

Simple Harmonic Motion

As you work through the steps in the lab procedure, record your experimental values and the results on this worksheet. Use the exact values you record for your data to make later calculations.

Procedure A: Determining spring constant using Hooke's law

Complete the table below.

Data Table 1

Total Added Mass (kg)	Scale Reading (m)

What is the slope of the plot of m versus y ?

What is the spring constant k ?

What is the percent uncertainty in k ?

CHECKPOINT 1: Ask your TA to check your table and Excel graph.

Procedure B: Determining spring constant from T^2 vs. m graph

What is the mass of your spring?

Enter the value of one-third the mass of your spring here.

For this experiment, do you need to add one-third the mass of the spring to the oscillating mass?

Complete the table below.

Data Table 2

Total Vibrating Mass (kg)	Time for 50 Vibrations (s)				Observed Period T (s)
	1	2	3	Average	

What is the slope of the plot of T^2 versus m ?

What is the spring constant k as determined from the slope?

What is the percent uncertainty in k ?

What is the percent difference between the two values of the spring constant? (Percent differences should not be rounded to one significant figure.)

Do your two values agree within experimental error? (Compare both of your percent uncertainties and your percent difference exactly as you have entered them.)

CHECKPOINT 2: Ask your TA to check your table values and calculations.

Procedure C: Simple Pendulum

Complete the table below. (Percent differences should not be rounded to one significant figure.)

Data Table 3

Length (cm)	Predicted Period (s)	Time for 50 vibrations (s)				Observed Period <i>T</i> (s)	% Difference
		1	2	3	Average		

CHECKPOINT 3: Ask your TA to check your table values and calculations.

Look at the values of L and T_{observed} in Data Table 3. Which of the following graphs correctly represents the relationship between T versus L ? (Note: The order of these options may be different in the WebAssign question.)

