

PHYSICS HOMEWORK

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How do you do your physics homework? Do you glance at the problem statement, and then start flipping pages to see if you can find an equation that looks as if it might apply to the situation? Or do you head straight for the many solution manuals and/or websites that already have the problem worked out for you? Perhaps you look up the answer first, and then try to “work toward” that answer. If these descriptions apply to you, you will not do well in this course or any other physics course. **Working homework problems yourself is one of the keys to learning and understanding physics.** The other key is regular classroom attendance.

Naturally some people are more interested in physics than others. Some are more talented in science than others. There is always a range of intellectual capabilities in any group of people. Nonetheless, I feel safe in stating that none of you will gain an understanding of physics if you don't work diligently at it. And understanding the subject matter should be the goal of taking any course. Let the GPA take care of itself!

So, let me give you some good advice on how to approach a homework problem in physics.

1. **First, don't even think about doing your homework unless you have read and gained some understanding of the applicable textbook material.** You will have also, (it goes without saying) paid close attention during your faithful attendance in class.
2. **Read the statement of the problem carefully.** Do you understand what is given and what is expected of you? Is this a “plug in some numbers and crank out the answer” type problem, or one that requires some small extension of what the book covered?
3. **Draw a picture describing the problem.** All the essential features of the problem should be contained in this picture. Arrows show force directions, or direction of motion: the coordinate system is shown: angles, distances, forces, charges, etc are identified (labeled). Only now are you ready to tackle the task of solving the problem.
4. **Now, what did the problem ask for?** At this point its time to start thinking about what you have just studied. Don't just start flipping through the text looking for an equation. If the problem consists of an assembly of electrical charges and you are asked to find the magnitude of the electric field at some point in space, then you **might** want to look at the equation that defines the electric field. If you are asked to find the effect of a given force on an object, you would **probably** consider starting with Newton's Second Law of Motion. Note the use of the words “might” and “probably”. This indicates that there is not a fixed prescription whose application will solve every physics problem. **You must use your own ingenuity, and experience and the only way to acquire this ingenuity and experience is by going through all of this yourself.**
5. If you are stymied at this point it is time to discuss the problem with someone else. This is a good way to get through a sticking point and also learn something, **but only if you have already invested some of your time in the problem.**
6. When you turn in your homework, make sure that there is a **logical flow** from start to finish. I want to be able to follow your reasoning, so **write a few words here and there** describing what you are doing and finally, **box in the answer** to make it easier to find.
7. It is **not desirable** to get the entire set of homework solutions on one page of notebook paper. A homework set, properly done, will take up much more space than that. Neatness and readability count!