

Academic Success Guide

Developed for Clark College Students



Develop a positive attitude toward mathematics and this math class. "The most important quality that will effect your success in a math course is your attitude. Your attitude determines what you will be willing to do in the course, and it is the quality of that effort that contributes most significantly to your success." -From *How to be a Great Math Student* by Richard Manning Smith.

Accept responsibility for your own education. "Once you are in a mathematics class and know you need to complete it, frequently ask yourself what you need to do to be successful in the course. Forget about all the reasons why you haven't been successful in the past and why you can't be successful in the future. Make up your mind that you will not blame your teacher, your background, your past performances, your personal deficiencies, or difficulties in your life for problems you may encounter in the course. Make up your mind that you will do whatever it takes to master the course without making excuses for lack of success. There is nothing a teacher can do to make up for what a student won't do." -From *How to be a Great Math Student*.

Learn to think critically and work to become a self-learner. The college expects you to do more than recite information fed to you by your instructors. Two of the most important goals the college has for its graduates are the ability to think critically and to become self-learners.

Dave Frohnmeyer, president of the University of Oregon, writes: *Our Children will change jobs, professions or careers an average of four or five times over their lifetimes. We do not know the nature of those careers -- they have not yet been invented. Our descendants must confront the invention and dislocation of their*

careers at a pace never before imagined....To adapt to changes far more frequent and revolutionary than we could imagine just 20 or 30 years ago, students need more than just knowledge specific to whatever career they pursue. Students need to learn how to learn, and to continue learning throughout their lives. This education will not be a luxury. It will be a survival skill....It is through such disciplines [literature, philosophy, math,..] that students learn skills required to cope with change: the capacity to think analytically, to solve problems with agility and to use the instruments of speech and writing to communicate ideas with precision.

You will not master critical thinking and become a self-learner in one class. It is an ongoing process which must be cultivated throughout your college education and beyond.

Mastering math requires performing math. Passing most of your other college courses requires that you read and understand the material. Math requires an extra step: applying the material by solving problems. An analogy can be drawn between solving mathematics problems and participating in a performance art or an athletic event. In preparing to perform in a concert it is helpful to listen to accomplished musicians play your instrument or give advice, but the best preparation is to practice. Similarly, in sports it may be instructive to watch an event performed by a pro, but there is only so much to be gained from watching, the real learning occurs in the doing. I have often had students tell me that they understood how to solve math problems when they watched me solve them on the board, usually they say it looked easy, but when they were given a test they found out that they hadn't internalized the concepts and/or the problem solving techniques. Watching is not doing. Understanding how someone else solves a problem is much easier than solving it for yourself.

To really understand math, you must be able to solve math problems.

Math courses are packed with material. The pace in college is much faster than in high school, in some classes two or three times faster. Even if the instructor wanted to, he/she simply does not have the time to discuss every topic in detail nor lecture on the same topic twice. Sometimes there will not be enough class time for your instructor to answer each student's question, or in the amount of detail the student may desire. You will need to get much of the course information by carefully and systematically reading the text, by carefully and systematically working the homework problems, by asking questions in class and during office hours, going to help sessions, forming study groups, etc.

Don't overcommit yourself. Many students create strenuous or unrealistic time frames for their educational goals. Together with the fact that tuition is roughly the same rate for 10 credit hours as it is for 18 can entice students to overload their schedule. When you overload your schedule the quality of your effort will be reduced in all of your classes, you may even receive a "D" or an "F" and have to retake some classes. Retaking classes will cost you extra time and money. Even if you manage to pass all of your classes, studies have shown that you will retain more of what you learned if you don't overtax your memory. If you are enrolled for 15 credit hours, plan on spending 30-40 hours per week performing school work outside of class.

Make a remarkable effort from the beginning. Don't wait until just before the first test to begin studying. This course is cumulative, that is, the concepts we will study later are built from the concepts we study now. If you don't understand the

early concepts well, you are unlikely to understand the concepts which follow at all!

To succeed in math each previous chapter has to be understood before continuing to the next chapter.

Attend all classes arriving on time or early. Missing even one class can put you behind by two classes. If you miss a class you will miss the discussion of the material for that day which will make working the homework more difficult. Then when you come to class you will not be prepared to understand the new material because it will most likely be related to the discussion you missed and the homework you had difficulty with or couldn't/didn't do. If you must miss a class, obtain a clear set of notes from a classmate, read the text and try to work the homework (you should do this anyway). If you are late to class you may miss a discussion of solutions to homework problems that you had questions on, or you may find yourself several minutes behind in taking notes. Additionally, your late arrival is disruptive to your teacher and classmates. If you arrive early to class you can review your notes from the previous class and the homework assignment and think of any questions that did not occur to you before. If you need to leave class early, let the instructor know before class. -From *How to be a Great Math Student*

Follow the explanations in class and ask questions. If you don't generally understand an explanation, it is your responsibility to let the teacher know this. The teacher can't read your mind. Furthermore, you will most likely have difficulty with reading the text, doing the homework, or doing well on the test.

If you are shy about asking questions in class, write down your questions and read them to your instructor or ask after class. To encourage you to ask questions remember: (1) you have paid for the instructor's help, (2) 5 other students probably have the same question, and (3) the instructor needs feedback on how well the class understands the material. -From *How to be a Great Math Student*

Improve your listening and note-taking skills. Becoming a good listener is the foundation for good note-taking. To become an effective listener you must prepare yourself physically and mentally. The physical preparation involves where you sit in the classroom. Sit in the best area to obtain high grades: the golden triangle of success. The G.T.S. begins with seats in the front row and converges to the middle seat in the back row. Students sitting in this area directly face the teacher and have to pay attention to the lecture. Also there is less tendency to be distracted by other students.

The mental preparation of note-taking involves "warming up" before class by: (1) reviewing the previous days notes, (2) reviewing the reading material, (3) reviewing homework, or (4) preparing questions for the instructor.

To become a good note-taker requires two basic philosophies. One philosophy is to be specific in detail. In other words, copy the problems down step by step. The second philosophy is to understand general principles. Record each step of every problem written or verbally explained. While in the classroom you might understand each step, but a week later you might not remember how to do the problem unless all the steps are written down in your notes. In addition, as each step is being written down, it is being memorized.

There will be times when you get lost while listening to the lecture. You should keep taking notes, though you do not understand the problem. This will provide a reference point for further study. Put a question mark by those steps you do not understand. After class, review the steps you don't understand with the instructor or a fellow student.

The goal of note-taking is to take the least amount of notes and get the most amount down while still hearing what the instructor is saying. To reduce the amount of written notes, an abbreviation system is needed. Some common abbreviations and symbols are: e.g. - for example, i.e. - that is, etc. - and so forth, p. - page, \therefore - therefore, \Rightarrow - implies (it follows from), \Leftrightarrow equivalent to, / - negation.

The note-taking system does not stop when you leave the classroom. As soon as possible after class, rework your notes. Most forgetting occurs right after learning the material. Do not wait two weeks to rewrite the material you cannot read or barely understand now. Fill in the gaps. Locate the portion of your notes that are incomplete. Fill in the concepts which were left out. Add additional key words and ideas in the left hand column which were not recorded during the lecture. These are the words that will improve your understanding of math.

Once you have finished going over your notes, review the major points in your mind. Synthesize your notes by combining your previous knowledge with what you have learned today. -From *Winning at Math* by Paul D. Nolting.

Work out homework problems on time. As stated earlier, working out the homework problems helps you to gain a much

better understanding of the concepts than simply attending lectures or reading the text. Math is not a spectator sport. Mastering concepts requires lots of practice and effort. Imagine how well you would do in a track meet if all you did to prepare was watch track meets from the bleachers. If you don't do the homework on time you will not be prepared to learn the next lesson or work the next homework assignment.

To improve your homework success follow these ten steps (From *Winning at Math* by Paul D. Nolting):

Step 1: — Review the textbook material that relates to the homework. A proper review will increase the chances of successfully completing your homework. If you get stuck on a problem, you will have a better chance of remembering the location of similar problems. If you do not review prior to doing your homework, you could get stuck and not know where to find the help in your textbook. To be successful in learning the material and in completing homework assignments, first review your textbook.

Step 2: — Review your lecture notes that relate to the homework. If you could not understand the explanation of the textbook on how to complete the homework assignment, then review your notes. Reviewing your notes will give you a better idea on how to complete your homework assignment.

Step 3: — Do your homework as neatly as possible. Doing your homework neatly has several benefits. When approaching your instructor about problems with your homework, he or she will be able to understand your previous attempts to solve the problem. The instructor will easily locate the mistakes and show you how to correct the steps without having to decipher your handwriting.

Another benefit is that when you review for midterm or final exams, you can quickly re-learn the homework material without having to decipher your own writing. Neatly prepared homework can help you now and in the future.

Step 4: — When doing your homework, write down every step of the problem. Even if you can do the step in your head, write it down anyway. This will increase the amount of homework time, but you are over-learning how to solve problems which improves your memory. By doing every step, it is an easy way to memorize and understand the material. Another advantage is that when you re-work problems that you did wrong it is easy to review each step to find the mistake. In the long run, *doing every step of the homework will save you time and frustration.*

Step 5: — Understand the reasons for doing each set of the homework problems. Don't get into the bad habit of memorizing how to do problems without knowing the reasons for each step. Many students are smart enough to memorize procedures required to complete a set of homework problems. However, when similar homework problems are presented on a test, the student cannot solve the problems. To avoid this dilemma, keep reminding yourself about the rules, laws, or properties used to solve problems. Here's an example.

PROBLEM: $2(a + 5) = 0$.

What property allows you to change the equation to $2a + 10 = 0$? ANSWER: The distributive property.

Once you know the correct reason for going from one step to another in solving a math problem, then you can answer any problem requiring that property. *Students who memorize how to*

do problems — instead of understanding the reasons for correctly working the steps — will eventually fail their math courses.

Step 6: — If you do not understand how to do a problem follow these steps:

- A. Review the textbook material that relates to the problem.
- B. Review the lectures notes that relate to the problem.
- C. Review any similar problems, diagrams, examples or rules that explain the misunderstood material.
- D. Refer to another math textbook, math computer program software, or math video to obtain a better understanding of the material.
- E. Call your study buddy.
- F. Skip the problem and contact your tutor or math instructor as soon as possible for help.

Step 7: — Always finish your homework by successfully completing problems. Even if you get stuck, go back and successfully complete previous problems before quitting. You want to end your homework assignment positively with feelings of success.

Step 8: — After finishing up your homework assignment, recall to yourself or write down the most important learned concepts. Recalling this information will increase your ability to learn these new concepts. Additional information about Step 8 will be discussed later in this chapter.

Step 9: — Make up note cards containing hard-to-remember problems or concepts. Note cards are an excellent way to review material for a test.

Step 10: — Getting behind in mathematics homework is academic suicide. Mathematics is a linear learning process. If you get behind in that learning sequence, it will be very difficult to catch up because each topic builds on the next. It will be like going to Spanish class without learning the last set of vocabulary words. The teacher will be talking to you, using the new vocabulary, but you won't understand what is being said. To keep up with your homework, it is necessary to complete the homework every school day and sometimes even on weekends.

Doing your homework one-half hour a day for two days in a row is better than one hour every other day. If you have to get behind in one of your courses, make sure it is not math. Fall behind in a course that does not have a linear learning process; e. g., psychology.

REMEMBER: Getting behind in math homework is the fastest way to fail the course.

Learn to check your work. Substitute your answer back into the original problem to see if it fits the given information. Is your solution accurate? Is your solution precise? Is your solution written clearly and concisely? Does your solution answer the original question?

Get help outside of class. Visit your teacher during office hours, go to the help sessions, find a tutor, visit the tutoring center above the bookstore, and/or form a study group with classmates. Write down a specific list of questions you want answered **before** meeting with the person who is trying to help you. It is not easy to help someone who has not bothered to try to assess which concepts they have difficulty with.

Read your textbook carefully and systematically. A mathematics text needs to be read actively but slowly with a pen or pencil in hand. Do not even start to read a textbook section unless you have at least a general understanding of the relevant material in the sections that precede it.

When reading a definition or a theorem, think of examples that illustrate the theorem or definition and write them in your notes or in the margin of the text. Then think of examples that do not satisfy the definition or one of the assumptions of the theorem. When reading an example, identify what topic, concept, definition, theorem, or formula it illustrates. When reading a description of a procedure for solving a particular type of problem, identify: what types of problems the procedure will solve, what the key points of the procedure are, differences between this procedure and other procedures which solve similar but different problems.

Place a question mark next to confusing material. Read the examples that follow until they are clear to you, then reread the confusing material. Use additional textbooks to help you in the course and/or work with a study guide. Read the relevant textbook sections **before** the next class. -Adapted from *How to be a Great Math Student*.

Schedule your study time. Plan your schedule on a weekly basis. Fill in the schedule below with your entire course and work load, then allocate time for meals, for studying math, and for studying other courses. It is preferable to allot more time than you actually think you need for each activity. For example, if you think it will take about an hour to finish your math homework, allot two hours on your schedule. Choose a time of day to study math when you are especially alert. Study in thirty

minute segments with breaks that last between five and ten minutes. A general rule of thumb is to study two hours for each hour of class time.

Every Sunday develop an effective study plan and establish study goals. The first priority is to establish the best time to study math. Math should be studied as soon as possible after each class session.

You may want to use the following abbreviations: C = class, W = work, E = eat, T = tutor, FR = family responsibility, CN = cleaning, SC = social time, O = other, SM = study math.

Time	Sun	Mon	Tues	Wed	Thur	Fri	Sat
7:00							
8:00							
9:00							
10:00							
11:00							
12:00							
1:00							
2:00							
3:00							
4:00							
5:00							
6:00							
7:00							
8:00							

Always aim for 100% when you prepare for tests. The higher the grade you aim for on the test, the higher the grade you are likely to get. Aiming for 100% helps ensure against having a "mental block" during the test. Begin your test preparation early so that you are not trying to learn new topics right before test time.

When studying for a test try to simulate the test situation by working a list of problems that are likely to be on the test while you time yourself. Don't allow yourself to look at notes or the textbook during the simulated test. Check your answers afterward and review the sections of the text that discuss the types of problems you may have missed. Then take another simulated test using different problems.

Use a strategy for test taking. To succeed on a test requires not only the ability to solve problems but confidence in your ability to solve problems, which in turn comes from dedicated and determined resolve to study (getting help when necessary) until you have mastered the material. But don't study right up until the test time. At a point where you feel confident that you understand the material, quit. If you continue to study after that point you may exhaust yourself or make a mistake and undermine your self-confidence. Try to pace yourself for answering the problems so that you will finish the test, but don't rush. First work the problems that you are sure of. Make sure all of the key steps in a solution are clearly spelled out. If you get stuck on a problem, skip it and return to it later. Use any time at the end of an exam to check your work. After getting a test back use it as a learning opportunity, study and learn how to solve problems that you missed on the test.

A test grade is a performance measure of your ability in a particular area at a particular time. It is not a measurement of personal worth nor future success or failure. Failing a test doesn't mean that you can't learn, it may mean that more time and effort is required and/or better study strategies, or that your life circumstances are not allowing you to devote the time and energy necessary to succeed.

Some books written to help students succeed in mathematics are:

1. *Mastering Mathematics: How to Be a Great Math Student* by Richard Manning Smith. Published by Wadsworth Publishing Company. In stock at the Clark College bookstore.
2. *Winning at Math* by Paul D. Nolting. Published by Academic Success Press. Available at the Clark College Library.
3. *Successful Math Study Skills* by Paul D. Nolting and William A. Savage. Published by Academic Success Press. Available at the Clark College Library.

Some courses offered at Clark College to help students succeed academically are:

1. **Mathematics and Test Anxiety**, HDEV 050.
2. **College Success** HDEV 116 and HDEV 117.
3. **Stress Management**, HDEV 186.

See the Schedule of classes or Clark College Catalog for more detail. Clark College also offers student support services, call 992-2366.

Student Self Assessment Form

Instructions: Fill in the blanks with the number that corresponds to the appropriate response.

1. I strive to understand ___ of the vocabulary and/or concepts of each section of the text book.
4. All 3. Most 2. Some 1. None

2. I make a list of ___ of the words and/or concepts from each section of the text that I do not understand.
4. All 3. Most 2. Some 1. None

3. I ___ set aside two hours of study time each day for doing math homework.
4. Always 3. Usually 2. Sometimes 1. Never

4. I make a list of ___ of the homework problems from each section of the text that I can not solve or do not understand.
4. All 3. Most 2. Some 1. None

5. I have read and understand ___ of the sections of the Academic Success Guide on working homework problems.
4. All 3. Most 2. Some 1. None

6. I ___ get help as soon as possible if I do not understand a lecture or homework problem.
4. Always 3. Usually 2. Sometimes 1. Never

7. I ___ bring a list of the words, concepts, and/or homework problems from the section(s) of the text that I am having difficulty with when I seek help from the Instructor or tutor.
4. Always 3. Usually 2. Sometimes 1. Never

8. I ___ bring my math book to office hours or help sessions.
4. Always 3. Usually 2. Sometimes 1. Never

9. I ___ test my understanding of the words, concepts, and/or homework problems from each section of the text by attempting to explain them to someone else.
4. Always 3. Usually 2. Sometimes 1. Never
10. I can___ get a reasonable mental estimate of the solution to a homework problem before actually computing it.
4. Always 3. Usually 2. Sometimes 1. Never
11. I can___ get a reasonable mental estimate of the graph of an equation before actually graphing it.
4. Always 3. Usually 2. Sometimes 1. Never
12. I ___ check my answers.
4. Always 3. Usually 2. Sometimes 1. Never
13. I strive to solve _ of the homework problems of each section of the text book.
4. All 3. Most 2. Some 1. None
14. I know _ of the times and places that I can talk with my instructor outside of class.
4. All 3. Most 2. Some 1. None
15. I ___ read the relevant sections of the text book and review my notes before each lecture.
4. Always 3. Usually 2. Sometimes 1. Never

16. My class attendance is __ .
4. Excellent 3. Good 2. Fair 1. Poor
17. I ___ with the following statement: The most important quality that will affect your success in a math course is your attitude.
4. Strongly Agree 3. Mostly Agree 2. Somewhat Agree 1. Disagree
18. I ___ simulate a test by working a list of problems that are likely to be on the test while I time myself. I do not allow myself to use the text or notes in order to more accurately simulate the test environment.
4. Always 3. Usually 2. Sometimes 1. Never
19. I ___ accept that it is my responsibility to ask questions or seek additional help outside of class if I do not understand an explanation or example from the instructor.
4. Always 3. Usually 2. Sometimes 1. Never
20. I ___ with the following statement: Learning to think critically and take responsibility for my own learning will ultimately make me better prepared for more advanced courses, jobs, and life in general.
4. Strongly Agree 3. Mostly Agree 2. Somewhat Agree 1. Disagree
21. I believe my chance for success in this class is ____ .
4. Excellent 3. Good 2. Fair 1. Poor

Add your numbered responses from the above list. If your total is:

- (A) greater than 79 but less than or equal to 84, you may be an over-achiever,
- (B) greater than 63 but less than or equal to 79, you have good study skills and attitudes,
- (C) greater than 49 but less than or equal to 63, you need to improve your study skills and/or attitudes,
- (D) less than or equal to 49, you are not taking learning seriously.