

# [Physics a - lab report example](https://assignbuster.com/physics-a-lab-report-example/)

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## Physics A

Physics Lab A Summary Sheet Objective The aim of this experiment was to ascertain how period of two Simple Harmonic oscillators (pendulum and spring mass system) differ with diverse parameters.   
Method   
This entailed conducting both pendulum and spring experiments separately to determine their behaviors especially when subjected to diverse parameters. These parameters included varied lengths, angles, and weights both the both the pendulum as well as spring respectively.   
Results   
Spring and pendulum varied directly with the parameters applied though slight errors emerged during the experiments. These were due to either slight distortions of the equipments or errors when talking measurements.   
Applications   
The application of these experiments is immensely in the fabrication sectors where engineers construct diverse models to come up with refined designs meant to construct real machines and objects.   
Graphs   
This section features two graphs;   
Weight vs. Extension Graph (F = kx)   
Length of the string used (m) vs. Period   
Simple Harmonic experiment   
Objective:   
The aim of this experiment was to ascertain how period of two Simple Harmonic oscillators (pendulum and spring mass system) differ with diverse parameters.   
Apparatus   
Simple pendulum   
Supporting rod, clamp, hook for suspending spring and short rod   
2 M stick with Vernier caliper jaws   
Cylindrical spring type   
Weights (100g, 200g, 300g, 500g)   
Stop watch or stop clock   
Triple beam balance   
Method   
Procedure   
Pendulum experiment   
The first step was to measure the diameter of the metal sphere (2. 5cm) and hanging it from a support with a string of length 0. 6m before displacing it at an angle of 50. Then timing of 50 oscillations followed together with recording of the attained results.   
Second step entailed repetition of the initial step but with varying lengths (0. 8m, 1. 0m, 1. 2m, 1. 4m and 1. 6m) coupled with recording oscillations after every 25 vibrations instead of 50 as it was in the first procedure.   
Using a 0. 5m length string and tilted at diverse angles (00, 300 and 450) for 50 oscillations, results were tabulated in table.   
Spring mass experiment   
This experiment entailed hanging the spring instead of string from the support with varying masses at its base (0. 1kg, 0. 2kg, 0. 3kg, 0. 4kg and 0. 5kg). Then displacing each mass in turn from their middle positions, measuring their displacements and tabulating them in a table.   
Results   
Diameter of the sphere = 2. 55 cm   
Radius of the sphere = 1. 275 cm   
Table 1: Pendulum statistics   
Length of the string used (cm)   
Length of the string used (m)   
Length of pendulum   
No. of vibrations   
Time   
Period   
Square of period   
58. 7   
0. 587   
60   
50   
77. 545   
1. 551   
2. 405   
78. 7   
0. 787   
80   
50   
89. 34   
1. 787   
3. 193   
98. 7   
0. 987   
100   
50   
99. 65   
1. 993   
3. 972   
118. 7   
1. 187   
120   
25   
55. 14   
2. 206   
4. 864   
138. 7   
1. 387   
140   
25   
59. 8   
2. 392   
5. 722   
158. 7   
1. 587   
160   
25   
63. 27   
2. 531   
6. 406   
Value of g from the slope = 9. 7w/s   
Percent error   
Normal earth’s pull = 9. 8w/s   
Then, % deviation = (9. 8-9. 7)/9. 8   
= 1. 02   
Length of the string used = 48. 7 cm Length of pendulum = 51. 2 (48. 7 + 2. 5)   
Table 2: Pendulum statistics   
Initial displacement of sphere   
Number of vibrations   
Time   
Period   
Square of period   
50   
50   
71. 14   
1. 422   
2. 024   
300   
50   
71. 87   
1. 437   
2. 066   
450   
50   
73. 61   
1. 472   
2. 167   
Per 0. 25g, Converting to Newtons multiply by 9. 81, Free extension = 6. 47 cm.   
Table 3: Spring statistics   
Mass suspended from the spring (Kg)   
Weight (N)   
Force stretching spring (g)   
Scale reading   
Elongation (cm)   
0   
0   
0   
6. 47   
0   
0. 1   
0. 981   
100   
10. 28   
3. 81   
0. 2   
1. 962   
200   
14   
7. 53   
0. 3   
2. 943   
300   
17. 95   
11. 48   
0. 4   
3. 924   
400   
21. 8   
15. 33   
0. 5   
4. 905   
500   
25. 45   
18. 98   
Mass of the spring = 9g, Force constant of the spring = 3. 914n/m   
Table 4: Spring Readings   
Mass suspended from the spring (kg)   
Mass of the vibrating system (g)   
Amplitude of vibration   
Time for 50 vibrations   
Period   
Percent discrepancy   
Experimental value   
Calculated value   
0. 2   
209   
5   
28. 29   
0. 135   
1. 641   
11. 2   
0. 2   
209   
10   
28. 68   
0. 137   
1. 641   
11. 2   
0. 5   
509   
5   
44. 30   
0. 087   
2. 593   
28. 8   
Applications:   
The application of these experiments is immensely in the fabrication sectors where engineers construct diverse models to come up with refined designs meant to construct real machines and objects. This is to minimize losses, which could have occurred if the specialists ignored small tests in determining how the real design will work.   
Graphs   
Table 5: Periods Squared (P2) vs. Pendulums Lengths (L)   
Table 6: Elongation (E) vs. Weight (W)   
Work Cited   
Serway, Raymond A., Faughn, Jerry S. & Chris, Vuille. College Physics. Boston, Mass: Brooks/Cole, Cengage Learning, 2011. Print.