

5 Steps to a 5: AP Physics 1

Before we even dive into the nitty-gritty of the AP Physics exam, it is important for you to know that the AP exam is an *authentic* physics test. What this means is that it's not possible to "game" this test – in order to do well, *you must know your physics*.

The best way to start preparing for the exam is by doing careful, attentive work in class all year long. We think you can get even more out of your physics class than you think you can. Read these pieces of time-tested advice, follow them, and we promise you'll feel more comfortable about your class *and* the AP exam.

Assignment: After reading the page, write at least half a page on how you plan to implement (or not implement) some of the suggestions. Try to be as specific as possible.

Ignore your grade.

This must be the most ridiculous statement you've ever read. But this may also be the most important of these suggestions. Never ask yourself or your teacher "Can I have more points on this assignment?" or "Is this going to be on the test?" You'll worry so much about giving the teacher merely what she wants that you won't learn physics in the way that's best for you. Whether your score is perfect or near zero, ask, "Did I really understand all aspects of these problems?"

Remember, the AP exam tests your physics knowledge. If you understand physics thoroughly, you will have no trouble at all on the AP exam. But, while you may be able to argue yourself a better grade in your physics *class*, even if your comprehension is poor, the AP readers are not so easily moved.

If you take my advice - if you really, truly ignore your grade and focus on physics - your grade will come out in the wash. You'll find that you got a very good grade after all, because you understood the subject so well. But you *won't care*, because you're not worried about your grade!

Don't bang your head against a brick wall.

Our meaning here is figurative, although of course, there are literal benefits also. Never spend more than 10 minutes or so staring at a problem without getting somewhere. If you honestly have no idea what to do at some stage of a problem, STOP. Put the problem away. Physics has a way of becoming clearer after you take a break.

On the same note, if you're stuck on some algebra, don't spend forever trying to find what you know is a trivial mistake, say a missing negative sign or some such thing. Put the problem away, come back in an hour, and start from scratch. This will save you time in the long run.

And finally, if you've put forth a real effort, you've come back to the problem many times and you still can't get it: relax. Ask the teacher for the solution, and allow yourself to be enlightened. You will not get a perfect score on every problem. But you don't care about your score, remember?

Work with other people.

When you put a difficult problem aside for a while, it always helps to discuss that problem with others. Form study groups. Have a buddy in class with whom you are consistently comparing solutions.

Although you may be able to do all your work in every other class without help, we have never met a student who is capable of solving every physics problem on his or her own. It is not shameful to ask for help. Nor is it dishonest to seek assistance – as long as you're not copying or allowing a friend to carry you through the course. Group study is permitted and encouraged in virtually every physics class around the globe.

Ask questions when appropriate.

We know your physics teacher may seem mean or unapproachable, but in reality, physics teachers do want to help you understand their subject. If you don't understand something, don't be afraid to ask. Chances are that the rest of the class has the same question. If your question is too basic or requires too much class time to answer, the teacher will tell you so.

Sometimes the teacher will not answer you directly, but will give you a hint, something to think about so that you might guide yourself to your own answer. Don't interpret this as a refusal to answer your question. You must learn to think for yourself, and your teacher is helping you develop the analytical skills you need for success in physics.

Keep an even temper.

A football team should not give up because they allow an early field goal. Similarly, you should not get upset at poor performance on a test or problem set. No one expects you to be perfect. Learn from your mistakes, and move on – it's too long a school year to let a single physics assignment affect your emotional state.

On the same note, however, a football team should not celebrate victory because it scores a first-quarter touchdown. You might have done well on this test, but there's the rest of a nine-month course to go. Congratulate yourself, then concentrate on the next assignment.

Don't Cram.

Yes, we know that you got an "A" on your history final because, after you slept through class all semester, you studied for 15 straight hours the day before the test and learned everything. And, yes, we know you are willing to do the same thing this year for physics. We warn you, both from our and from others' experience: *it won't work*. Physics is not about memorization and regurgitation. Sure, there are some equations you need to memorize. But problem solving skills cannot be learned overnight.

Furthermore, physics is cumulative. The topics you discuss in December rely on the principles you learned in September. If you don't understand basic vector analysis and free-body diagrams how can you understand the relationship between an electric field (which is a vector quantity) and an electric force, or the multitude of other vector quantities that you will eventually study?

So, the answer is to keep up with the course. Spend some time on physics every night, even if that time is only a couple minutes, even if you have no assignment due the next day. Spread your "cram time" over the entire semester.

Never forget, physics is fun.

The purpose of all these problems, these equations, these exams, is to gain a knowledge about physics - a deeper understanding of how the natural world works. Don't be so caught up in the grind of your coursework that you fail to say "Wow!" occasionally. Some of the things you're learning are truly amazing. Physics gives insight into some of humankind's most critical discoveries, our most powerful inventions, and our most fundamental technologies. Enjoy yourself. You have an opportunity to emerge from your physics course with wonderful and useful knowledge, and unparalleled intellectual insight. Do it.