



# **Strategies for Academic Success**



## Strategies for Academic Success

# 0.1 Understanding and Reducing Stress

Stress is a part of daily life and comes from many different sources, including school, work, and family life. Stress in small doses can be positive, providing you with more energy and making you feel more alert. However, too much stress can start affecting you mentally and physically. You may feel overwhelmed or physically sick as the result of too much stress.

### Determine the Causes of Stress

Stress can be caused by either external or internal stressors. External stressors are things outside of ourselves and are typically situations that we cannot control, such as class registration deadlines, traffic jams, or the loss of a loved one. Internal stressors happen inside of our minds and are related to our feelings, expectations, and goals, such as feeling nervous about an upcoming math exam or annoyed with a friend's decision. Internal stressors can also be the result of decisions we make. While external and internal stressors are separate, they often do affect one another. For instance, if you are feeling nervous about a presentation and run into technology issues, the technology issues can increase your nervousness, which can influence how you react to the situation.

Examples of common stressors are as follows. Consider whether each is an external stressor, internal stressor, or a combination of both.

**School:** disappointment about a test result, class schedule, homework

**Work:** hours, commute, finances, budgets, nervousness about a presentation

**Family life:** childcare, spending time with family, family conflict

### Putting Stress into Perspective

The first step in dealing with stress is to take a step back and evaluate the situation. Try to understand what is causing your stress, and then determine which parts of the situation you can control and which parts you cannot control. Typically, we have control over internal stressors but do not have control over external stressors.

Suppose you have a math final next week that you need to study for. You discover during a meeting with your advisor that you need at least a B on the exam to maintain your scholarship. Besides finding time to study, you also have classes to attend, a job to work, and an important family event, along with all of the regular day-to-day activities in your life, such as sleeping, bathing, and eating. When viewed all together, this situation can seem stressful.

Taking a step back and carefully considering each item listed, we can assign a priority to each and put the whole situation into perspective. To assign a priority, you can use a scale of 1 to 3, in which 1 is the most important, and 3 is the least important. For instance, you might consider studying for the exam and working to be priority 1, attending classes and the family event priority 2, and some of your day-to-day activities (such as catching up on news or podcasts) to be priority 3.

Once you put your stressors into perspective, you can focus on managing your stress.

### Plan to Manage Stress Effectively

Without a plan to manage the various stressors in life, it's easy to become overwhelmed. To prevent the stressors from affecting your mental and physical health, it's best to have a plan in place to effectively manage stress.

**Take Action:** Once the causes of stress are identified and given a priority level, you can take action to manage them. Focus on potential solutions instead of focusing on the problem. Consider creating a prioritized to-do list or creating a weekly schedule. It can also be helpful to determine if certain items are completely out of your control, and if so, letting them go.

**Stay Organized:** Staying organized can greatly reduce stress. This includes keeping work or school papers organized as well as keeping upcoming events and deadlines organized in a calendar.

**Ask for Help:** Asking for help can be a stressor itself but can also greatly reduce the stress that a situation or event is causing. The help can come in many forms; you can ask family or friends for assistance with childcare while you study for an exam. You can ask a therapist for help coping with the loss of a loved one. There are a variety of services available to help you deal with nearly any stressor in your life, regardless of whether the stressor is internal or external.

**Focus on Yourself:** Your physical and mental health play a role in how you respond to any stressor that arises. If you're tired or hungry, your reaction to stressors may be magnified. Getting enough rest, eating healthy meals, and exercising regularly can help. You can also find ways to manage your immediate reactions to stress by practicing breathing techniques, mediating, or doing yoga. With a clear mind and a healthy, well-rested body, you'll have an easier time managing any stressor that comes your way.

**Practice Prevention:** As Benjamin Franklin once said, "An ounce of prevention is worth a pound of cure." Some stressors can be prepared for in advance. For example, you can review your class notes daily and finish all homework assignments so that you don't need to cram last minute for the final exam. Similarly, you can save money each paycheck for financial emergencies instead of worrying about how to borrow money when an emergency strikes. Sometimes, prevention is simply avoiding procrastination; other times, it requires foresight of potential stressors and preventative action.

## Actively Reduce Stress and Anxiety

Practicing deep breathing is an effective strategy to reduce in-the-moment stress or anxiety. During moments of high stress, several things happen in the body: blood pressure and heart rate increase, breathing becomes more shallow and rapid, and the flight-or-fight response can be triggered. By practicing deep breathing, also known as diaphragmatic breathing, you can combat these natural responses. This works because deep breathing triggers the rest and relaxation response, which reduces anxiety, lowers blood pressure, and decreases heart rate.

To practice deep breathing yourself, try the following simple technique:

1. Breathe in slowly, until your lungs feel full, while imagining drawing the air towards your belly.
2. Hold in this breath for a few seconds.
3. Slowly exhale all the air out of your lungs.
4. Repeat for several cycles.

If this method of deep breathing does not work well for you, try another. Any deep-breathing technique can trigger the same relaxation response. Try practicing deep breathing if you are experiencing high anxiety before or during a math test or during any other stressful events in your day-to-day life.

### Questions

1. List two internal stressors and two external stressors in your life right now. Give each stressor a priority level.
2. Create a plan to deal with the stressors you listed in Question 1.



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### 0.2 Staying Organized

Staying organized is a key element in reducing stress and making sure you finish all your tasks. This is true whether you are a student, employee, parent, or in any other stage of life. It is especially true if you are in multiple stages at once.

While keeping a mental to-do list is an option, it's likely that you'll run into a variety of issues with this method, such as forgetting to do tasks, scheduling overlapping appointments, or missing a loan payment. Occasional issues like these might not seem like a big deal, but if they are recurring, you may eventually end up failing a class, losing your job, or paying late fees.

#### Keep a Planner

A planner is a place for you to organize your schedule and record any important tasks or responsibilities. By keeping all of this information in one place, you'll be less likely to forget to complete something important.

You can make a planner or you can purchase one. Planners can be made in either printed form or electronic form. Planners can be broken down into daily, weekly, or monthly pages. Daily planners allow for the most detail per day, while monthly planners only allow for a high-level overview of events. Weekly planners are a balance between the two.

When purchasing or creating a planner, consider how much detail you'll need in order to keep your life organized. If you need hourly breakdowns of each day, a daily planner will be best. If you need less precision, but still have several events or tasks each day, then a weekly planner might suit your needs. If you only need to keep track of a few events per week or month, then a monthly planner might be the option that works for you.

It is worth noting that an electronic planner can travel with you everywhere you carry your phone. There are a variety of apps available for most operating systems. At the very least, the calendar app on your phone can be utilized to remind you of the most important events in your schedule.

If you are unsure which type of planner you need, list out the regular events and tasks you have coming up, and then determine the level of precision you'll need to accomplish everything on your list.

Items on your list might include the following:

- Your work schedule
- Your class schedule
- Academic calendar dates
- Assignment deadlines
- Billing due dates
- Important holidays and birthdays
- Upcoming trips

When filling out your planner, first prioritize the events and tasks, then schedule the most important items before adding any nonessential items. Once you've filled in your planner, be sure to keep it up to date by adjusting appointments or adding in new events. And don't forget to always check your planner before scheduling any new appointments!

#### Use a File System

A well-organized file system is important for keeping documents sorted and easy to find at any moment. File systems can be used for a variety of documents, such as course materials, financial papers, and legal documents.

Keeping track of course materials, such as handouts, homework, exams, and notes, can help you improve your grades. If these materials are readily available, it is easier to fill free time with reviewing and studying. Other important papers to keep track of are course policies and the course syllabus. Having these documents on hand will help you know what to expect in the course along with a list of important dates.

The first step in creating a file system is determining what is important to save. If you save everything, your file system may become cluttered and unusable. If you keep too few items, your file system may not be informative enough to be helpful. A good rule of thumb is to keep recent important documents and discard older documents after a certain date. For instance, you may decide to keep all current course documents (notes, homework, tests, and so on) while the course is in progress, then trim down the files to only the notes and tests once the course is complete. For financial documents, you may decide to keep initial loan or account information, recent account statements, and account updates, then decide to discard old files after a certain number of years.

The second step in keeping an organized file system is deciding where to save files. Printed documents can be saved in binders, folders, or divided cabinets. For example, you can have a binder that holds all of your course information, with a divider tab for class information, notes, homework, and tests. Keeping the files within each section in order by date can make it easy to find what you are looking for when you need it.

Electronic files can be saved in a system of nested folders. For example, you can have a main folder titled with the course name, and within that folder, have individual subfolders for notes, tests, and course documents. It's important to clearly name files that are saved electronically.

## Create a Workspace

An organized workspace can help you focus and work efficiently. If you have a dedicated workspace that is comfortable and uncluttered, it is easier to sit down and work without distractions. Having enough space is also essential. For example, if you are working on math homework, you need space for your computer, textbook, notebook, calculator, and writing utensils. If you have a clean area where you can spread out, you are less likely to misplace items when you need them.

If your workspace needs to be used for multiple purposes, having an easy-to-access storage space for your work items is essential. Keeping your items organized and together can help you set up and break down your workspace as needed.

If you live in a crowded house or dorm room, finding a workspace at home can be tricky. You may need to get a little creative and be flexible. The items you need at your workspace should ideally be easily relocated from room to room and completely stored away when not in use. This will allow the workspace to be multifunctional.

If you don't have space to work where you live, you can consider public places such as a library or a coffee shop. Consider the pros and cons of each location before making a choice. Libraries are typically free to use, but you might be limited on hours you can be in the building or how long you can use study rooms. Coffee shops typically require you to make a purchase to stay for any length of time, but the music and atmosphere can help create a focused mindset. Both options usually have free Wi-Fi, but proceed with caution when using unsecured public Wi-Fi and don't access important personal information when connected.

It is also important to figure out the level of distractions you can tolerate before picking a location to set up your workspace. Distractions can come in the form of friends and family talking to you, an open space on campus getting too crowded, or the smell of baked goods at a bakery becoming too tempting. While it's unlikely you can avoid all distractions, keeping them to a minimum can help make your study session more productive.

## Questions

1. Would you benefit best from a daily, weekly, or monthly planner? Explain your reasoning.
2. Describe your current workspace and determine three changes you can make to create a more organized workspace.



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### 0.3 Managing Your Time Effectively

Have you ever made it to the end of a day and wondered where all your time went? Sometimes it feels like there aren't enough hours in the day. Finding time to balance work, school, and home life can be difficult. Some interruptions, like unexpected traffic or family emergencies, are simply outside of your control. However, other distractions are within your control, such as watching TV or scrolling through social media. It's important to find a balance between activities you need to do (such as attending class and work) and activities you want to do (such as watching TV). Managing your time is important because you can never get time back.

Here are three strategies for managing your time more effectively.

#### Take Breaks

When you are working on an important project or studying for a big exam, you may feel tempted to work as long as possible without taking a break. This is especially true when you're working or studying at the last minute. While staying focused is important, working yourself for hours until you're mentally drained will lower the quality of your work and force you to take even more time recovering.

Think about the way that overworking can affect your body physically. If you're weight-training, you must take frequent breaks both between individual sets and entire workout sessions. If you don't let your muscles recover, you risk injuring yourself, which could leave you laid up for weeks.

Just like taking breaks helps your physical body recover, it will also help your brain re-energize and refocus. During study sessions, you should plan to take a short study break at least once an hour. If you usually work indoors, take this time to get a breath of fresh air outside and clear your head.

Study breaks and work breaks should usually last around five minutes. The longer the break, the harder it is to start working again. Instead of stopping for half an hour, take a five-minute break and reward yourself with some downtime when the task is complete. Similarly, if a course you are taking has a built-in break during the middle of the class period, use it to get up and move around. This little bit of physical movement can help you think more clearly.

#### Avoid Multitasking

Multitasking is working on more than one task at a time. When you have several assignments that need to be completed, you may be tempted to save time by working on two or three of them at once. While this strategy might seem like a time-saver, you will probably end up using more time than if you had completed each task individually. Not only will you have to switch your focus from one task to the next, but you will also make more mistakes that will need to be corrected later.

People don't multitask nearly as well as they think they do. For example, research studies have shown that multitasking while driving is similar to or even worse than driving while drunk. While multitasking on a project for school or work may not be dangerous, it can lead to wasted time and silly mistakes. Instead of trying to do two things at once, schedule yourself time to work on one task at a time.

Multitasking can also become an excuse for distractions, especially electronic ones. Have you ever tried to complete a homework assignment, watch TV, and message friends all at the same time? You probably did one of these things well and two of these things badly. That's because your brain can't give its full attention to three tasks at once. To stay focused in class or while studying, try stashing your phone in your backpack or purse and staying logged out of your computer until you need it.

## Use a Time Budget

Just like a financial budget shows you how you spend your money, a time budget shows you how you spend your time. A time budget can help you identify “wasted” time that could be used more productively.

To begin budgeting your time, you first need to get an idea of how you usually spend it. For one week, keep track of everything you do in fifteen-minute time blocks. Be as accurate as possible and track as you go throughout your day. Here’s an example of what a partial record of activities for one day might look like.

| Time                     | Activity                |
|--------------------------|-------------------------|
| 12:00 a.m. to 7:30 a.m.  | Sleeping                |
| 7:30 a.m. to 8:15 a.m.   | Getting ready for class |
| 8:15 a.m. to 8:45 a.m.   | Driving                 |
| 8:45 a.m. to 9:00 a.m.   | Walking to class        |
| 9:00 a.m. to 10:30 a.m.  | Math class              |
| 10:30 a.m. to 10:45 a.m. | Walking to next class   |
| 10:45 a.m. to 11:30 a.m. | English class           |

Once you’ve recorded your entire week in fifteen-minute time blocks, you can calculate how much time you spend on different types of activities. First, review the activities you entered and assign each of them to one of the following categories: sleep, meals, work, class, study, extracurricular, exercise, personal, family, entertainment, social, and other. Then, answer the following questions.

1. Do you feel like you had enough time to fulfill all your responsibilities?
2. Were you surprised by how much time you spent on any particular activity?
3. What are some important activities you should have spent more time doing?
4. What are some activities you’d like to spend more time doing in the future?
5. What are some activities you’d like to spend less time doing in the future?

Based on your answers to these questions, create a weekly time budget. Remember that one week contains only 168 hours. If you want to spend more time on a particular activity, you’ll need to find that time somewhere. Use a planner to schedule specific blocks of time for study sessions, meals, travel times, and morning/evening routines. As a general rule, you should set aside at least two hours of study time for every one hour of class time. That means that a three-credit-hour course would require at least six hours of outside study time per week.



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# 0.4 Reading a Textbook and Note-Taking

Reading a math textbook and taking notes is more intensive than casually reading a book for fun. You have to concentrate more on what you are reading and be careful how you take notes because you will likely be tested on the content. Here are some tips to help you successfully read a math textbook and take notes.

### Reading a Math Textbook

Reading a math textbook requires a different approach than reading literature or history textbooks because math textbooks contain a lot of symbols and formulas in addition to words. Whether you are reading a physical math textbook or an e-book, the following tips can help you understand and retain the information presented.

**Start at the Beginning:** Don't start in the middle of an assigned section. Math tends to build on previously learned concepts, and you may miss an important concept or formula that is crucial to understanding the rest of the material in the section.

**Don't Skim:** When reading math textbooks, look at everything: titles, learning objectives, definitions, formulas, text in the margins, and any text that is highlighted, outlined, or in bold. Also, pay close attention to any tables, figures, charts, and graphs.

**Work through Examples:** Make sure you understand each step of an example. If you don't understand something, mark it so you can ask about it in class. Sometimes, math textbooks leave out intermediate steps to save space. Try working through the examples on your own, filling in any missing steps.

**Understand the Mathematical Definitions:** Many terms used in everyday English have a different meaning when used in mathematics. Some examples include *equivalent*, *similar*, *average*, *median*, and *product*. It is important to note these differences in your notebook along with other important definitions and formulas. You might find it helpful to keep a separate math glossary that contains each term with its definition along with an example of how the term is used.

**Reread important information:** After reading through the section, go back and reread boxed definitions, examples, or any other important information. It is also important to reread any portions of the lesson that seemed more complex or difficult compared to the rest.

### Annotating a Textbook

Annotating involves marking the text and taking notes in the margin. Put your book to good use and don't be afraid to add comments and highlighting. If you don't understand something in the text, reread it a few times. If it is still not clear, note the text with a question mark or some other notation so that you can ask your instructor about it. A well-annotated text can help you find important information while completing homework assignments as well as help you review for exams.

You can use sticky notes, pens, and highlighters to annotate a physical text. Try adding special colors or symbols for different types of information. For example, questions could be in blue with a question mark, and important ideas could be in red with a star. However, if you are renting a textbook, be sure to limit annotations to sticky notes and easily removed markings. Most e-books can be annotated with mark-up tools available in the e-reader.

Some important things to annotate or highlight are definitions, key concepts, important ideas, and examples. You can also add notes about prior knowledge to the margin and summarize definitions or procedures in your own words.

### General Note-Taking Tips

- Write the date and the course name at the top of each page.
- Write the notes in your own words and paraphrase.
- Use abbreviations, such as ft for foot, # for number, def for definition, and RHS for right-hand side.
- Copy all figures or examples that are presented during the lecture.
- Review your notes after class and add additional detail where needed.
- Review and rewrite your notes after class. Do this on the same day, if possible.

There are many different methods of note taking and it's always good to explore new methods. A good time to try out new note-taking methods is when you rewrite your class notes. Try each new method a few times before deciding which works best for you. Presented here are three note-taking methods you can try out. You may even find that a blend of several methods works best for you.

## Note-Taking Methods

Taking notes in class is an important step toward understanding new material. Review your notes daily while you do your homework and before taking quizzes and tests. While there are several methods for taking notes, three are presented here.

### Outlines

An outline consists of several topic headings, each followed by a series of indented bullet points that include subtopics, definitions, examples, and other details.

Example:

1. Ratio
  - a. Comparison of two quantities by division.
  - b. Ratio of  $a$  to  $b$ 
    - i.  $\frac{a}{b}$
    - ii.  $a : b$
    - iii.  $a$  to  $b$
  - c. Can be reduced
  - d. Common units can cancel

### Split Page

The split page method divides the page vertically into two columns, with the left column narrower than the right column. Main topics go in the left column, and detailed comments go in the right column. The bottom of the page is reserved for a short summary of the material covered.

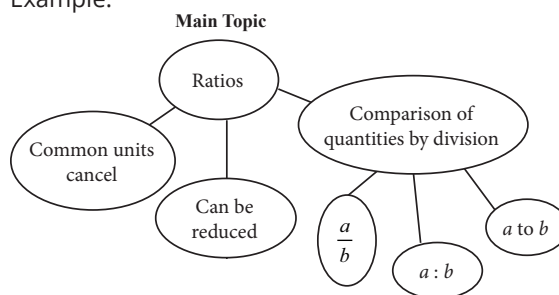
Example:

| Keywords:                                                            | Notes:                                                                                                                                                                                                                                              |
|----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ratios                                                               | <ol style="list-style-type: none"> <li>1. Comparison of two quantities by division</li> <li>2. <math>\frac{a}{b}</math>, <math>a : b</math>, <math>a</math> to <math>b</math></li> <li>3. Can reduce</li> <li>4. Common units can cancel</li> </ol> |
| Summary: Ratios are used to compare quantities and units can cancel. |                                                                                                                                                                                                                                                     |

## Mapping

The mapping method is the most visual of the three methods. One common way to create a mapping is to write the main idea or topic in the center and draw lines from that main idea to smaller ideas or subtopics. Additional branches can be created from the subtopics until all of the key ideas and definitions are included. Using a different color for subtopics can help you visually organize the topics.

Example:



## Reviewing Supplemental Content

Many textbooks have corresponding online courseware that includes lesson or example videos to supplement the text. The videos can vary in topic from reviewing the skills and concepts covered in the lesson to working through a specific example. While watching these videos, keep the following tips in mind.

- Pause the video as needed to self-assess your understanding.
- Avoid other audio or visual distractions.
- Take notes.
- Write down any additional questions asked during the video, then try to find the solution in the textbook or ask your professor for more information.
- Rewatch videos as needed for clarification.
- Work through the same or similar exercises on paper while watching the video or soon after.

In addition to videos, you might have access to other supplemental content such as PowerPoints, chapter reviews, and content created by your instructor.

## Questions

1. Explain why you need to carefully read a math textbook in the order the information is presented.
2. Which note-taking method do you use? (If it isn't one listed, describe it.)



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# 0.5 Using Effective Study Strategies

Have you ever heard the phrase “practice makes perfect”? This saying applies to many things in life. You won’t become a concert pianist without many hours of practice. You won’t become an NBA basketball star by sitting around watching basketball on TV. You can watch all of the videos and read all of the books on how to do something, but you won’t learn the skills without actually practicing. The same idea applies to math: math is not a spectator sport.

Just as you work your body through physical exercise, you have to work your brain through mental exercise. Math is an excellent subject to provide the mental exercise needed to stimulate your brain. So when doing mathematics, remember the 3 P’s—Practice, Patience, and Persistence—and the positive effects they will have on your brain! A few ways to instill practice, patience, and persistence into your routine are to manage your study schedule, use creative study strategies, and diligently prepare for exams.

## Manage Your Study Schedule

Creating a study routine will keep you in the habit of studying and provide personal accountability. Studying daily will also help prevent the need for emergency cram sessions before an exam. To make studying part of your daily routine, try using the following strategies.

**Find a study time that works for you.** If you’re a morning person, wake up early for a brief study session. If you struggle to stay awake after eating lunch, don’t plan to study in the early afternoon.

**Schedule study times in your planner.** Adding study sessions to your planner makes them harder to skip. Plan to study two to three hours outside of class for every hour spent in class. Schedule your most difficult subjects first so your mind is fresh.

**Be flexible when necessary.** Unexpected events are bound to happen once in a while. Don’t feel guilty about rescheduling your study time around these disruptions. You should also be flexible with your study location and not be afraid to relocate if you start getting distracted by your surroundings.

**Keep study times separate.** When you have multiple assignments due for class, you may find yourself spending all your study time working on assignments and not reviewing. Even if you only have fifteen minutes to spare, reserve time for studying your class notes.

**Review class notes as soon as possible.** Reviewing class notes soon after class will help you retain the skills and concepts covered. This will also allow you to fill in any gaps in your notes for future reference.

## Use Creative Study Strategies

Sometimes studying can be boring and you lose your attention after extended periods of time. Creative study strategies can help retain your attention and help you learn.

**Recite information aloud.** Ask yourself questions about the material to see if you can recall important facts and details. Pretend you are teaching or explaining the material to someone else.

**Use mnemonics or memory techniques.** For example, a mnemonic that is commonly used to remember the order of operations is “Please Excuse My Dear Aunt Sally,” which uses the first letter of the words Parentheses, Exponents, Multiplication, Division, Addition, and Subtraction.

**Use acronyms to help remember important concepts or procedures.** An acronym is created by taking the first letter (or letters) from each word in the phrase that you want to remember and making a new word. For example, the acronym HOMES is often used to remember the five Great Lakes in North America, where each letter in the word represents the first letter of each lake: Huron, Ontario, Michigan, Erie, and Superior.

**Use visual images like diagrams, charts, and pictures.** You can make your own pictures and diagrams to help you recall important definitions, theorems, or concepts.

**Split larger pieces of information into smaller “chunks.”** For example, instead of remembering a sequence of digits such as 555777213, you can break it into chunks and remember 555 777 213.

**Group long lists of information into categories that make sense.** For example, instead of remembering all the properties of real numbers individually, try grouping them into shorter lists by operation, such as addition and multiplication.

**Associate the information with something you already know.** Think about how you can make the new information personally meaningful. How does it relate to your life, your experiences, and your current knowledge? If you can link new information to existing memories, you can create “mental hooks” to help you recall the information in the future.

### Tips for Preparing for an Exam

When preparing for a final math exam, it's best to take at least a week to prepare for the exam along with regular studying throughout the semester.

#### Determine Important Exam Information

1. What is the date, time, and location of the exam?
2. Is there a time limit to complete the exam?
3. What materials can you bring to the exam? Can you use formula sheets, calculators, or scrap paper?

#### One Week before the Exam

1. **Create a study schedule.** Determine where to study and whether you will study with classmates. Be sure to limit distractions when deciding. Bring snacks and take regular breaks.
2. **Organize your study materials.** Even if you have well-organized course materials, you may decide to condense them into a single study sheet, create note cards, or make a formula sheet.
3. **Follow through with your study plan.** Starting right away will give you time to ask your instructor or classmates for help with difficult topics.

#### Three Days before the Exam

1. Make a practice test and take it under the same constraints the final exam will have.
2. Ask your instructor or classmates about any questions you struggled with on the practice test.

#### Night before the Exam

1. Organize and pack all of the supplies you will need for the exam: pencils, erasers, calculator, scratch paper, and so on.
2. Review your formula sheet.
3. Avoid trying to cram in a lot of last-minute studying.
4. Go to bed early and get a good night of sleep.

#### Day of the Exam

1. Eat a healthy breakfast and don't drink too much caffeine, which can make you anxious.
2. Make sure you have all of your supplies with you when you leave for the exam.
3. Review your formula sheet if you are not allowed to use it on the exam.
4. Get to the exam location early so you can be organized and mentally prepared.

#### Questions

1. Which creative study strategy do you find most useful, and why? (If it isn't one listed, describe it.)
2. Describe your current method for preparing for an exam and determine three ways you can improve it.



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### 0.6 Reducing Test Anxiety

Approximately 93% of adults in the United States have experienced anxiety related to math at some point in their life.<sup>1</sup> Anxiety can come in many forms when it comes to the subject of math. You may have general anxiety about math, you may have anxiety about specific aspects of math class, or you may have test anxiety. Practicing the following strategies can help you reduce any general math anxiety and test-specific anxiety you may experience.

#### Reducing Math Anxiety

Depending on what causes your math anxiety, the tools to overcome it will differ. You may need to develop an effective study strategy so that you always feel prepared for your math class or any test. You may need to learn how to properly read a math textbook and take notes. You may even need to learn to manage your time, prioritizing what is most important (such as work and studying), or develop a system to keep your documents and workspace organized.

Math anxiety could also be caused by your thoughts and feelings about either your abilities or the subject itself (or both). If this is the case, try the following methods to reduce math anxiety.

1. Maintain a positive attitude and avoid negative self-talk. Remind yourself that each mistake is an opportunity to learn and improve. Set small math achievement goals to keep you moving toward bigger goals.
2. Visualize yourself doing well in math, whether it's on a quiz, test, or passing the course.
3. Think of setbacks as opportunities for growth. When you experience a setback, learn from your mistakes or the situation and keep moving forward.
4. Take deep, slow breaths, and think about the people or places that make you feel happy and peaceful.
5. Find a ritual that makes you happy. This could be listening to music, taking deep breaths, or imagining your future success. Find what works for you and practice it regularly.

6. Form a math study group. Working with others will help you feel more relaxed, and you can support each other.
7. Learn effective study skills that work with your learning style. Don't be afraid to change the way you study if it's not working for you.

#### Preparing for an Exam

Being prepared for an exam can reduce your anxiety leading up to and during the exam. Preparing for an exam is not just the studying that happens the few days before the exam. The preparation should take place throughout the semester. Be sure to consistently do the following to always be prepared for exams or pop quizzes.

1. Read your math textbook before class and review the lesson again after class.
2. Take notes using the method that works best for you, and review the notes regularly. Rewrite your notes if necessary to expand or condense the information covered.
3. Keep your class materials organized. Use labels or highlighting so you can easily review the content.
4. Use study aids, such as note cards, to help you remember definitions, theorems, formulas, or procedures.
5. Actively practice the skills you learn by working through the examples and doing your homework.
6. Strive to understand the material, not simply memorize it. Explain the material in your own words or look for patterns.

<sup>1</sup> Christie Blazer, "Strategies for Reducing Math Anxiety. Information Capsule. Volume 1102," ERIC, September 2011, [eric.ed.gov/?id=ED536509](https://eric.ed.gov/?id=ED536509).

7. Plan to study two to three hours outside of class for every hour spent in class. Pick a study time and place that works well with your schedule.
8. Do not spend all of your study time working through a single exercise or figuring out a single concept. Move on to the next exercise or concept. Make notes to ask your instructor or classmates for help when needed.

## » Test-Taking Strategies to Reduce Anxiety

In addition to preparing for a test by studying, you can try the following tips to reduce your test anxiety.

1. Get plenty of sleep the night before the exam and eat nutritious meals on the day of the exam. Being well-rested and avoiding hunger will help you focus.
2. Talk to your instructor about your anxiety. Your school might allow special accommodations, such as extra time on the test or taking the test in a more calming area.
3. When handed a test, immediately write your name at the top, and then perform a “brain drain” to write down all the formulas and important facts you remember on your test or scratch paper. Having this information readily available will boost your confidence and reduce your anxiety.
4. Carefully read the directions of the exam before starting any work. Then, read through the questions to make sure you understand them. You can add notation next to each question to indicate the perceived level of difficulty. It might build your confidence to start with problems you find easier and then move on to the more difficult problems.
5. If you panic or freeze during a math test, focus on a single problem you can do. Once you gain confidence, work through other problems you know how to do. Then, attempt the more difficult problems.
6. Check your solutions as you go to make sure they make sense. Then, use any extra time after you finish the exam to do a final check of your work and solutions before you turn it in.
7. If you get to a problem you don’t know how to solve, skip it and come back after you finish the problems you do know how to solve. Another problem on the test may help you remember how to solve the more difficult problems.
8. If a problem is multiple choice, work the problem before looking at the answers. Alternatively, you can start by looking at the answer choices and working backwards to see if any are easily eliminated.

## 🔍 Reviewing Test Results

Whether you ace the test, receive a passing score, or receive a low score, you should take the time to review your work and any feedback from your instructor. This is especially true for tests and exams early in the course because math courses tend to be cumulative. That is, concepts and skills learned for one test are likely to be needed for the next test. When you receive a test back, do the following:

1. Correct any of your incorrect work so that you know the correct way to solve the problem in the future. If you are unsure what you did wrong, ask a classmate or visit your instructor during office hours.
2. Analyze the test questions to determine if most of them came from your class notes, the homework, or the textbook. This will give you an idea of how to spend your time studying for the next test.
3. Analyze the errors you made on the test. Were they careless mistakes? Did you run out of time? Did you not understand the material well enough? Were you unsure which method to use?
4. Based on your analysis of the test, adjust your study methods and schedule. It is important to adjust your study strategy or try new approaches. This may seem difficult if you are used to your current study techniques. Adjusting one or two aspects of your study methods and schedule at a time can allow you to find out what works (or does not work).

### Questions

1. Describe any anxiety you may have in relation to math.
2. Create a plan to help work through your math anxiety.

