WINNING AT MATH

HOW TO IMPROVE YOUR MATH TEST-TAKING SKILLS

Taking a math test is different from taking tests in other subjects. Math tests not only require you to recall the information, you must apply the information. Multiple-choice tests, for example, usually test you on recall, and if you do not know the answer, you can guess.

Math tests build on each other where history tests often do not test you on previous material. Most math tests are speed tests where the faster you are, the better grade you can receive, while most social science tests are designed for everyone to finish.

Math test preparation and test-taking skills are different from preparation and skills needed for other tests. You need to have a test-taking plan and a test-analysis plan to demonstrate your total knowledge on math tests. Students with these plans make better grades compared to students without them. Math instructors want to measure your math knowledge, not your poor test-taking skills.

In this chapter your will learn:

Why attending class and doing your homework may not be enough to pass,

- the general pretest rules,
- the 10 steps to better test-taking,
- the six types of test-taking errors, and
- how to prepare for the final exam.

WHY ATTENDING CLASS AND DOING YOUR HOMEWORK MAY NOT BE ENOUGH TO PASS

Most students and some instructors believe that attending class and doing all their homework ensures an "A" or "B" on tests. This is far from true. Doing all the homework and getting the correct answers is very different in many ways from taking tests:

1. While doing homework, there is little anxiety. A test situation is just the opposite.
2. You are not under a time constraint while doing your homework; you may have to complete a test in 55 minutes or less.
3. If you get stuck on a homework problem, your textbook and notes are there to assist you. This is not true for most tests.
4. Once you learn how to do several problems in a homework assignment, the rest are similar. In a test the problems are all in random order.
5. In doing homework, you have the answers to at least half the problems in the back of the text and answers to all the problems in the solutions guide. This is not true for tests.
6. While doing homework, you have time to figure out how to correctly use your calculator. During the test you can waste valuable time figuring out how to use your calculator.
7. When doing homework, you can call your study buddy or ask the tutor for help, something which you cannot do on the test.

Do not develop a false sense of security by believing you can make an "A" or "B" by just doing your homework. Tests measure more than just your math knowledge.

THE GENERAL PRETEST RULES

General rules are important when taking any type of test:

1. Get a good night's sleep before taking a test. This is true for the ACT, the SAT and your math tests. If you are going to cram all night and imagine you will perform well on your test with three to four hours of sleep, you are wrong. It would be better to get seven or eight hours sleep and be fresh enough to use your memory to recall information needed to answer the questions.
2. Start studying for the test at least three days ahead of time. Make sure you take a practice test to find out, before the test, what you do not know. Review your problem log and work the problems. Review the concept errors you made on the last test. (How to identify and correct your concept errors will be discussed later on in this chapter.) Meet with the instructor or tutor for help on those questions you cannot solve.
3. Review only already learned material the night before a test.
4. Make sure you know all the information on your mental cheat sheet, but do not use it on the test. Review your notebook and glossary to make sure you understand the concepts. Work a few problems and recall the information on your mental cheat sheet right before you go to bed. Go directly to bed; do not watch television, listen to the radio or party. While you are asleep, your mind will work on and remember the last thing you did before going to sleep.
5. Get up in the morning at your usual time and review your notes and problem log. Do not do any new problems but make sure your calculator is working.

THE 10 STEPS TO BETTER TEST-TAKING

Once you begin a test, follow the 10 steps to better test-taking below:

Step 1 - *Use a memory data dump.* Upon receiving your test, turn it over and write down the information that you put on your mental cheat sheet. Your mental cheat sheet has now turned into a mental list and writing down this information is not cheating. Do not put your name on it, do not skim it, just turn it over and write down those facts, figures and formulas from your mental cheat sheet or other information you might not remember during the test. This is called your first memory data dump. The data dump provides memory cues for test questions.

Example: *It might take you a while to remember how to do a coinword problem. However, if you had immediately turned your test over and written down different ways of solving coin-word problems, it would be easier to solve the coin-word problem.*

Step 2 - *Preview the test.* Put your name on the test and start pre-viewing. Previewing the test requires you to look through the entire test to find different types of problems and their point values. Put a mark by the questions that you can do without thinking. These are the questions that you will solve first.

Step 3 - *Do a second memory data dump.* The secondary data dump is for writing down material that was jarred from your memory while previewing the test. Write this information on the back of the test.

Step 4 - *Develop a test progress schedule.* When you begin setting up a test schedule, determine the point value for each question. You might have some test questions that are worth more points than others.

In some tests, word problems are worth five points and other questions might be worth two or three points. You must decide the best way to get the most points in the least amount of time. This might mean working the questions worth two to three points first and leaving the more difficult word problems for last.

Decide how many problems should be completed half-way though the test. You should have more than half the problems completed by that time.

Step 5 – *Answer the easiest problems first.* Solve in order, the problems you marked while previewing the test. Then, review the answers to see if they make sense. Start working through the test as fast as you can while being accurate. Answers should be reasonable.

Example: *The answer to a problem of trying to find the area of a rectangle cannot be negative, and the answer to a land-rate-distance problem cannot be 1,000 miles per hour.*

Clearly write down each step to get partial credit, even if you end up missing the problem. In most math tests, the easier problems are near the beginning of the first page; you need to answer them efficiently and quickly. This will give you both more time for the harder problems and time to review.

Step 6 - *Skip difficult problems.* If you find a problem that you do not know how to work, read it twice and automatically skip it. Reading it twice will help you understand the problem and put it into your working memory. While you are solving other problems, your mind is still working on that problem. Difficult problems could be the type of problem you have never seen before or a problem in which you get stuck on the second or third step. In either case, skip the problem and go on to the next one.

Step 7 - *Review the skipped problems.* When working the skipped problems, think how you have solved other, similar problems as a cue to solving the skipped ones. Also try to remember how the instructor solved that type of problem on the board.

While reviewing skipped problems, or at any other time, you may have the "Ah, ha!" response. The "Ah, ha!" response is your remembering how to do a skipped problem. Do not wait to finish your current problem. Go to the problem on which you had the "Ah ha" and finish that problem. If you wait to finish your current problem, your "Ah, ha!" response could turn into an "Oh, no!" response.

Step 8 - *Guess at the remaining problems.* Do as much work as you can on each problem, even if it is just writing down the first step. If you cannot write down the first step, rewrite the problem. Sometimes rewriting the problem can jar your memory enough to do the first step or the entire problem. If you leave the problem blank, you will get a zero. Do not waste too much time on guessing or trying to work the problems you cannot do.

Step 9 - *Review the test.* Look for careless errors or other errors you may have made. Students usually lose two to five test points on errors that could have been caught in review. Do not talk yourself out of an answer just because it may not look right. This often happens when an answer does not come out even. It is possible for the answer to be a fraction or decimal.

Remember: Answers in math do not have "dress codes." Research reveals that the odds of changing a right answer to a wrong answer are greater than the odds of changing a wrong answer to a right one.

Step 10 - *Use all the allowed test time.* Review each problem by substituting the answer back into the equation or doing the opposite function required to answer the question. If you cannot check the problem by the two ways mentioned, rework the problem on a separate sheet of paper and compare the answers. Do not leave the test room unless you have reviewed each problem two times or until the bell rings.

Remember: There is no prize for handing your test in first, and students who turn their papers in last do make "A's."

Stapling your scratch paper to the math test when handing it in has several advantages:

- If you miscopied the answer from the scratch paper, you will probably get credit for the answers.
- If you get the answer incorrect due to a careless error, your work on the scratch paper could give you a few points.
- If you do get the problem wrong, it will be easier to locate the errors when the instructor reviews the test. This will prevent you from making the same mistakes on the next math test.

Remember: Handing in your scratch paper may get you extra points or improve your next test score.