

How to Succeed in Mathematics
WOU Mathematics Department
<http://www.wou.edu/math>

1. Effective Daily Homework

a. **Homework is work done outside of class.**

Some instructors ask that it be turned in. Others expect that you do it, correct it, and use it for a study guide. All instructors of mathematics expect you to do homework.

If your homework is to be turned in, there may be a special form to follow, be sure to follow the directions for turning in homework.

If your homework is to be used only for your own study, try to write down enough so that you will know - a day or two later - what you were thinking while you solved that problem. The trail you leave will be most helpful in determining what went wrong with the problems you were unable to solve. It has been said, "No one ever puts down a wrong answer. You just don't know what question is being answered." Can you see how a record of your thoughts can help?

b. **Try all of the problems!**

It is important that you try all of the problems in an assignment, but be reasonable. If you have worked on one problem for five minutes with no success, skip it and try the next one.

When you are done, come back to the ones you skipped. If you still have issues, make clear notes—even mark your homework with post its and save these questions for study group, office hour and class questions.

Please remember - if you can do every assignment quickly and correctly you are probably in the wrong class.

c. **Review graded assignments**

Part of your study time should be spent looking over the most recently corrected assignment. If you missed some questions, can you do them now? Don't be too quick to say yes. Don't erase your work. Try them again on new paper. It is not at all uncommon for a student at home, alone, to find it impossible to do what seemed too obvious when done in class.

d. **Form a study group.**

Meet regularly with three to five other students and help each other. If something is not clear to anyone in the group, you will gain confidence to ask your instructor for help.

2. Effective Class Time

a. **Come to class prepared.**

Before you go to class, read the section that will be covered. Try all of the assigned problems from your previous homework.

b. **Don't cut class when you are not prepared**

Cutting class only makes things worse. You won't get as much out of class, but at least there will be some gain and you will be better prepared for the next class.

c. **Be reasonable about taking notes.**

Don't write down every word. If you intend to keep your text or are using an e-text, you may wish to star, underline or highlight some parts of it or even write in a definition given in class.

Try to understand the concept being explained before you take notes. If you don't understand, ask right then. If you still don't understand, make a note of that.

3. Effective Exam Study

a. **Study as you go**

If it is your habit to study only a day or two before a test - even if you study ten or fifteen hours then - you will find your grade one or even two letters below what you could earn if you used the same time spread over daily assignments.

With mathematics, it is very important to regularly do your homework assignments. You should do each of your assignments and study the current material, as much as possible, before your next class meeting.

b. **Learning definitions**

One of the reasons that mathematics is important in this world is that it is a precise universal language. When a new mathematical word or symbol is introduced in your text, it should be carefully defined. Learn the definition exactly as given. If it's a "good" definition, it will not include extra words. If you leave out a word or change one, it is extremely likely that you have changed the meaning.

If the definition is not clear to you, try to use it on an example. If that doesn't help, ask about it in class.

Memorize definitions. See section on "Conditioning."

c. **Study previous tests.**

Always get your test papers back. If you don't, it will be a continual reminder to your instructor that you don't care. It is very likely that you will see these problems again.

Learn from your mistakes. Be certain that you know why every problem you missed was wrong and that you would not miss one like it the next time.

4. Effective Help

a. Don't be shy

Use your instructor's office hours. If you don't understand, ask! If you don't know why a problem was marked wrong on your test or graded homework, ask! Please don't wait until final exam time. If your instructor knew a way to teach you everything in one day, it would have been done on the first day of class.

b. Know yourself

Probably the most important thing you can learn in college is to "Know Yourself."

Europeans make a digit for one that looks like 7. In order to reduce the chance for confusion between one and seven, they use 7 for seven.

People who study mathematics use the letter z so often that most of us find confusion between that letter and the digit 2. To reduce this confusion, we use Z for the letter Z.

The point of these stories is that you should examine your mistakes and then plan for a way to reduce the number of times the same kind of error will appear

- i) Was your mistake due to misunderstanding? If so, get it straightened out.
- ii) Was your mistake due to a messy paper with work scattered all over it? If so, try to write complete equations (true ones). Try not to be so messy.
- iii) Was your mistake due to an incorrect addition fact or multiplication fact? Have you missed this one before? If so, begin a program of conditioning to correct this. Don't put it off.
- iv) Was your mistake due to misuse of a fundamental property or use of a formula you recalled incorrectly?
- v) Did your error occur on a portion of your paper which you had previously erased? Minus signs are often lost or added when new work is written over erased work. You might consider working without an eraser.
- vi) Write in complete sentences. If there is an equal sign or other relation sign given, include it in your work. Don't include equal signs without reason.
- vii) Are you more alert at a different time of day? Use that time to study.

Conditioning

Some things are best learned by a process called *Conditioning*. The process is described here because it is an effective way to learn to recall a set of words or an algebraic pattern when you see a particular stimulus.

1. Decide exactly what you want to do when you are given a particular stimulus.

Examples

- a. Stimulus: see or hear "Distributive property"
Response: say or write " $a(b+c) = ab + ac$ " or " $ab + ac = a(b+c)$ "
 - b. Stimulus: see or hear " $x^3 - a^3$ "
Response: say or write " $(x - a)(x^2 + ax + a^2)$ "
 - c. Stimulus: see or hear " $A \cap B$ "
Response: say or write "The set of all elements which belong to set A and also to set B."
2. Now, make yourself a set of flashcards. On one side of the card write the stimulus and on the other side of the card write the desired response. Check the cards with some authority to be certain they are correct.
 3. Go over your set of flashcards daily until you know each desired response. It is usually best to go over the cards with someone else who is learning these same stimuli.