How to Avoid Careless Mistakes on Tests

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After hours of careful studying, you can comprehend all the math and science concepts and complete all of your homework problems with no issues. However, sometimes you keep repeating careless mistakes. These careless mistakes can be the source of immense frustration after all of your hard work at home. How can you avoid these mistakes? The most common answer you will hear is to reserve time at the end of tests to recheck your work. In this article, I will share several additional strategies to help you avoid making careless mistakes on math and science tests.

1. Do Not Skip Too Many Steps at Once on a Test

Math and science questions can be complex when they are composed using multiple parts. For math, the answer for one part of the question is often used for equations later in the same problem, so if you make one small mistake early on it will affect the outcome for the rest of the question.

Therefore, for math problems, do not be tempted to skip too many steps at once. Even if you can perform the shorter math calculation steps in your head, you should still write all of the steps down. Doing the steps mentally without writing each step down may lead to accidental mistakes. Also, mental calculations are not always accurate, and writing them down on paper as you work will allow you to see if you actually made the correct calculation.

2. Check All Calculations and Then Reverse-Check Them

You are probably often told to recheck your work in math and science for accuracy. For an additional strategy, after arriving at an answer to a math problem, try plugging your answer back into the equation. If the equation works out, then you have the correct answer. If not, then you may have made a mistake somewhere. Many students skip this "reverse-check" method especially when they are rushed for time. However, this is a key step because reverse-checking is actually faster than going through and re-working the problem all over again when you are rechecking an answer. Therefore, next try to "reverse-check" before you "re-check" !

$$\int \sin(ax+b).dx = -\frac{1}{a}\cos(ax+b)+c$$
$$\int 1 + \tan^2(ax+b) = \int \frac{1}{a}\tan(ax+b)+c$$
$$\int 1 + \tan^2 x.dx = \int \frac{1}{\cos^2 x}.dx = \tan x + c$$
$$\int u'(1 + \tan^2 u) = \int \frac{u'}{\cos^2 u}.dx = \tan u + c$$
$$\int \frac{u'}{1+u^2} = Arc\tan u + c$$
$$\int \frac{u'}{\sqrt{1-u^2}} = Arc\sin u + c$$
$$\int \sqrt{x}.dx = \frac{2}{3}x\sqrt{x}+c$$

3. Use the Same Units While Working Through Problems

Math and science problems are sometimes tricky because the question will give numbers with different units. This is a potential huge stumbling block! It is important to be aware of the units presented in the questions, especially when you are required to convert units back and forth. Begin by carefully reading the question—read it more than once to be clear on the units presented in the problem. After noting the units, the next step is to convert all of the units to the same type before performing calculations. You will often encounter this issue not only on math problems, but also for physics and biology questions.

Note that sometimes the question will ask for an answer to be in a specific unit. Do not make the careless mistake of giving your answer in the wrong unit, even if you got the correct number!
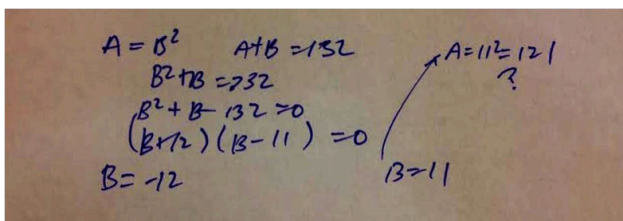
4. Keep Your Calculations and Work Organized

Students are always under a time limit, whether it's taking a test or working towards a deadline. You need to work fast to finish up all the assignments and questions, but at the same time, it is important not to overlook accuracy.

Managing time means not spending the entire time solving one math problem because you get stuck. To make the best use of your time, try to keep all of your work on paper neat and systematic. This strategy will allow you to spend less time checking on equations because you can quickly find your calculations. It will also prevent you from accidentally copying a different or wrong numerical answer if the math problem as multiple parts.

Often, you have to use the answer from the first part for the rest of the problem. If you copy the incorrect answer from an earlier part, you risk fumbling the rest of the math problem. Therefore, overcome the possibility of making these careless mistakes by keeping your work organized.

To achieve this strategy, you will need constant practice. Start doing this in your daily homework routine, and soon you'll be able to write legibly faster. Here is an example of messy work:

As you can see, the calculations are disorganized, and you will misread numbers, mess up signs and so on. Scrawling your calculations everywhere will lead to careless mistakes.

Instead, try working through each question in its own segregated space on a sheet of paper, such as the example below:
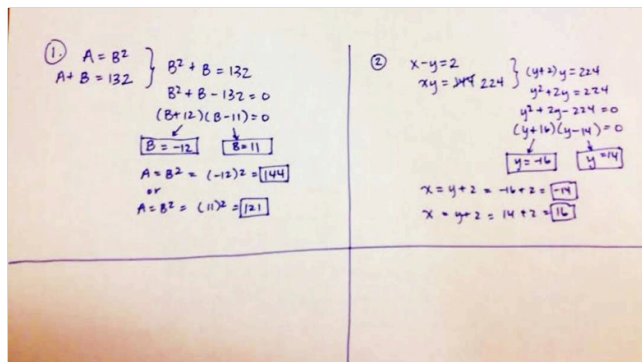
Your work is easy to find when you want to check your solutions. Your answers are also boxed so that the reviewer can easily locate them. One of the biggest benefits of organizing calculations is that this habit will make you subconsciously more organized in other areas of your test taking. You will make fewer errors copying equations over from the test and fewer mistakes recording your answers.

Conclusion: Being "careless" means that you are "not giving enough attention and thought to what you are doing." These strategies are aimed at helping you pay more attention to your performance, so that you can minimize the number of errors on tests.