

Sample Lab Notebook


1. Notice the lab **Title, Date and Lab Partners** are given. Also the location of the on-line lab is noted.
2. This student also included notes on the background theory. You should take notes when the TA lectures!
3. The notebook is a place for **free-association or brainstorm writing**. This is **your** notebook; put anything into it that you deem necessary. Note the use of diagrams.
4. This student used his notebook to jot down his plan of attack. Any idea that popped into his head about the lab procedure, data tables or error analysis he wrote down. Also any unanswered questions he had were noted.
5. On another page, he recorded the raw data as it was taken. Never trust a computer to permanently store your data!
6. Finally, any mistakes written into the notebook were not blotted out or erased, but rather a single line through the mistake is all that is needed.

1/7/02

Properties of a Simple Pendulum

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web page: physicst.clemson.edu/chriso/labs/223/sample.html



Period, T : time to swing back & forth.
time for one oscillation

T is period not Tension!

Notes:
$$T = 2\pi \sqrt{\frac{L}{g}} \left(1 + \frac{1}{4} \sin^2 \frac{\theta}{2} + \frac{9}{16} \sin^4 \frac{\theta}{2} + \dots \right) \quad (1)$$

↑ infinite series

as $\theta \rightarrow$ large, T increases
for small θ , T is constant!

for small θ $T = 2\pi \sqrt{\frac{L}{g}} \quad (2)$

so for small θ , a pendulum is approximately a simple harmonic oscillator!

Cool! This is like a spring: $T = 2\pi \sqrt{m/k}$

Objective I

Find period by timing ~~one swing~~. NO!
use 10 swings, then divide time by 10!
much more accurate!

Is 10 enough?

find the cut-off angle \rightarrow for small θ , $T \rightarrow$ constant.

Make Data Table

T	θ
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no!

T_{10}	T	θ

$\therefore T$ vs θ graph showing a curve that levels off at small θ . The flat region is labeled "small $\theta \Rightarrow$ Const. T ".

use protractor to measure

? What is uncertainty of protractor measurement?