Experiment Number 2: Spring mass system

For a certain spring mass system, the following is the data while the masses have been changed. Using these data find the spring constant of the spring. Also verify it graphically

|  |  |  |
| --- | --- | --- |
| Mass (g) | Extension (x) cm | |
| Loading | Unloading |
| W | 1.5 | 1.4 |
| W+50 | 2.9 | 3 |
| W+100 | 4.3 | 4.3 |
| W+150 | 5.7 | 5.7 |
| W+200 | 7.1 | 7.2 |
| W+250 | 8.5 | 8.5 |

The Time for 20 oscillations for three different spring mass systems is given below. Calculate the frequency of oscillations for the three systems theoretically and compare it with experimental value.

|  |  |  |  |
| --- | --- | --- | --- |
| Spring | Mass (kg) | Extension (x) cm (zero on scale is ref reading for each case) | Time for 20 oscillations (s) |
| Spring 1 | 1 | 13.6 | 14.70 |
| Spring 2 | 1 | 9.9 | 12.60 |
| Both in series | 1 | 23.5 | 19.30 |