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Time Management

Time management is the foundation of academic success; learning this skill will help lead you to better grades. Good time managers find productive study environments, set clear priorities and goals, use calendars and schedules, and work to overcome procrastination.

Study Environment

Your study environment affects how much you accomplish during study sessions. Bad study environments are distracting, while effective ones facilitate learning and allow you to make the best use of your time.

Factors to consider in choosing a study environment:

- **Lighting**: There should be plenty of it to minimize eye strain and help keep you awake.
- **Noise**: The location you choose should be quiet. Music and talking may be distracting, so keep them to a minimum.
- **Interruptions**: Turn off or silence your phone, put a “do not disturb” sign on the door, and tell your roommate(s) you have work to do.

Possible locations:

- Library (explore to find the best library locations for you).
- Empty classrooms, especially ones you have classes in—studying where you will be tested can improve your ability to remember the information when you need it.
- The Tutoring Center, or another campus service location that could be helpful to you.
- Your room or house (but beware of noisy roommates and possible distractions).

*Don’t study in bed*: your body is conditioned to react in certain ways to specific environments. When in bed, the environment is telling you it’s time to go to sleep...and you will probably end up sleeping instead of studying.

Priorities and Goals

Priorities are the things that are most important to **you**; they differ from person to person. Be aware of your priorities and use your time and resources accordingly. Think of it this way: someone following you around for a week should be able to tell what your priorities are. For example, if academics are
your top priority, but you study just 5 or 6 hours a week, you should re-

examine either your priorities or how you spend your time.

Setting a goal is very useful, even if the results are not what you had intended. Goals help you decide what you want and how you are going to get there.

**Successful goals are:**

- **Attainable**
  - Good example: “Getting at least a B on my next test.”
  - Bad example: “Growing 6 inches by next week.”

- **Realistic**
  - Good example: “Write my 10-page paper by next week.”
  - Bad example: “Write my 10-page paper by noon today.”

- **Specific**
  - Good example: “Get at least a 3.0 this quarter.”
  - Bad example: “Bring my grades up.”

- **Something you really want and are willing to work for**
  - Good example: “Get into the major I have always wanted.”
  - Bad example: “Get into the major my parents have always wanted, but I don’t really care about.”

**There are three different types of goals:**

- **Short range,** e.g. “Finishing my paper by Sunday night.”
- **Mid range,** e.g. “Getting at least a 3.0 this quarter.”
- **Long range,** e.g. “Graduating in four years.”

Re-evaluate your goals periodically to be sure they are what you really want.

**Using Calendars to Manage Your Time**

Calendars are important time management tools. Calendars help us organize and plan, and allow us to identify available free time. We suggest setting up your calendars in this order:

1. **Quarterly Calendar**
2. **Weekly Calendar**
3. **Weekly Checklist**
4. **Daily Checklist**

Use a quarterly calendar to see the big picture. At the beginning of the quarter, review each syllabus you receive for test, quiz, and assignment due dates; then record the information on your quarterly calendar. This allows you to plan in advance for busy weeks, without having assignments and tests sneak up on you.
Weekly calendars help you schedule the hours of your day. First, record activities that are non-negotiable, such as classes or work, for each week in advance. Then add more negotiable and/or one-time events, e.g. meetings or extracurricular activities that may be okay to miss sometimes. Be sure to include time for fun, like recreation and socializing. Then use the blank hours to begin filling in time to study.

Studying Time

College is different than high school: class time is usually spent on lecture. This means that you need to schedule out-of-class time for activities like homework, reading, discussion groups, practice exams, and research papers – this is studying. “Studying” means familiarizing yourself with the material through various techniques. When people talk about “studying” just the day before an exam, they’re really talking about “cramming.”

Plan on studying two hours outside of class for each credit. This isn’t written in stone: some classes won’t require the full time; others will need even more.

When making your weekly schedule, try not to schedule more than three straight hours of study time. If you have to study in long stretches, schedule breaks too.

Use breaks between classes as study time; look for other little blocks of open time and learn to make the most of them.

Study at consistent times each day. If you get into the habit of studying at a certain time, it will be easier to motivate yourself to sit down and study then.

Use your calendars to design weekly checklists. Break each large task into a series of smaller ones that can be accomplished in about an hour, and list these on your checklist.
When Are You Most Efficient?

Identify your most productive times of the day. You will get more accomplished and learn better during those times. Doing difficult or important tasks during peak hours improves your efficiency and accuracy.

Procrastination

People procrastinate for various reasons. Identifying your reasons for procrastination will help you learn to control the behavior. Possible causes of procrastination include:
- Boredom
- Fear of failure (“If I don’t do it, I can’t do it wrong!”)
- Lack of interest/motivation

Tips for Overcoming Procrastination

- **Identify your patterns.** Keep track of your activities and thoughts to discover your own procrastination behavior.
- **Set priorities.** Decide each day what you want and need to accomplish. Make active decisions regarding how to spend your time. Remember, it’s not always possible to do everything you “should” or want to do.
- **Break down large tasks.** Big projects are more manageable when they are broken into smaller tasks. Estimate the time each step will take, and set goals for completion.
- **Clear away distractions.** Jot down distracting thoughts. This reminds you to deal with them later, so you can concentrate on what you’re doing now.
- **Start with the worst.** Tackle difficult or boring tasks first. If you put them off, you will be approaching them when your energy is low.
- **Form study groups.** Study groups are a great way to combat procrastination and an excellent study method. Working with other students motivates you to stay on top of things.
- **Ask for help.** Take advantage of campus resources like professors, TAs, the Tutoring Center, and the Writing Center.
- **Vary subjects to reduce boredom.** Stay focused by doing one subject for an hour, taking a short break, and then moving on to another.
- **Give yourself rewards!** Ice cream, a movie, an extra study break, or other small rewards may provide you with the motivation you need.
Active Learning

Students learn more effectively and earn better grades when they are actively involved in their education. Skills like reading, active listening, note taking, and test preparation are all part of an active approach to learning. Developing these skills will enrich your educational experience and improve your academic performance.

Four Steps to Becoming an Active Learner

1. Prepare and be on time
   a. Preview chapters and prepare questions.
   b. Have a positive attitude.
   c. Get to class a few minutes early, and have necessary materials with you when you get there.
   d. Practice the active lecture participation tips outlined below.

2. Take organized notes
   a. Experiment with different styles of note taking (see page 10).
   b. Listen for main ideas.
   c. Learn to cope with professors who talk too fast (see page 9).

3. Review and clarify notes
   Review your notes for at least 15 minutes within 24 hours of taking them, or you may forget up to 80 percent of what you learned. Review notes on a weekly basis as well, spending about 25-30 minutes per class at the end of the week to prepare for the new information you will be learning in the next week.

4. Prepare for the next lecture
   Complete assignments (including reading) before the lecture they are assigned for. Not only will this make lecture more interesting, but you will also be able to identify main points more easily - since you will have an idea of what the information being presented is about.

Active Lecture Participation

Actively participating in the lecture helps you get more information from your classes and improve your performance on assignments and exams. Here are some tips for improving your active participation skills:

- **Attend class regularly.** You will most definitely get more out of class if you are attending than if you’re not. Arrive early and stay late so you won’t miss the beginning or end of the lecture.
• **Sit in front.** Minimize distractions between you and the professor. Sit in the T-Zone, as outlined below. The T-Zone is made up of the front rows and the direct middle of the classroom; teachers tend to visually scan this area during lectures.

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• **Pretend you and the professor are having a conversation.** Sit up straight and make eye contact, as though the conversation depends on you being a good listener. Nod when you understand and ask a question if you are confused. Paying attention in this way improves your concentration and lets the professor know you are interested in the class.

• **Oxygenate.** Sit up straight and take deep breaths to stay alert.

• **Concentrate and avoid daydreaming.** If you are worried about something, write it down so you can put it out of your mind and deal with it later. If you catch yourself daydreaming, calmly bring yourself back to attention.

**Note Taking**

Note taking is often overlooked as an academic skill but it’s a necessary skill for college success. The note-taking process helps you identify important material you’ll need to complete assignments and prepare for tests.

Good note taking is more than writing down what your professor says; it requires an active approach to lectures and class preparation. Good note-takers must be good listeners and they must pay close attention to lecture and evaluate the material presented to determine what should be recorded.

Sometimes it’s hard to know what to write down. Record it if the professor...

• Says it’s important.
• Writes it on the board.
• Repeats it.
• Breaks it into steps.
• Gives contrasts or pros and cons.
• Changes vocal tone or volume. This may indicate excitement, and information a professor is excited about often ends up on tests.
Note Taking (continued)

Another indicator that a professor is saying something you might want to write down is if they use signal words and phrases, such as:

**Introductory words**, giving a basic outline of what the day’s lecture will cover: “Today we will discuss...”, “After today you’ll be able to...”

**Qualifying words**, noting exceptions to rules and clarify information: “however...”, “nevertheless...”, “still...”

**Cause and Effect words**, showing relationships between ideas and events: “therefore...”, “as a result...”, “if...then...”

**Contrast words**, also showing relationships between ideas and events: “on the other hand...”, “in contrast...”, “by comparison...”

**Repeat words**, rephrasing and clarifying information: “in other words...”, “this simply means...”, “in essence...”

**Test clues**: “this is important...”, “remember this...”, “you’ll see this again...”

**Summary words**: “in a nutshell...”, “to sum up...”, “in conclusion...”

**Example words**, explaining and clarifying information: “to illustrate...”, “for example...”, “for instance...”

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**When Professors Talk Too Fast**

Professors who talk too fast make taking notes more difficult—but not impossible. The following tips will make it a little easier:

- Read the assigned material and previous notes before class, to make the lecture easier to follow and more interesting.
- Share notes with a classmate or form a study group. Putting notes together provides a more complete picture.
- Leave space in your notes so you can add information later.
- Develop a “lost” signal for your notes, so you can move on to the next information and figure out what you missed after class.
- Talk with your professor after class or during office hours if you are confused about something from the lecture.
- Use a tape recorder (ask your professor first). Listen again later.
- Use abbreviations. Try symbols such as > for “greater than”, ⇒ for “implies”, .:. for “therefore”—or make up some of your own!
Note Taking Styles

There are many different styles of taking notes; it’s up to you to choose which works best for you. Here are a few examples—formal outline, informal outline, paragraph style, and Cornell. No matter what your notes look like, the number one technique for retaining information from your notes is to review them on a regular basis.

Sample Formal Outline

I. Statistical Measures
   A. Center
      a. Mean- average
      b. Median- exact middle number
      c. Mode- most frequent number
   B. Spread
      a. Variance
      b. Standard Deviation- spread of numbers around average
   C. Correlation
      a. Shows relationship between two variables
      b. Usually represented as “r”

II. Methods of Gathering Data
   A. Experimental
      a. Usually takes place in laboratory
      b. Less realistic than other methods

Sample Informal Outline

Statistical Measures
   Mean- average
   Median- middle number
   Mode- most frequent number

Spread
   Variance
   Standard deviation- spread of numbers around average

Correlation
   Shows a relationship between two variables; usually represented as “r”

Methods of Gathering Data
   Experimental
      Usually takes place in a laboratory

Sample Paragraph-Style Notes

3 types of Statistical Measures- center, spread, & correlation

   Center measured by mean, median, and mode. Mean (average), median (exact middle num. in data), mode (most frequent num. in data)

   Spread measured by standard deviations and variances. Standard Deviation (spread of data around average), Variance (spread of data).

   Correlation of data shows relationship between two variables. Usually represented as “r”

One method for gathering stat. data= experimental, usually in laboratory and uses experimental group and control group. Method w/ most control, but least realistic
The Cornell System

This note-taking system is based on strategies that researchers and successful students have found to improve understanding and performance:

- Unless lecture notes are reviewed, most people forget up to 80 percent of what they have heard in class within 24 hours.
- Actively processing information (analyzing, summarizing, paraphrasing, and reciting) increases comprehension and retention.
- Students who predict and practice answering possible test questions perform better on tests than students who don’t.
- Taking time to actively review notes on a regular basis is one of the easiest and most effective study skill improvements a student can make.

In Class: Take all notes to the right of the margin.

After Class (within 24 hours):

- Review your notes, filling in blanks and making them complete, legible, and accurate.
- Go back over your notes and identify key ideas and terms.
- On the left side of the margin, write down these key words or ideas opposite to the complete notes. You can also write questions on the left side that can be answered by the information on the right side.
- Cover up your notes on the right side of the margin with another sheet of paper. Look at your key words or questions on the left side and attempt to recite (out loud if possible) the related information from your notes.
- Check to see if you have recited all of the information correctly. If you missed anything, study it until you feel comfortable with it and try again to recite the information. Continue until you are familiar with the material.

Weekly, Throughout the Quarter: Set up a weekly time to review all notes for the week—perhaps 30 minutes every Sunday afternoon. By covering up your notes and reciting from key words and questions you will continue to learn the information and prepare yourself for exams.
The Importance of Review

The most important part of note taking is reviewing your notes after class. People forget up to 80 percent of the information they learn within 24 hours of exposure to it. You can increase retention by reviewing the information within 24 hours of class. While you review your notes, edit them and identify the main ideas. To improve retention even more, do a weekly review too. See diagram and tips below, under “Information Retention Graph,” for more information.

Although nobody is anxious to add another task to his or her to-do list, reviewing is essential for long-term learning. It will actually save you time, since consistent review leads to less cramming before tests.

Information Retention Graph

Review is essential to improving comprehension and retention. It is possible to lose up to 80 percent of the information you learn within 24 hours from the time of exposure. Students dramatically increase retention by reviewing the information at some time during this 24-hour period. To further improve retention, do a weekly review as well. Spend approximately 30 minutes per class to review your notes, and another 30 minutes for notes on reading.
Reading for Meaning

It’s not enough to complete reading assignments—you must also comprehend and retain the material.

Improving Reading Comprehension: SQ5R

The SQ5R study method enables students to read, study, and process information more actively, leading to better understanding and retention.

SURVEY Before reading assigned material, read the introduction and summary. Skim the chapter, paying attention to headings, pictures, charts, and graphs. This will give you an idea of the general structure and content before you begin reading.

QUESTION Develop questions about the material. Start by asking yourself who, what, where, when, why, and how questions. General questions that cover main topics and ideas work the best.

READ Break the assignment into sections that take about 20 minutes to read. Read section by section, looking for key concepts, supporting details, and answers to your questions. Study charts, graphs, tables, and pictures, which present new information and connect to concepts from the reading.

RESPOND After each section, think about what you have read and answer your questions from step 2. This can be done at the same time as the reading step; the main point of this step is to think about the material and notice important points.

RECORD Underline key concepts and take notes on a separate sheet of paper, on note cards, in the margins of the textbook, or any place that works well for you. Do this after each section.

RECITE Try to recite key information and ideas without looking at the material. Put the information in your own words then go back and re-read until you are comfortable with it. This will lead to better understanding and save you review time in the long run. Do this after each section.

REVIEW After completing the entire chapter, review the information aloud or in your head. Try to identify overall themes and relationships between concepts. Make revisions to your notes so you can understand them later.
Increasing Reading Fluency

Students often complain about the time it takes to do the required reading for their courses, but speed-reading is usually not appropriate for college reading. Textbooks are dense with information; you need time to comprehend and make connections. Improving fluency can help increase your reading speed.

The most common factor that interferes with fluent reading is regression. Regression is the tendency to re-read a sentence, phrase, or passage you have already read. It is usually a result of not concentrating the first time through. The best way to control regression is to notice when you do it and make a conscious effort to increase concentration. One way to do this is to use a note-card to cover what you have read.

Another way to improve your fluency is to reduce word-by-word reading. Try to look at phrases instead of individual words, increasing your reading speed. Reading in phrases will also make it easier to determine the author’s meaning.

*Keep a dictionary on hand* to look up words you don’t know. Try to gather the meaning of the word from context first; if unsuccessful, look it up. Misunderstanding the meaning of a key word could interfere with understanding an important concept.

Guidelines for Highlighting and Underlining

- *Read a section before you underline or highlight it.* Information that seems important when you first read it may not turn out to be so important after you have read the entire section.
- *Do not underline or highlight too much.* Underlining everything has the same effect as underlining nothing. Try to only underline about 15 percent of the material.
- *Make the major points stand out clearly.* Develop special markings to use on major points so they are set apart from other information.

You may find it more convenient to take notes in the margins of texts rather than on a separate piece of paper. This also makes it easier to refer to information in the book while using your notes.

Testing

Preparing for tests requires regular use of a combination of study skills. Just as you wouldn’t play “the big game” or concert without regular practice to prepare, you need regular “practice” to perform well on tests. Many of the tools in this section should be used throughout the quarter, not just several days (or the day) before a test.

Study Tools

Students learn material better when they actively do something with it. Here are some study tools to try:

- **Flash cards**: create flash cards with vocabulary on the front and definitions on the back, or with questions on the front and answers on the back. The act of writing flash cards will help you learn and remember course material and self-testing is an effective way to improve your memory.

- **Summary sheets** condense large amounts of information (like a chapter of notes or text) into a page or two. This helps you pick out important points and puts information into an easily accessible format.

- **Timelines** can be a great way to organize and develop a mental image of the information. They also help you put isolated events in context and see the progression of events or ideas.

- **Charts**: charts organize information with many categories or subtypes.

- **Mind Maps and Detail Trees** are great tools for increasing understanding and retention, especially for visual learners. Making a mind map or a detail tree helps you mentally organize information, and can be used to review for tests. They can also help you visualize information when taking a test.

- **Predicting Test Questions** helps you remember the main points of a chapter when you are studying for a test, and it doesn’t take much time.

  Keep a list of “Possible Test Questions” for each class. Mark key points in your notes. When you review them after class, record these topics to your “Possible Test Questions” list.

  Do the same thing when reading a textbook. Include a page number from the book or your notes so you can look up additional information if necessary. When it is time for a test, you have a homemade study guide listing key points and ideas.
**Tips: Studying for Tests**

**Tips for studying for multiple-choice, true/false, and matching tests:**
- Know specifics, e.g. key terms and dates.
- Don’t assume that you *just* need to memorize facts and figures. Professors typically write test questions that check your overall understanding of the subject and its concepts.
- Use study tools, such as flash cards, to help you learn the material.

**Tips for studying for essay tests:**
- Ask the professor for sample questions (the professor may not give them to you but it doesn’t hurt to ask).
- Make an outline for all sample questions.
- Find out how many questions will be on the test and how much time you will have to answer each question. Practice writing under a similar time constraint.
- Know key concepts well. Outline summaries of the most important concepts.
- Know the relationships between concepts. This is a theme that often appears in essay questions.

**Tips for studying for problem-solving tests:**
For tips for studying for problem solving tests, please turn to the Math Study Skills section, starting on page 20.

**Tips: Taking Tests**

**General tips for all types of tests:**
- As soon as you get your test, write down any information (e.g. formulas, equations, key points) you might forget during the test.
- Mark questions that you are not sure of; come back to them later.
- Make sure to turn in an answer instead of leaving a question blank, unless you are penalized for guessing (which is rare); you have a better chance of getting points this way.

**Tips for taking multiple-choice tests:**
- Try to come up with the answer before looking at the choices.
- Read all of the options. Eliminate incorrect answers to narrow your choices.
Tips for taking multiple-choice tests:
- Try each option with the original question and decide if it makes a true or a false statement. This is especially helpful on tests where there can be more than one answer.
- Whenever you see “all of the above” as an option, double check to see if there might be more than one correct response.
- Watch for negative words in the question, such as “except” or “not.”
- Be aware that you might find information that will help you answer one question within other questions on the test.

Tips for taking problem-solving tests:
- If you get stuck, try different ways of solving a problem on scratch paper, using formulas that seem like they might fit. You might stumble across the right way to do the problem.
- Check your work. Verify that your answers make sense.
- See more tips in the Math Study Skills section, starting on page 20.

Tips for taking true/false tests:
- Carefully read all of qualifying words such as all, most, some, never, always, usually, more, and less. Be especially cautious of absolutes like all, best, only, always, and never.

Tips for answering item-matching questions:
- First, preview the list of items to be matched to get an overview of your options.
- As you start to match items, look at one list and think of the answer in your head before you search the other list.
- Guess only at the end. If you guess incorrectly early, correct answers for later matches may be eliminated.

Tips for taking essay tests:
- Write a brief outline of main ideas and supporting points to organize your thoughts; you may get credit for your outline if you run out of time.
- Address and answer all parts of the question. Re-read the question periodically to make sure you have covered all of its parts. List the points you need to address and check them off as you go.
- Interpret action words. If the question asks you to define, describe, compare, contrast, explain, or summarize, make sure you are doing what it asks.
- Don’t waste a lot of time deliberating about the question. Start by outlining, and then start writing. If you are really stuck, write what you do know and try for partial credit.
**Tips: After the Exam**

When a test is returned, do a test-error analysis. Analyze why the wrong answers are wrong (e.g. didn’t know the information, misread the question, made a mathematical error). Ask the instructor or a tutor about any questions you don’t understand.

**Ask yourself the following questions after taking your exam:**

- In what ways was the exam similar to what I expected?
- In what ways was the exam different from what I expected?
- What part of my preparation helped me most?
- What should I have done but didn’t?
- What percentage of the questions was drawn from class notes, the text, or other sources?
- What study skills should I work on to prepare for the next test?

**If possible, meet with your professor for help:**

- Arrive prepared with questions.
- Approach the meeting with a positive attitude.
- Look for ways to improve for the next exam.

Decide which study habits worked well and which didn’t. Work to improve weaker skills. Make an appointment with a Tutoring Center study skills tutor by calling (360) 650-3855 or visiting Wilson Library 280.

**Handling Test Anxiety**

- **Schedule time for a review** as exams approach. Don’t redo all the assigned problems; just do a few problems of each type to refresh your memory. Panic sets in not when you make a mistake on a problem, but when you don’t know how to approach it at all.
- **Don’t cram** all your review in the night before the test. Cramming often results in little sleep or restless sleep so you are exhausted and extra tense as you walk into the exam.
- **If you begin to panic** over the amount of review to be done, make a list of the problems covered. As you do a few problems of each type, cross that off the list. Breaking the overall task down into smaller tasks gives you a sense of control.
- **Worry is understandable**, but prevents you from focusing on the material to be studied. If worrying is interfering with studying, remind yourself that it isn’t constructive.
- **If you begin to tense up during an exam, try these techniques:**
Notice negative things you say to yourself such as “Everyone is writing faster than I am,” or “I must be stupid if I can’t figure out this problem.” These thoughts distract you from the test itself and make you more anxious.

Once you’ve identified negative thoughts, refocus your attention to the questions or problems you are able to answer.

Take time out for 30 to 60 seconds; sit back, breathe, and relax.

Constantly looking at the clock to see how much time is left will not help you do any problems. Do the problems you can, go back and work on the ones that stumped you, and then look at the clock.

When you are taking a test, you cannot control whether you studied enough, studied the right material, or even what your grade will be. Your only responsibility is to do the best you can in the time you have.

At the end of the test, don’t dwell on it. You’ve given it your best shot and now it’s done. Use the test as a learning opportunity and to spot trouble areas to work on.

The Importance of a Positive Attitude

When you expect to fail, your mind becomes open to failing. This can occur during a test or at any time when you are studying – and it’s perfectly normal. To overcome these negative feelings, here are a few things you can try:

- **Learning relaxation techniques** to calm down if you panic during an exam.
- **Not worrying** if other students leave an exam before you do. People work at different paces, and some leave early because they have given up.
- **Becoming aware of negative or irrational statements** by writing them down. Replace negative statements with realistic positive statements. For example replace “I know I’m going to fail this test” with “I’ve studied hard for this test and have a chance to do well.” But don’t use overly positive statements, which pressure you to achieve unrealistic goals.
- **Just getting started.** People often waste energy worrying about what needs to get done instead of actually doing it. Break your work into manageable tasks and do one thing at a time.
- **Paying attention to handwriting** when doing math problems. For example, if your work becomes sloppy or your handwriting changes, you may be distracted; if you are pressing harder with your pencil, you may be frustrated. Take a few moments to calm down.
- **Not getting discouraged.** If a topic is difficult, be persistent. Everyone needs time to absorb new concepts. Try various ways of solving problems and then, if you’re still stuck, take a break and come back to them later.
Math Study Skills

“Why math study skills? Don’t all study skills apply to math?” While it’s true that general study skills will help you succeed in math, a more specialized approach can be beneficial as well. This section presents skills and strategies specifically recommended for math courses.

Math Study Skills Inventory

Assess the effectiveness of your math study skills by estimating how often each statement applies to you. 3=usually; 2=sometimes; 1=rarely (the inventory continues on the next page).

1. I attend all of my math classes. 
2. I read my math assignment before attending class. 
3. I listen to class explanations to understand concepts and principles. 
4. In class, I write down main points, all steps in explanations, definitions, examples, and proofs. 
5. I review of all my class notes and textbook notes weekly. 
6. I review by reciting aloud, writing, picturing the material, etc. 
7. I study math before other subjects, when I’m most alert. 
8. I take breaks every 40 to 60 minutes when I study math. 
9. I reward myself for having studied and concentrated. 
10. I survey assigned math reading before I tackle it in depth. 
11. When I am reading, I write out important points and say them aloud. 
12. I underline, outline, label, or take notes on the key procedures, concepts, and formulas in my text. 
13. I complete all assignments and stay caught up in class.
16. I study math for two hours a day, at least five days a week. _____

17. I work on new problems and review problems each study session. _____

18. I work to “over learn” and thoroughly master my material. _____

19. I re-test myself often to fix ideas in my memory. _____

20. I work to understand formulas, terms, rules, and principles before I memorize them. _____

21. I use various checking procedures when solving math problems. _____

22. When I don’t understand my text, I use other math texts or go to the instructor for clarification. _____

**Scoring:** Add all of the points in the columns above. **TOTAL:** _____

*If your score is 50 or more, you have excellent math study skills. You may pick up some extra tips by reading this section.*

*If your score is between 41 and 49, you have fair math study skills. This section will help you improve.*

*If your score is 40 or below, you can benefit from trying all these strategies!*

**Math Basics**

Math is like any other class—you need to pay attention to the basics in order to do well. The following tips are a great place to start:

- **Attend class regularly.** There are two main ways to learn information in college: reading the text and going to class. During lecture, professors often explain concepts that are hard to grasp or that students have had trouble with in the past, or that they believe to be especially important.

- **Study when you have the most energy;** it will be easier to concentrate and focus on the material.

- **Use calendars to plan your time.** You need to complete assignments and study on a regular basis in order to understand the concepts. Be sure to plan time for work, classes, study, and leisure too.
Math Basics (continued)

- **Remember:** If the instructor writes something on the board, it is important. Copy all definitions and rules as well as all of the steps of the examples. Leave white space in your notes so you can add to them as you review. If you have questions after class, use your instructor’s office hours or visit the TC.

- **Make up missed work** as soon as possible.

- **Ask questions** in class.

- Form or join a **study group**.

- **Get phone numbers** of classmates you can call if you have questions.

- **Locate and use resources provided by the school**, such as tutors, the Testing Center, workshops, and disAbility resources.

- **Be realistic** about the level of math you should be attempting.

- Identify your preferred **learning style(s)**.

- **Know course requirements** - record important dates and times.

- **Schedule math classes** at the time of day when you are most alert.

- **If math is a difficult subject for you**, schedule math courses in quarters when you can give them lots of time and attention.

- **For each hour in class**, plan to do homework for 2 hours outside of class.

### Strategies for Reading Mathematics

Reading the textbook is important for success in math classes. However, mathematics reading is different from other types of reading. To get the most from your mathematics text:

- **Read the text before the material is presented in class** and read it more thoroughly after class. This will help you understand what the instructor is saying, and enable you to ask better questions.

- **Focus on concepts, not just exercises.** Some of the most important material in a math textbook is *between* the problem sets and exercises. Don’t read only when doing homework; schedule time to read the text when you are *not* working on an assignment, and focus on concepts.

- **There is infinite variety in mathematics problems; there is no way to learn every problem-solving technique.** Math is about ideas. Problems are expressions of these ideas. If you learn key concepts, you can solve *any* type of problem that revolves around those concepts.
Strategies for Reading Mathematics (continued)

- **Read the text more than once.** You can’t read a math text the same way you read a novel. Expect to review reading assignments several times to gain a full understanding of the material.

- **When reading the first time, scan for big ideas.** Think to yourself: “What is the main point of the chapter?” Read the introduction, section titles, and summary to get an idea of what you will be learning in the chapter.

- **During the second reading, fill in the details.** Take time to think about each of the definitions, theorems, and formulas that you encounter.

- **Read with paper, pen, and calculator.** Write notes. Check calculations. Rewrite definitions and theorems *in your own words*. Create your own examples. *Actively engage with the material.*

- **Read the narrative.** Math tells stories. What is the progression of ideas being told? Don’t just skip to the formulas and examples.

- **Study the examples.** Work the examples in the text to be sure you understand each step. Ask yourself what each example illustrates.

- **Read the pictures.** There are good reasons for pictures and graphs in math texts. Focus on how each illustrates a particular idea.

- **Learn vocabulary and language.** Pay attention to definitions. Math language is very precise, and a word may have a different meaning when used in a mathematical context than in everyday language.

- **Learn theorems and what they mean.** Theorems are vital building blocks of mathematical knowledge. Look closely at the theorems in your math text. What do they mean?

- **Compare the text with the notes from class.** Are the methods the same or different? Which method makes the most sense to you?

- **Use the index and the appendices** to understand words and ideas. If there is a particular word that you do not know, use the table of contents or the index to help you. Pay special attention to information in boxes and to bold and italicized words.

- **Note things you don’t understand, and ask for help afterwards.** Even after following this advice, some ideas may still seem confusing. If there is something you don’t understand, mark it. Bring up these issues with your instructor, a classmate, or a tutor.
Strategies for Completing Math Assignments

- **Review** what you have read before attempting an assignment. Note the main concepts. How does the reading relate to what you already know?
- **Read** the directions.
- **Complete** homework assignments daily so you don’t fall behind.
- **Do assigned homework** as soon as possible after class.
- **Work through** example problems from the book for extra practice.
- **Work slowly**, carefully, and neatly. Neatness makes it easier to find your errors. Speed will come as you *master* the concept, not on the first try. If you are having trouble with a problem, skip it and come back to it later.
- **Watch for mistakes** you make often (like losing a negative sign or not distributing). Keep a list. Watch for these on exams and quizzes.
- **Work to understand** definitions and rules before memorizing them.
- **Keep working** until you can do the problems without referring to the text or lecture notes.
- **Always check** your answers. Plug your answers back into the problem to see if units match; make sure that the answers make sense in the context of the problem; check the arithmetic.
- **If you have questions**, get them answered as soon as possible and then re-work the problem to make sure you understood correctly.
- **Review** what you learned. What types of problems were assigned? What rules did you learn and use? What new steps did you learn? How did these problems relate to the text and lecture notes? How did they relate to previous material?
- **After** finishing each assignment, look back over previous assignments and try a problem (or two) to make sure you can still do those problems. If you don’t remember, review the old material.
- **Find two or three** problems that are representative of the assignment. Copy each problem and its page number on one side of a flash card, and put the solution on the back. At the end of the week (or the night before the quiz), try the problems. If you have trouble with a problem, go over the section it came from until you understand it. Before an exam, shuffle the problems and use them as a practice test.
- **Remember** that the TC has the answers for many assignments, tests, and quizzes, and provides handouts for common formulas and rules.
Studying for Math Tests

- **Get enough rest** (especially the night before the exam), eat well, and exercise. You’ll be able to concentrate better if you’re in good shape.
- **Learn** when to apply algebraic manipulation skills; don’t just work on developing the skills.
- **Understand concepts** and recognize when to use those concepts to answer questions. Memorization alone is not enough.
- **Keep a list** of definitions, principles, and rules. Be clear about when each is used, how it’s the same or different from the others, and why it works.
- **Take time to reflect** and tie the information together. How are the sections related? How do the concepts build upon each other? What types of problems can you now solve that you could not solve previously?
- **Practice, practice, practice!** Practice math every day, not just before an exam. Use chapter review exercises to study.
- **Review** daily and weekly throughout the quarter, so you don’t need to cram before exams.

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**SQRQCQ Strategy for Solving Word Problems in Math**

- **Survey.** Read the problem quickly to get an idea or general understanding of it.
- **Question.** Ask what information is required, i.e. “What is this problem asking for?”
- **Read.** Carefully read the problem to identify the relevant information, facts, and details needed to solve it.
- **Question.** Ask yourself how to solve the problem. For example, “What operations must be performed and in what order?”
- **Compute (or construct).** Do the computations or otherwise construct a solution to the problem (for example, make a chart, table, or picture).
- **Question.** Ask yourself whether the solution process and answer seem to be correct. For example, “Were the computations performed accurately and is the answer reasonable?”

*Teaching Reading in Mathematics* by Mary lee Barton & Clare Heidema © 2002
**Studying for Math Tests (continued)**

- **Study in groups.** You can learn math more effectively this way.
- **Learn** all you can about the test. If possible, talk to students who have had the course to get a feel for what the professor emphasizes.
- **Make a practice exam** using problems that appeared in the homework, and take it under actual testing conditions (no notes or other resources, 50-minute time limit, etc.). Take practice tests a few days before the actual exam to help you identify what you need to study and to get used to taking an exam under a time constraint.
- **Get help early.** If you are having difficulty with the course, get help early in the quarter. Bring the work you have done so the instructor or tutor can see what you have tried. In math, new material builds upon previous material, so *don’t fall behind*.
- **Study over a period of days** - don’t cram. Begin studying for the test at least three days in advance so you can review all the material, and get help with anything you don’t understand.
- **On the night before the test,** review material you’ve already learned. Don’t try to learn any new material right before the test.

**Taking Math Tests**

- **Arrive on time** to get any instructions before the exam begins.
- **Relax.** This is an exam, not brain surgery. Take a deep breath, exhale slowly, and tell yourself that you can do well.
- **Do a memory dump.** When you get your exam, turn it over and write down the important things you think you might forget.
- **Preview the test.** Read the instructions and pay attention to any changes your professor mentions. If possible, scan the entire test for different types of problems and their point values.
- **Do a second memory dump.** Write down material that was jarred from your memory while previewing the exam.
- **Develop a test progress schedule.** Decide the best way to get the most points in the least time. Decide how many problems you should have completed halfway through the test-taking time.
- **Answer the easiest problems first.** Review answers to make sure they make sense. Clearly write each step – even if you don’t get the answer right, this will increase your chances of getting partial credit.
Taking Math Tests (continued)

- **Skip difficult problems.** Read them twice and then move on. Your brain will continue to work on them while answering others.

- **Review skipped problems.** If you remember how to do a problem you skipped, solve it immediately and *then* return to the one you were working on.

- **Guess at the remaining problems.** Write as much work as you can for problems that remain. If you can’t remember how to solve a problem, re-write it. Sometimes this will jar your memory.

- **Review the test.** Look for careless errors, and make sure your answers seem reasonable. Do not talk yourself out of an answer because it looks “nasty,” i.e. involves fractions or decimals. Write answers in the space provided, or otherwise clearly identify them.

- **Use all the allotted test time.** Check your answers; don’t leave until you have reviewed each problem two or three times or have run out of time.

Adapted from Math Study Skills Workbook by Paul D. Nolting © 2005

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**Signs of Math Anxiety**

- **Blanking Out:** You forget the math you knew. It’s like a curtain was drawn, cutting you off from all your knowledge and abilities.

- **Panic:** You have a feeling of coming disaster. Your pulse races and you perspire heavily. A feeling of defeat takes control.

- **Tension:** You feel yourself tightening up. Your neck or back is stiff, your hands may shake, and your breathing may become strained.

- **Paranoia:** You suspect that everyone knows how stupid you’re feeling. You think: “Everyone in the room can do it except me.”

- **Tuning Out:** When numbers come up or math is mentioned, you fail to hear what the person is saying. If you’re reading a math book, at the end of the page you have no idea what you have read.

- **Guilt:** You may feel your math ability is a fraud. You’ve been faking it, and sooner or later the deception will be discovered.

- **Physical Reactions:** When you deal with math you may get a headache, become nauseous, have stomach cramps, experience blurred vision, lose your ability to concentrate, or get sleepy.

- **Avoidance:** You avoid the problem by trying hard to stay out of situations where you encounter math.

For more information and help, contact the Counseling Center at (360) 650-3164.
Other Campus Resources for Success

One of the most important things you can do to be successful in college is to make effective use of available resources. Western offers a wealth of free services to help students with academics, employment, child care, disability accommodation, and much more. This section provides information about some of those issues; if you have further questions, please don’t hesitate to contact the Tutoring Center at (360) 650-3855 or the Academic Advising Center at (360) 650-3850

Working with Professors

Successful students understand how to work comfortably with their professors. Keep in mind that each professor is a unique individual and might have different views from those listed here. The best advice is to get to know the expectations of your professors each quarter.

In class, DO:

- Ask questions. Professors welcome questions and comments about the material. Professors appreciate people who are not afraid to ask a question—especially since others probably have the same one.
- Keep up good attendance.
- Get involved in class discussions.
  - Keep your interaction positive—combine inquisitiveness with an open mind.
  - Strive to do all of your work thoroughly and on time.
  - Be awake, alert, and attentive.

In class, DON’T:

- Keep talking when the professor begins to lecture.
- Pack up books and papers early—the professor is the one who decides when the lecture is over.
- Engage in distracting behaviors such as talking, giggling, sleeping, arriving late or leaving early.

During office hours, DO:

- Take advantage of office hours—they are set by professors so help will be available to students. Find out whether your professor prefers advance notice, or will welcome you without an appointment.
- If you can’t attend office hours, make an appointment for another time (continued on next page).
• Call your professor if you have a quick question that can be answered over the phone. Identify yourself and ask if it is a convenient time. If not, ask when you may call back.

• Be prepared when you talk with your professor: write out questions and organize your thoughts in advance. Try to find your own answers in the text and other resource materials before the meeting, and be ready to tell the professor what you have already tried.

**During office hours, DON’T:**

• Interrupt a professor when they are with another student.

• Expect a professor to repeat a lecture you missed.

• Tell a professor the grade you need; you will get the grade you earn.

• Say something like, “I don’t understand anything from today’s lecture.” Review your notes and the text to narrow down your areas of confusion, so you can ask more directed questions.

**Frequently Asked Questions**

The following list highlights issues students may encounter during their time at WWU, along with the department on campus that may be able to help if you have similar questions or issues. All phone extensions begin with (360) 650-.

<table>
<thead>
<tr>
<th>Issue:</th>
<th>Where to go:</th>
</tr>
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<tbody>
<tr>
<td>“I need help with my GUR math (or science) class.”</td>
<td>Tutoring Center (TC) Wilson Library 280, x3855</td>
</tr>
<tr>
<td>“My philosophy 102 class is much harder than I thought it would be.”</td>
<td>TC</td>
</tr>
<tr>
<td>“Where can I study and eat?”</td>
<td>TC</td>
</tr>
<tr>
<td>“I’m having trouble keeping up with my class work.”</td>
<td>Professor</td>
</tr>
<tr>
<td>“I need to miss a class. What do I need to do?”</td>
<td>Professor</td>
</tr>
<tr>
<td>“I’m having a serious family crisis (or illness)...”</td>
<td>Academic Advising Ctr, OM 380, x3850; Counseling Center, OM 540, x3164; Student Health Center, CS, x3400</td>
</tr>
<tr>
<td>“I want to drop a class.”</td>
<td>Professor; Academic Advising</td>
</tr>
<tr>
<td>“How do I get off academic probation?”</td>
<td>Academic Advising</td>
</tr>
<tr>
<td>“I’m not sure what classes to take next quarter.”</td>
<td>Academic Advising, or department-specific advisor</td>
</tr>
<tr>
<td>“I’m taking 18 credits this quarter because I flunked a class last quarter. I’m also on probation.”</td>
<td>Academic Advising</td>
</tr>
<tr>
<td>Concern</td>
<td>Help Available</td>
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<td>------------------------------------------------------------</td>
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<tr>
<td>I need a copy of my transcript (official or unofficial).</td>
<td>Official: Registrar, OM230, x3430; Unofficial: Academic Advising</td>
</tr>
<tr>
<td>I have ADHD/ADD/LD...</td>
<td>disAbility Resources for Students, OM120, x3083</td>
</tr>
<tr>
<td>I’m having trouble reading, listening...</td>
<td>disAbility Resources</td>
</tr>
<tr>
<td>I’m interested in texts on tape.</td>
<td>disAbility Resources</td>
</tr>
<tr>
<td>I’m really having problems with tests. I keep blanking out.</td>
<td>Counseling Center</td>
</tr>
<tr>
<td>I really hate math. I mean, I leave class crying most days.</td>
<td>Counseling Center</td>
</tr>
<tr>
<td>I can’t sleep very well.</td>
<td>Student Health Center; Counseling Center</td>
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<tr>
<td>I’m getting sick of the bad weather...</td>
<td>Student Health Center</td>
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<tr>
<td>Yeah, I party too much. I know I could get better grades if</td>
<td>Student Health Center; Counseling Center</td>
</tr>
<tr>
<td>I don’t feel well. I keep getting sick.</td>
<td>Student Health Center</td>
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<tr>
<td>I want to get some scholarships.</td>
<td>Scholarship Center, OM 275, x3471</td>
</tr>
<tr>
<td>I really don’t know what I want to do after college.</td>
<td>Career Services Center, OM 280, x3240</td>
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<tr>
<td>I think I know what I’d like to do after I graduate, but I’m</td>
<td>Career Services Center</td>
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<tr>
<td>I’d like to try out some different jobs or volunteer before</td>
<td>Student Employment Center, OM 285, x3158</td>
</tr>
<tr>
<td>I need help with essays and writing papers.</td>
<td>Writing Center, Learning Commons WL2 across from Zoe’s, x3219</td>
</tr>
<tr>
<td>I’m having problems in my upper-level math class.</td>
<td>Math Center, BH 211A, BH 234, x3785</td>
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<tr>
<td>I need tutoring in my foreign language class.</td>
<td>Modern and Classical Languages Dept., MH 223, x3918</td>
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<tr>
<td>How do I use e-mail or Blackboard?</td>
<td>ATUS, HH 121, x3333</td>
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<tr>
<td>I want to get online at home.</td>
<td>ATUS</td>
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<tr>
<td>I need help with English as a Second Language.</td>
<td>International Programs and Exchanges, MH 208, x3298</td>
</tr>
<tr>
<td>I need some resources for grammar.</td>
<td>Writing Center</td>
</tr>
<tr>
<td>I’m an ethnic minority; I don’t feel I’m supported here at</td>
<td>Student Outreach Services, OM 387, x3843; Ethnic Student Center, VU420, x7271</td>
</tr>
<tr>
<td>I’m lesbian/gay/bisexual/transgender and I don’t feel supported at Western.</td>
<td>Queer Resources Center, VU 515, x6120</td>
</tr>
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</table>
WWU Academic Support Services

Academic Advising Center, OM 380, 360-650-3850  
http://www.wwu.edu/advising/
Help with academic planning, including: choosing a major, registration assistance, General University Requirement (GUR) advising, and more.

Ethnic Student Center, VU420, 360-650-7271  
http://as.wwu.edu/esc/  
The ESC is a community that supports historically underrepresented ethnic students and allies by providing a social atmosphere and inclusive environment where we engage in identity exploration and strive for cultural awareness and academic excellence.

Math Center, BH 211A  
http://www.wwu.edu/depts/mathcenter/  
Free peer tutoring in upper-level math courses, including calculus, linear algebra, statistics, and differential equations.

Student Outreach Services, OM387, 360-650-3843  
http://www.wwu.edu/depts/sos/  
Student Outreach Services serves first generation, multicultural and non-traditional students and engages students in personalized academic coaching, peer mentoring and specialized programs using a global and multicultural focus to support student persistence and academic achievement.

Student Technology Center, HH 213, 360-650-4300  
http://www.wwu.edu/techcenter/  
The Student Technology Center is a place where students attend workshops, schedule peer tutoring, and make use of manuals, tutorials and other advanced equipment and software to promote their learning.

Tutoring Center, Learning Commons WL 280, 360-650-3855  
http://www.wwu.edu/depts/tutorialcenter/  
Free peer tutoring for GUR courses in math and the sciences. Services include drop-in tutoring, tutor-facilitated study groups, and individual academic coaching.

Western Libraries, 360-650-3050  
http://www.library.wwu.edu/  
a wealth of resources and services including quiet study spaces; laptops to check out; and more than 1.4 million books, journals and, other documents in print and online.

Writing Center, Learning Commons WL 2, across from Zoe’s Bookside Bagels  
Writing assistants guide writers from across the disciplines in all stages of composing, by offering reader response and providing process and proofreading strategies.