

Rubric: Simple Harmonic Motion of a Mass on a Spring

Analysis Item	Points	Note
Calculations	4	$k = F/x$ $k = 4\pi^2m/T^2$
Graph F v. x	3	Linear trendline + equation
Graph $4\pi^2m$ v. T^2	3	Linear trendline + equation
% error	2	between mathematical stationary and mathematical oscillating k values AND between graphical stationary and graphical oscillating k values

Conclusion Item	Points	Note
Describe the simple harmonic motion of the oscillator using mathematical analysis	3	Reference Hookes Law and Period of Mass on a Spring equations. Explicitly, discuss values and trends of those values.
Describe the simple harmonic motion of the oscillator using graphical analysis	3	Reference the graphs and the trends of those graphs. Explicitly, discuss slopes.

Sources of Uncertainty Item	Points	Note
Error analysis	5	Compare mathematically derived k constants from stationary and oscillating experiments. Compare graphically derived k constants from stationary and oscillating experiments. Reference assumptions and how those could affect results. Friction would cause measured period to be more and k to be less. Spring mass would cause measured k to be higher. Large amplitude oscillations would cause k to be higher.
Accuracy	1	Define and explain.
Precision	1	Define and explain.