of the equation, which was K. Using the graph to find the slope, the value of K turned out to be 36.077 N/m.