

AP Physics C: Summer Assignment

Other than going out to buy a lab notebook, this assignment should not take most of you more than 30 minutes.

- *Note 0: The goal of this course is not “passing the AP test”.
The goal is “critical thinking backed by solid, well-documented evidence and reasoning”.
- *Note 1: if you haven’t taken AS Physics here at M-A (or you talked somebody else into doing your AS Physics lab reports) please also do the **AS** Physics Summer Homework as the skills of that work will be needed from day 1. You can download that document from the *AS Physics* Documents page off my class web page at: tinyurl.com/C2physics
- *Note 2: if you will have no calculus experience by the start of school in August, (e.g., if you will not have completed AB Calc) please contact me before July 15th at jdecortins@seq.org.

Part 1: Stuff you need to get

A lab notebook: this needs to be **bound** (not “spiral”, not glued-in=flat spine) with “quadrille” (i.e. graph) paper pages that are at least 8½ by 11. It should **not** have alternating white/yellow pages. It should be soft cover, not hard cover. The little English “composition” books will not do.

Like This:



We will use these for ALL labs. They will function as a “lab diary”. In addition, many colleges require you to show this notebook before receiving college credit for AP Physics.

http://en.wikipedia.org/wiki/Lab_notebook

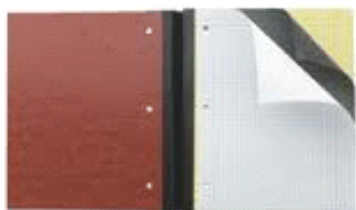
Here is a link to a very appropriate lab notebook (though I believe less expensive versions are available to those who shop around):

<http://www.shopleet.com/Roaring-Spring-Lab-Book/ROA77648/spdv>

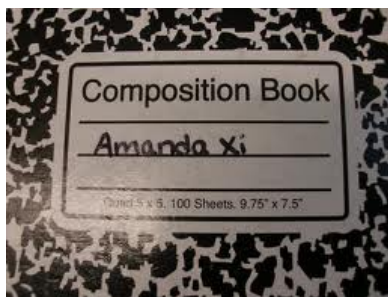
I think you can also find these things at: Stanford Bookstore and Village Stationers in Menlo Park.

What NOT to get:

NOT like this:



Alternate white/yellow for “carbon” copy



Composition book (too small, isn’t graph paper ruled)



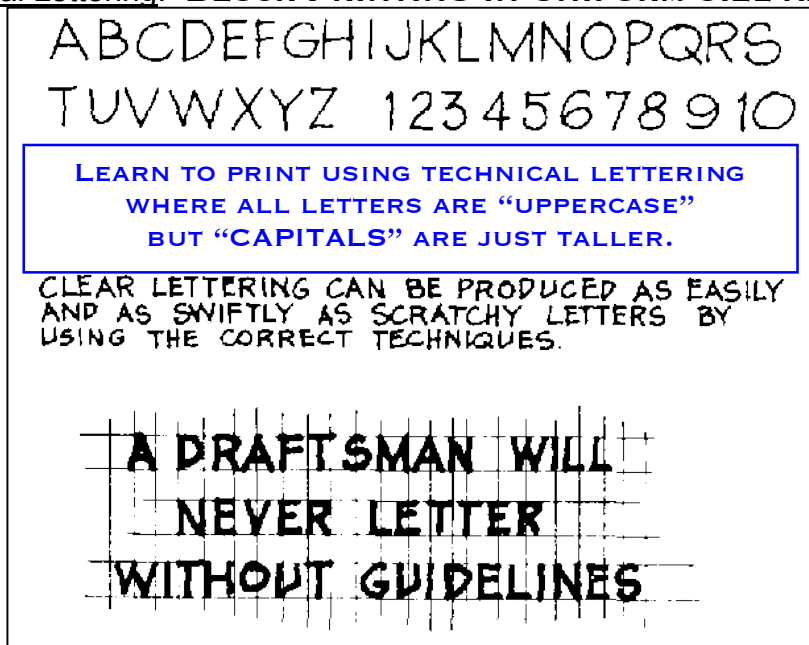
Pages not bound, will fall out

Please print your name in **BIG BOLD LETTERS** on the front cover of the book.

Part 1: Stuff you need to get (continued)

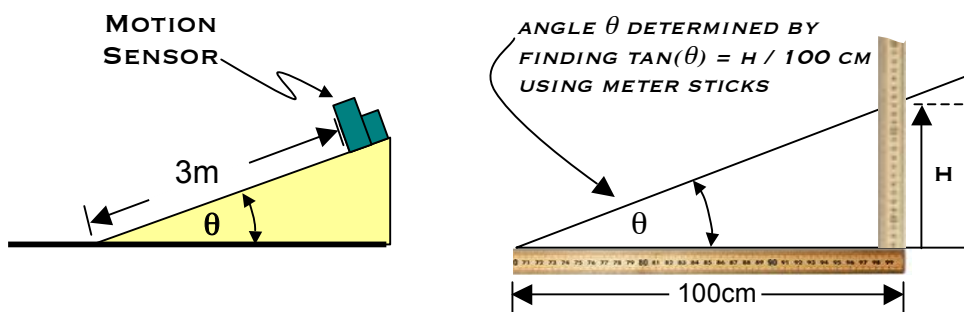
Lab books will serve as diaries for your lab work. As such you'll need to record technical detail by hand... in a form that is legible to other humans.

This requires you to have (or get) two skills:

(1) Technical Lettering: BLOCK PRINTING IN UNIFORM SIZE AND STYLE**(2) Technical Drawing: detailed lab setup diagrams with complete annotation**

Plan on using the following techniques for diagramming and annotating lab setups and problem situations. ALL DIAGRAMS MUST BE AT LEAST THE WIDTH OF A PAGE.

- use a ruler for all straight lines
- draw an *elevation view* (a view from front or side)... an example is here:
http://en.wikipedia.org/wiki/Multiview_orthographic_projection#Elevation
- show dimensions with $\longleftrightarrow$ markers at double-headed arrow ends (so limits are clear)
- designate angles with symbol or °value and double-arrow arc
- identify objects with descriptive text attached by curved or broken arrows
- show specific measurement techniques with tools and descriptive text
- use non-red ink (not pencil) for all work in lab book



Part 2: Stuff you need to do

Reminder: no calculus by August 15? contact me before July 15th at jdecortins@seq.org

Task 1:

Initialize page 1 in your lab notebook as shown here →

Your date may vary. Reserve next facing right-hand page (probably page 3) for additional Table of Contents entries. Do the actual drawing on the page after that... probably page 5. Your page numbers may vary.

AP PHYSICS C: MECHANICS TABLE OF CONTENTS		
PG#	DATE	ITEM NAME
5	4 JUL	TECH DRAWING PRACTICE

Task 2:

A lab experiment setup is shown in the photo below. In the lab we want to find the velocity of the cart when the spring (red, at lower right corner) is stretched various distances by pulling the cart back and releasing it. The force sensor is used to gather info on the spring's force constant. A photogate, placed at the cart location where the spring just begins to stretch, records the time interval during which the index card passes thru the gate, thus enabling a velocity calculation.

On page 5 of your lab notebook, please diagram this experiment's setup including annotation defining:

- all relevant variables
- all relevant objects
- any unique measurement techniques

You do not need to imagine every detail of this lab's execution. Only the actions mentioned in the introductory paragraph above. You may find it useful to draw the diagram in "landscape" mode (turning the book sideways).

Page 5 should include the **TITLE** of the assignment (which should match the name in the Table of Contents). The Title should be at the top of the page when the book is in the usual orientation.

Don't forget to use technical lettering in your annotation.

