

Math Strategies

From the Academic Center for Excellence, University of Illinois at Chicago

How to Study in a Math Class

1. Try to take your math courses back-to-back without skipping a semester. **Before starting a new course, review the math from your previous course.**
2. **Never let yourself fall behind.** If the class seems too easy, remember that all math classes start with some review. But at a certain point, the class kicks into high gear and if you haven't been keeping up, you'll quickly be lost.
3. **Your first test will be easiest, but don't get over confident** and "blow it off." You may need that "A" on the first test to offset lower grades on harder tests later in the semester.
4. Read or at least scan the chapter before your lecture and read it again afterwards. **But don't read a math book like a history book, with the goal of memorizing.** Think of your textbook more as a reference book that will help you understand different kinds of math problems.
5. As you read your text, **do the computations along with the book.** Work the problems section by section as you read the text.
6. **In your lecture, write down everything the professor writes down,** and if he/she uses different colors of ink, do likewise. Even if you think you understand a problem thoroughly, write down each step! You may be confused two weeks later and need those notes for the test.
7. **Memorize math symbols and definitions, but with processes and concepts, first understand them.** When you look at a process, ask yourself the purpose for each step. Think of analogies as you try to understand a concept.
8. If you find yourself confused by a topic, **try some of the following resources:** a review book, a high school textbook (your own or from the library), a tutor, the T.A., or the instructor. **Tutors can be extremely helpful,** especially if you use them soon enough. Don't wait until you get a "D" on an exam! **Free tutoring** is available at the Fredericksburg Academic Center for Excellence: (540) 891-3017, the Locust Grove Academic Center for Excellence (540) 423-9148, and the Barbara J. Fried Center Academic Center for Excellence (540) 834-1993. Make an appointment today!

Solving Math Problems

1. It is usually best to do homework for your hardest courses first (this will usually be math). Also **do homework after class as soon as possible** so that concepts are fresh.
2. Try to do all of the assigned problems, but at least do a representative sampling of each kind of problem.
3. **Check your first answers** in a given section before going on to do a whole set of problems. When you make a mistake, determine the source of error, and make a mental note of a method for avoiding that kind of error in the future (i.e. double check all positive and negative signs). If you can't find your error for a problem after two tries or 15 minutes, **don't get stuck**. Consult with another student or tutor.
4. **Do your homework with a classmate or with a group** of students. At the very least, get a classmate's phone number, so you have someone to consult with when you're confused.
5. **Read each problem slowly and carefully**, running a pencil under the words to make sure you process each word (i.e. find the length of the *smaller* leg of the triangle).
6. **Summarize word problems by drawing a diagram or setting up the information in a table**. Sort out the problem into *given*, *find*, and *need*.
7. **For a very difficult word problem or when you forget a formula, substitute simpler numbers**. Once you understand the nature of the problem, use the same process with the real numbers in the problem.
8. At the end of a homework session, mentally review (or write on a note card) the most important concepts you've just learned.

Studying for and Taking Math Tests

1. **Don't just memorize formulas; make sure that you understand** the concepts. Concepts will stay in your memory longer and are less likely to be forgotten under the stress of a test.
2. Remember that doing well on homework and/or quizzes is no guarantee of doing well on an exam.
3. **The best way to study for a math test is by working mixed problems** in chapter reviews, old tests the professor has made available, and reviewing books. It's not enough to be *familiar* with the material; you should have worked so many problems that the material is now *easy* for you.
4. **Do some timed practice tests** or sets of problems and make sure the problems are mixed. You want to mimic the testing situation as closely as you can while you study for your exam.
5. **During your practice tests, check all results**, just as you will during the test. Use some of the following methods:
 - a. Plug your answers back into the problem to make sure it works (this is particularly important for word problems).
 - b. Estimate the answer to make sure your answer is in the right ball park.
 - c. Double check "+" and "-" signs
 - d. If time allows at the end of the test, rework the problem using an alternative method or rework the problem without looking at your original attempt.
6. **Get plenty of sleep the night before the test.** Sleep is essential for higher order thinking.
7. When you first get the actual test, write down any formulas you might forget. Next, apportion your time and **work on the easiest problems first**. Also, look at points given for problems and think of how to get the most points in the quickest amount of time.
8. **Write each step** so that you'll get some points if you miss the answer.
9. When your test is returned, **rework all problems you missed** and find out what went wrong.