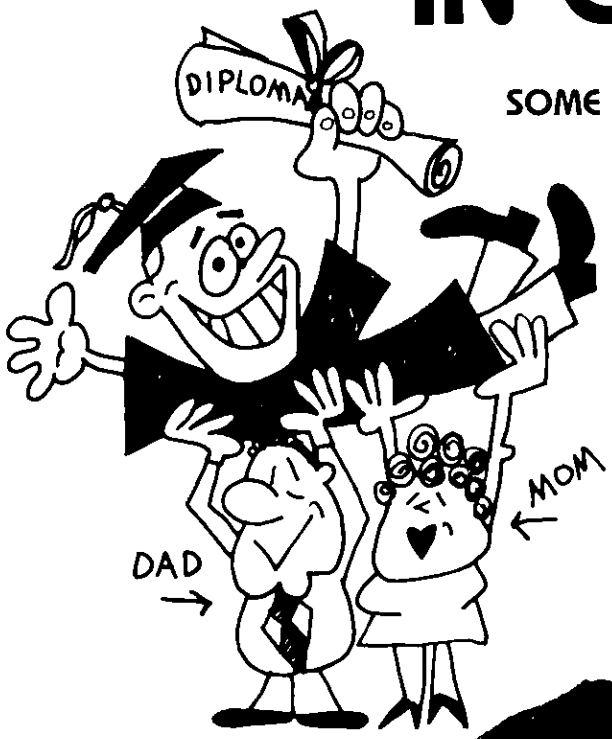
TOWARD SUCCESS IN COLLEGE

SOME NONSENSE & HORSESENSE
IN A STEP-BY-STEP GUIDE
(THAT REALLY WORKS)



REVIEWS:

"This is the greatest book I ever perused!" (T. T.)

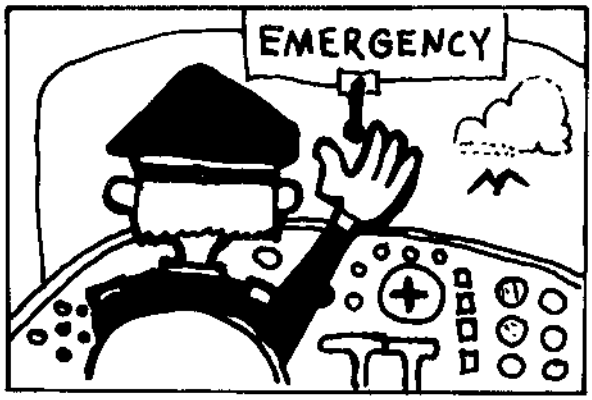
"This is the best book I ever understood!" (R. O'C.)

"This is the only book I ever read!" (P. G.)

Rod O'Connor
& Tom Taylor

with illustrations by Paul Glenn

Overview



This little book is a guide to Best Operating Procedures and EMERGENCY techniques for surviving (***well***) in college. The chapters generally follow your academic calendar and are of maximum value if used regularly as the term progresses. (If you are a ***normal*** human being, just use this book from the chapter corresponding to wherever you are in the academic term, but start reading at Chapter 1.) You should use the "game board" (page vi) as often as necessary. While it is true that the "hardest job is finding ways to avoid work", we think this book ***can*** help you find ways of avoiding ***unnecessary*** work and wheel-spinning.

BEFORE CLASSES START (Chapter 1) tells you how to get a good head start on a track that ***you*** make free of obstacles. It includes techniques for designing the ***best*** arrangement of courses, for preparing a ***realistic*** learning schedule, and for setting up an ***ideal*** study environment.

THE FIRST WEEK (Chapter 2) tells you how to try a running style that you can modify to fit ***your*** needs. It describes preparation for classes, what to do in classes, after-class activities, and effective study habits to build.

THE SECOND WEEK TO THE FIRST EXAM (Chapter 3) shows you how to modify what you started in Chapter 2 so that it really works best for ***you***. It gives you keys to preparing for "the day of truth" (exam day). It helps you identify learning problems and correct them, while reinforcing the things that you're doing right.

THE EXAM (Chapter 4) is geared to having exams work ***for*** you, instead of against you. (Convene the firing squad to act as your bodyguards!) Even if you are underprepared for this exam, this chapter tells you how to minimize the damage.

AFTER THE EXAM (Chapter 5) explains how to have good ***or*** bad results work ***for*** you. (Even a wake can be a good party.) This chapter deals with how to proceed when you're up to your CENSORED in alligators, or how to turn one victory into a winning campaign.

REASSESSMENT TIME/DROP DATE (Chapter 6) is a guide to deciding whether to decrease your course load, redesign your learning schedule, or keep on truckin'. (Before deciding to punt, you really should consider the number of yards to go ***and*** how many downs you might have left. But there ***is*** a time to punt.)

PREPARING FOR FINALS (Chapter 7) is designed to help you maintain a winning streak or improve a poor situation. (Even if you're six touchdowns behind, there is a ***best way*** to proceed.)

SPECIAL PROCEDURES (Chapter 8) discusses particular techniques needed for certain courses. The areas covered are "memorizing", "problem solving", "labs", "writing", "analyzing", and "the library".

NONACADEMIC MANAGEMENT (Chapter 9) deals with some of those things that many students never had to fool with at home . . . . . laundry, checkbook balancing, handling roommate problems, bus passes or parking permits, etc.

BACKWARD-FOREWORD (not to be confused with a retarded basketball player) is found where it belongs—at the end of the book instead of in the usual "up-front" position. Here are some ideas that only have meaning ***after*** you've been through part of the academic world and can see beyond the glitter.

Acknowledgments

We hereby acknowledge our culpability in having pointed ***thousands*** of students toward the route to success over the years. It was their dismayed looks when we offered no road map that planted the seeds for this book. It was their trials and tribulations on that uncharted road that allowed us to learn what works and what doesn't work. Thus, the primary credit for the book goes to all those students who permitted us to share in their lives. In particular, very special thanks must go to Mr. Kevin Mazziotta, a student at Texas A&M University, who very critically and perceptively went through the second edition of the book to suggest many of the revisions now included in this edition.

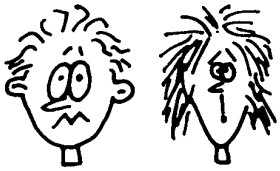
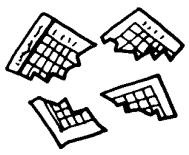
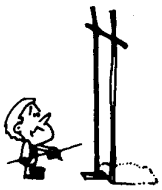
Dr. Charles Leighman, Director of the Texas A&M University Writing Labs, gave us a beautifully clear encapsulation of his vast knowledge for the writing and library sections. Mrs. John Rood of Minneapolis, Minnesota gave us the most careful evaluation of the manuscript. She also is responsible for our maintaining a perspective that addressed ***all*** students who wish to become more cultivated human beings. Mrs. Linda Tracy devoted many weekends to the prodigious task of assembling the manuscript, for which we are most grateful.

But above all, we must acknowledge the insights and patience of our wives. Those ladies gave encouragement and understanding and were repaid with many days of our absences.

ROC, TET, PG

The Toward Success in College GAME BOARD

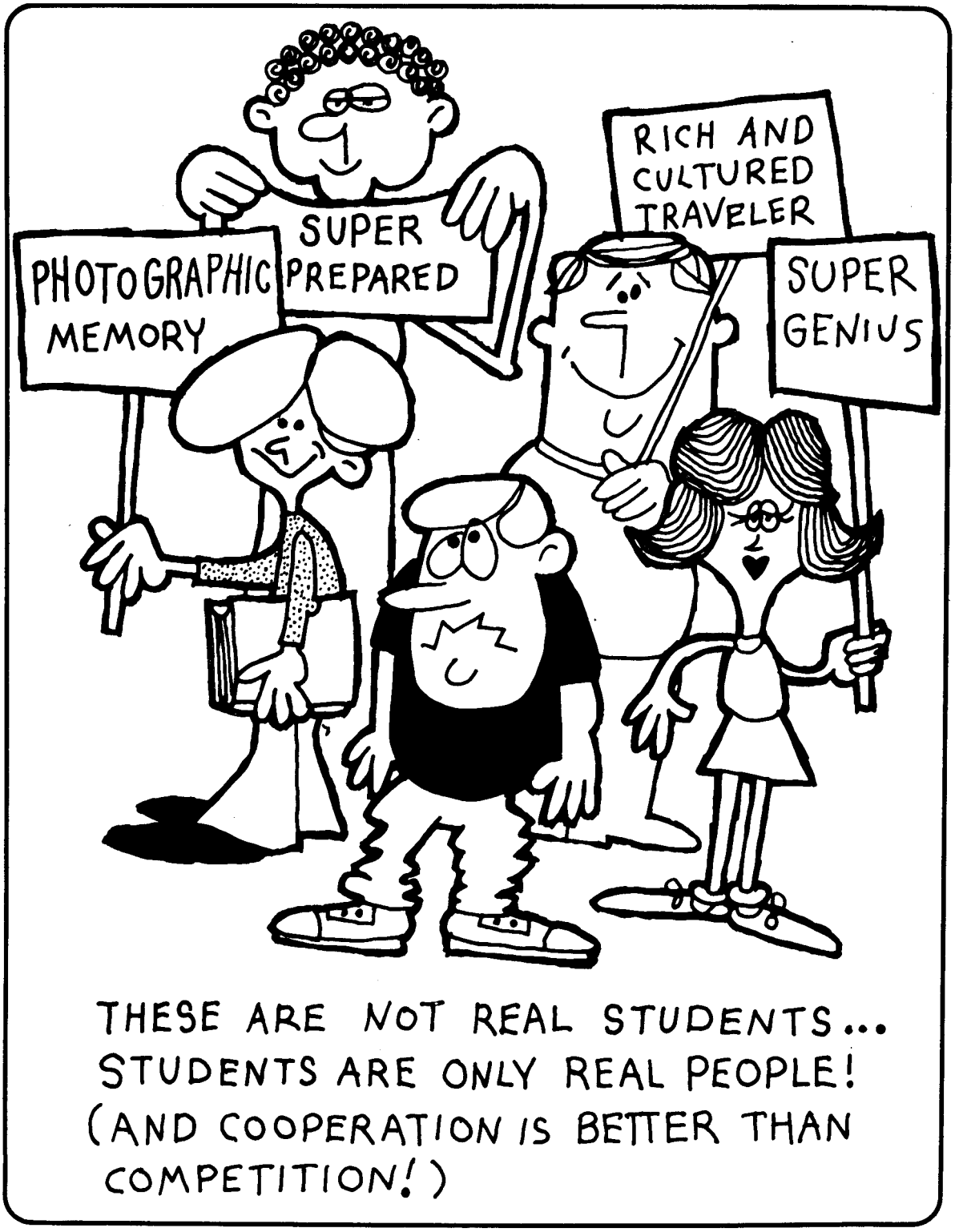
Directions: Find your problem in one of the squares. Then go to the Section(s) indicated. (See Table of Contents for page numbers of Sections.)

REGISTRATION RUNAROUND  Can I choose classes? Profs? Times?	**FIRST WEEK WEAKNESS**  Am I doing enough? Too much?	**CLASS CHANGE CHAGRINS**  Should I change courses? Times? Profs?	**TUTOR TREMORS**  Do I need a tutor? Two? Ten of them?
Go to Section 1.2.	Go to Sections 2.1 & 3.2.	Go to Section 1.2.	Go to Section 3.2d.
SELF-DISCIPLINE DIFFICULTIES  Can I learn to "get going"?	**TEST TRAUMA**  Will I forget? Will I goof? Will I flunk?	**POST EXAM PULSE THROB**  Are they all this hard? (Or this easy?)	**ACADEMIC PROBLEM PROLIFERATION**  I'm behind! I'm lost! I'm scared of failing!
Go to Sections 1.4 & 3.2.	Go to Sections 4.1–4.6.	Go to Section 5.1.	Go to Sections 3.1, 6.1, 8.1–8.6.
DROP DEADLINE DREADFULS  Should I drop some courses? Change majors?	**CAREER GOAL CAREENING**  What do I really want to be?	**PLUG-ALONG POOP-OUT**  I'm so tired I can't function!	**PERSONAL PROBLEM PROLIFERATION**  I'm disillusioned! I'm upset! I'm lonely!
Go to Sections 6.1–6.4.	Go to Section 6.3	Go to Section 3.1 (Table 3.5).	Go to Sections 9.1 & 9.10.
SCHEDULE SKITTERS  I need a better schedule, that works!	**HIGH STANDARD HORRORS**  It's too hard! It's too much work!	**INEFFICIENCY INFECTION**  Is there a better way to do things?	**FINALS FRIGHT**  I'll never be ready! I'm getting more scared!
Go to Sections 3.2 & 6.1–6.4.	Go to Section 3.1 (Table 3.4).	Go to Sections 1.4, 3.1, 3.2, 5.1 & Chapters 8 & 9.	Go to Section 7.1.

Contents

chapter 1 BEFORE CLASSES START:

Take Deep Breath, Close Your Eyes, and Get Ready Jump!

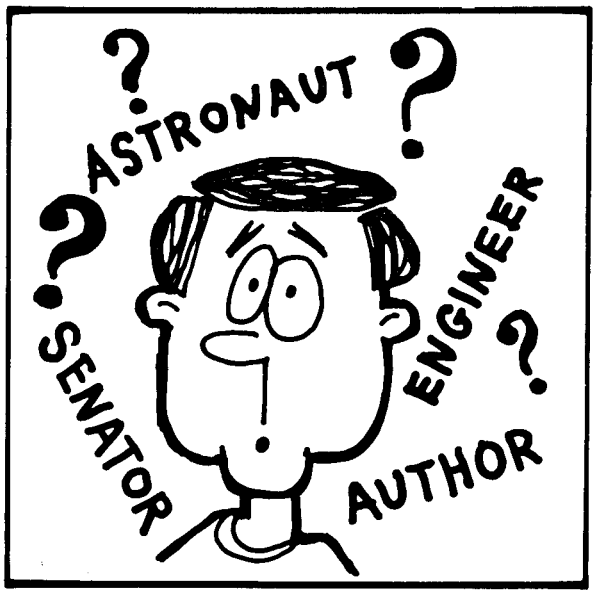


chapter 1
BEFORE CLASSES START:
Take a Deep Breath, Close Your Eyes, and Get Ready to Jump!*

1.1 CAN YOU SURVIVE?

CERTAINLY YOU CAN! Virtually anyone can obtain some kind of a college degree. If you've read this far, your command of English is adequate. (Since you bought—or borrowed—this book, you obviously have intelligence and good taste.) ***Of course*** you can survive college. Don't let anyone convince you otherwise!

That was an easy question. Let's consider a couple of tougher ones:



1.1a Do You Want, or Need, to Survive College?

If you are reasonably certain that what you ***really*** want to do for the rest of your life requires a college program, then the answer is obviously "yes". If it does ***not*** require a college program (and many interesting and rewarding careers do not), then you should seriously consider if the ***time and effort*** are worthwhile. There are, of course, many excellent reasons for obtaining a college education in addition to preparation for a career. Expanding your horizons and gaining an appreciation of our culture can make the investment of time and energy ***VERY*** worthwhile. If you are uncertain about educational requirements for ***your*** goals, a visit to an academic counselor ***will*** be worthwhile.

1.1b Are You Aware of, and Willing to Make, the Effort Required to Survive College?

You have probably been warned that success in college will take more time, will take harder work, and will require better organization than anything you have done so far.

YOU PROBABLY DON'T REALLY BELIEVE THIS.....BUT

*Don't jump too far yet! It is neither necessary nor desirable for you to read "straight through" this book. You should only study Chapter 1 carefully this week (if classes haven't yet started). ***Next week*** you should study Chapter 2 carefully. (If classes ***have*** already started, study Chapters 1 and 2 right away.) After that, use the remaining chapters, or appropriate sections, only as you need them.

YOU WILL!

Nobody wants to "just survive". It is ever so much more fun to have the satisfaction of doing well and of really getting "your money's worth". Some thinking now can help you accomplish both of these goals. Consider the following:

1. Is your "academic goal" really ***yours*** or someone else's?
2. Do you really know what someone in your planned profession does on a day-to-day basis?
3. Do you have a good understanding of the educational level required for your chosen goal?
4. Do you plan to spend college becoming a "superbrain" with no time for friends, a "social animal" with no time for books, or something in between?

IF YOUR HONEST ANSWERS TO THE FIRST THREE QUESTIONS WERE:

"someone else's", "not really", and "not fully"

THEN STOP HERE, SEEK GOOD ACADEMIC COUNSELING, AND THEN CONTINUE. IF YOU ANSWERED THE FIRST THREE QUESTIONS:

"MY goals, by gosh!", "I surely do, and that's what I want.", "good enough"

AND YOUR ANSWER TO QUESTION (4) WAS EITHER "Superbrain" or "the best of both", READ ON.

(If you answered question (4) with "social animal", burn this book, cash in your registration receipt, and buy stock in a saloon or poolhall near campus.)

The real differences among serious students are not with "ultimate survival". The real differences are with the time and effort required for "success" and the ***quality*** of success achieved. Most of this book is designed to help you achieve success with minimum time and effort, through MAXIMUM EFFICIENCY.

(For some thoughts on the ***quality*** of success, see the Backward-Foreword, p. 113.)

1.2 GETTING SIGNED UP (REGISTRATION)

If you have already completed registration, you should still consider the following discussion carefully. Most colleges allow a period of a week or so for "drop-and-add", during which you may rearrange your schedule. If this is possible and the schedule you have is considerably less than ideal, you should certainly attempt rescheduling. See your academic advisor. If he or she is unavailable or unwilling to help, see the head or chairman of your department, or the dean of your college, and request a new advisor. Most advisors are fine people, but faculty are just as human as everybody else. A grouch sometimes sneaks into an advisory position. Remember (and, if necessary, politely help your advisor remember) that it is YOUR life, YOUR tuition, and ultimately YOUR decision. Advisors should ONLY "advise".

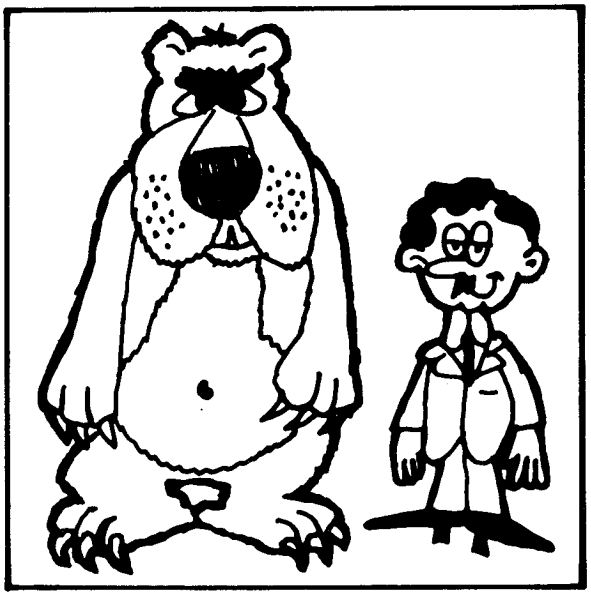
If you have not yet registered, attempt to design an "ideal" schedule. If that doesn't work, consider "drop-and-add" time as an opportunity to get closer to the ideal.

1.2a Courses

Almost every student finds some courses that are really great and some that have to be taken, but are no fun. You should try, as much as possible, to spread the "no fun" classes over several terms. In that way, each term has the maximum possible number of classes that you like (or at least don't mind very much).

In most cases, your college catalog will "specify" the courses to be taken in each term. You should, however, recognize that the college catalog was ***not*** carried down a mountain on stone tablets by Moses. The courses for the "average student load" may be just right for you. They might also be ***all wrong*** for you. If ***you*** feel insecure about your readiness for some "typical" courses, consider starting, instead, with a lower level course to strengthen your background.

For ***quality*** in your program, you need to talk seriously with a good advisor. ***Sometime*** (not necessarily as you first start in college) you will want to broaden your perspectives and become a more cultivated person. If you're eager to do this now, be especially careful to choose ***exciting*** profs. If you're not turned on by these ideas yet, come back later and read the Backward-Foreword (page 113).



1.2b Professors

Except at small colleges, there are usually different sections of a course, taught by different professors. You should, obviously, try to get the best possible professors. Clues to a selection of "good guys and gals" and an avoidance of "grizzly bears" can be obtained from student acquaintances who have had that class. Other sources include published course evaluations (available on many campuses) and advisors or other faculty. (In seeking advice from faculty about selecting professors, you must learn to "read between the lines" and to ask the right questions. Professional ethics should prevent a faculty member from making disparaging remarks about a colleague.)

If you ask other students about professors, be sure that you are asking SERIOUS students. You want VALID opinions, not "sour grapes" from those who just didn't feel like doing the work!

During the term, it may be possible for you to ***visit*** "future" classes in order to form your ***own*** opinion of the profs. If you have time to do this, it can be valuable in providing you with a good perspective of the ***prof*** and of the general nature of the course. Be ***sure*** to ask the prof's permission to visit a class (for the purpose of "getting an idea of what the course will be like"). Most profs are flattered by such requests. If a "grizzly bear" growls a refusal, ***that*** tells you something, too.

Sometimes you will have to make an initial choice from among a totally unknown group, especially when Professor "STAFF" is listed for every section. (You'll discover that Prof. STAFF teaches a lot on many campuses. The secretary in the department office may be able to supply the real names of Prof. "STAFF".)

No matter how you choose a professor, most (but, unfortunately, ***not*** all) will do a good job if you give them a chance. However, you may interact better with some than with others. A rescheduling during "drop-and-add" time is WELL worth considering if it can get you a professor that ***you*** feel better about.

1.2c Credit Hour Load

Most curricula will indicate the normal number of credit hours for each term, often with a specific set of courses. If you carry fewer than the normal number of credits, you're going to have to make that up somewhere (a summer session, an extra term, or a term with a greater than normal load).

It is, however, important that you avoid too heavy a load, especially in your first term or at times in which you must be heavily engaged in other activities (work, athletics, student activities, military programs, etc.). If you plan to be involved in any other activities or if you feel at all insecure about handling a full load, you should certainly consider taking at least a few credits less than the usual load. Planning to avoid too many credits is much better than dropping classes later.

Incidentally, it is NOT good practice to enroll in more courses than you really intend to keep and then to drop "problem" courses. This can develop the bad habit of accepting too much responsibility and quitting the "tough jobs". ***It can also "louse up" an otherwise good schedule!***

It is equally important that you avoid too ***light*** a load. There is usually a minimum credit requirement for qualification for scholarships, student loans, participation in various activities, etc. Although college can be fun, few would care to prolong it more than necessary. Perhaps more important, carrying too light a load is very likely to produce inefficient study habits. LEARNING "HOW TO LEARN" EFFICIENTLY MAY BE THE SINGLE MOST IMPORTANT THING YOU CAN GAIN FROM COLLEGE.

1.2d Class Time Schedule

Arranging classes in a particular way is EXTREMELY important! This will provide overall efficiency in the learning process (the key to gaining the most from the least amount of effort). It will also help you avoid certain traumatic experiences. (Having major exams in chemistry, calculus, and history three hours in a row can just spoil your whole day.)

A really good schedule may require you to exercise some "creative planning" and to make some sacrifices. Don't hesitate to schedule some classes at "unpopular" times such as evenings or Friday afternoons. You will often have to choose between "most desirable" class times and "most available" class times. If LEARNING is important to you, ***choose the times most likely to get you a good learning schedule.***

The optimum class schedule is one that spreads the total work load as evenly as possible throughout the week and leaves a "free" hour between all classes. The total work load spread suggests that it is highly desirable to mix classes that are "difficult" for you with some that are "easy", preferably on an alternating "hard-easy-hard" basis. The reasons for spreading the work load evenly are fairly obvious, but the "free" hour needs some explanation.

Careful studies have shown (page 27) that the reinforcement of learning necessary for long range retention is ***critically*** tied to the length of time elapsed between successive learning experiences. Retention decreases with elapsed time in a truly astonishing way. It is **VERY** important, therefore, to provide time blocks in your schedule for "post-lecture work" and "pre-lecture work". A 30–45 minute block at the right time, and for the right activities, can be worth 2 hours later that day and up to 5 hours a week later.

1.2e Summary

THE IDEAL CLASS SCHEDULE MUST HAVE:
(in order of importance)

***** TIME BLOCKS BETWEEN CLASSES

**** BEST AVAILABLE PROFESSORS

*** EVENLY DISTRIBUTED WORK LOAD

** TOTAL CREDIT HOUR LOAD THAT IS NEITHER TOO HEAVY NOR TOO LIGHT FOR *YOUR* NEEDS

* OPTIMUM MIX OF "LIKED" CLASSES AND "UNLIKED, BUT NECESSARY" CLASSES

Which of the two schedules in Table 1.1 is most nearly IDEAL?

Table 1.1. Sample Class Schedules

Class: Freshman Major: Undeclared Name: Frank Lee Fehling

HR.	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
8	CHEM 101		CHEM 101		CHEM 101	8
9	MATH 121	MATH 121	MATH 121	MATH 121		9
10	HIST 105		HIST 105		HIST 105	10
11	CHEM LAB		P.E. 199		P.E. 199	11
12	↓					12
1						1
2	ENGL 103		ENGL 103		ENGL 103	2
3						3
4						4

Class: Freshman Major: Chemistry Name: Joe Cool

HR.	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
8		BIOL 113		BIOL 113		8
9	CHEM 101		CHEM 101		CHEM 101	9
10						10
11	ENGL 103		ENGL 103	CHEM LAB	ENGL 103	11
12				↓		12
1	P.E. 199		P.E. 199			1
2					BIOL LAB	2
3	MATH 121	MATH 121	MATH 121	MATH 121	↓	3
4						4

Did you get that right? Just look at how much you've learned already! (How does YOUR present schedule compare with these?)

1.3 THE INITIAL ORGANIZATION

If you have already started your classes, read this over your shoulder while looking in the mirror, because you're already behind. However, all is not lost. Getting ***really*** organized is best before you get started, but it can be done later if necessary. (On the way home with a pocket full of F's may be a ***little*** too late.)

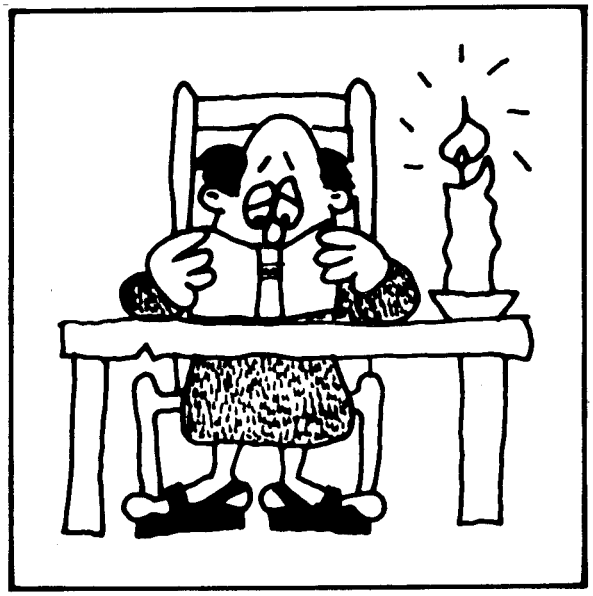
Two aspects of organization are extremely important if you really want to study efficiently (thus saving more time for other activities). These might not appeal to you at a first glance, but give them a try for a reasonable time. You'll be surprised how much they help. These aspects involve DESIGNING A STUDY ENVIRONMENT and DESIGNING A ***REALISTIC*** STUDY SCHEDULE.

How much you ***learn*** in college is, unfortunately, not always the same as how much you are ***perceived*** to have learned (i.e., the grades you get). It is most assuredly important to get your money's worth by learning as much as possible. It is also important to get good grades. If you follow the methods of this book, you can do ***both.*** Some "tricks of the trade", with respect to getting a grade that reflects your real knowledge, are discussed in Chapter 4.

(NOW, DON'T PEEK AHEAD. WE'RE NOT READY FOR THAT YET AND WE ***NEVER WILL BE*** IF WE DON'T GET ORGANIZED.)

1.3a The Monastic Cell: A Study Environment

The study environment has two impacts on your potential grades. If the environment really helps you learn, that ***must*** help your grades. (And guess what affect on your grades you should expect if the environment ***hinders*** your learning.) The second impact is more subtle. Your grade will depend, to a significant extent, on how you perform in an ***exam*** environment. If we model our study "Cell" on an exam environment (quiet, uncluttered, dedicated to a single kind of activity), then an exam will be taken in a familiar, comfortable setting, with reduced tension and better performance. Fortunately, these same criteria are excellent for optimum ***learning.***



The necessary criteria, remember, are "quiet, uncluttered, dedicated to a single activity". To achieve these, you must survey the overall area in which you hope to establish your "Monastic Cell".

1. Can you locate a suitable work area (table or desk) where you can "tune out the world"?
2. Can you find a nearby non-study area where you can take a break, read a novel, write letters, etc.?
3. Can you arrange the identified study area in an "uncluttered and dedicated way"?

If you answered "yes" to ***all*** of these questions, ***great!*** You've found your Shangri-La. (If you don't know what that is, ask your history professor or someone "old", i.e., who remembers the 1940's.)

If you answered "no" to ***any*** of these questions, seek further. If your living quarters can't be kept quiet and isolated, then you should consider a library study carrel, a learning resources center, or a group-of-three study area (page 44).

If your "Monastic Cell" is too far away for between-class study, locate one or more "day-time study areas" that meet the basic requirements. These should be near your classrooms to avoid wasting time in "travel".

1.3b The Suitable "Regular" Study Area Must Have:

A SIZABLE CLEAR DESK (OR TABLE) SURFACE

A BOOKSHELF (OR STABLE BOOKENDS)

A CLOCK OR WATCH (An alarm clock is useful in practicing "examsmanship", Chapter 4.)

PLENTY OF PENCILS AND A SHARPENER

LOTS OF SCRATCH PAPER

A DICTIONARY

A WASTEBASKET

A CALCULATOR OR SLIDE RULE

A COMFORTABLE STRAIGHT CHAIR

A POSTED STUDY CALENDAR (to be described shortly)

THIS BOOK

(When using a "day-time study area", such as a library carrel, your backpack serves as the "bookshelf". It should contain everything you will need, including a copy of your schedule and, naturally, this book.)

1.3c The Suitable Study Area Must *Not* Have:

Photos (especially girlfriend/boyfriend or family)

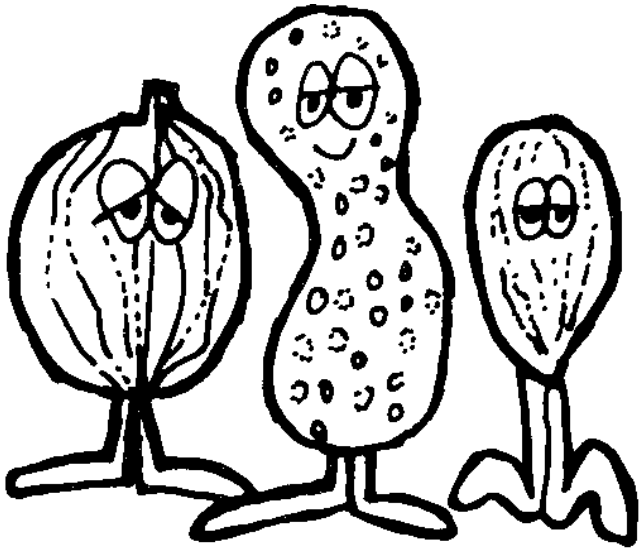
Radio, Stereo, or TV (or ANY noise therefrom)*

View of a window or open door

KEEPSAKES, GRAFFITI, SOCIAL OR SPORTS CALENDARS OR ANYTHING ELSE NOT ON THE "HAVE" LIST

HOLD IT! How dare anyone tell you what to put on your desk? What kind of sadistic nuts wrote this book?

*Some people feel that they study better with ***soft*** music in the background. If this is true for you, have a source of ***SOFT*** music nearby (as long as it won't bother others). However, you ***don't*** want to become dependent on music to help you concentrate. You are ***unlikely*** to get music during exams (or in your final career). Plan for some study blocks (e.g., "exam review") WITHOUT background music. If you "move" in time to the music, it *is decreasing* your concentration.



HEY! We're sorry about that. We just meant, "That's what we think you should try". If you don't like our suggestions, well, you just go ahead and mess it up any old way. We'll still be your friends. (But save this book just in case you change your mind later.)

Rod, Tom, and Paul

THREE NUTS THAT SURVIVED!

1.4 A REALISTIC LEARNING SCHEDULE

Learning to schedule work ***and play*** could very well be as important as anything you can do to prepare yourself for life in the "real world". It involves two factors:

LEARNING TO MAKE A GOOD SCHEDULE, THAT YOU MAY REVISE AT PROPER INTERVALS
(***This*** is pretty easy.)

LEARNING TO *STICK TO* A SCHEDULE FOR A DEFINITE PERIOD OF TIME
(This is NOT so easy.)

At this point, assuming that you've not yet started classes, you really can't make more than a temporary study schedule. Let's see what's involved. Here are the basic steps:

1. The total "Learning Schedule" includes all of the learning experiences--class time, lab time, pre-and-post-class time, library time, alternative resources time, "homework assignment" time and "review" time. Your calendar should, therefore, show all of this, plus scheduled "student activities time", "sleep time", and FREE TIME (for "breaks", for "play", or for whatever ***YOU*** want to do). The real goal is to maximize efficiency to gain the most possible FREE time.)*

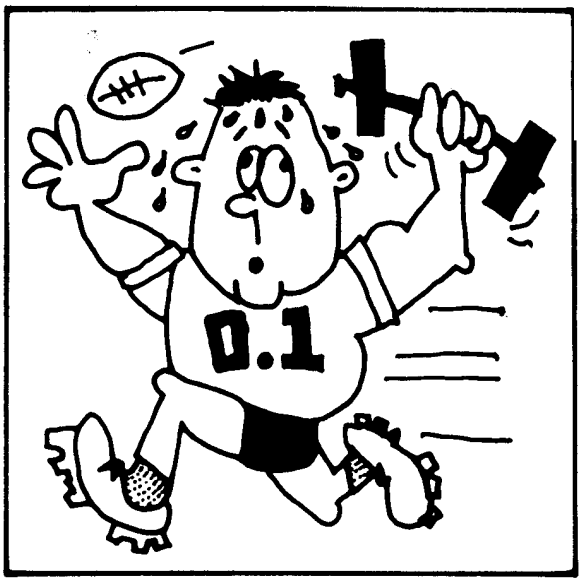
2. It is fact, not theory, that we have relatively short "attention spans". As a result, spending 2 or 3 continuous hours on a single subject is usually much less fruitful than doing the same work in 4 or 5 shorter separated segments. The length of time you can study a subject ***efficiently*** is a very individual matter. It will probably be shorter for some subjects than others. A very good rule to start with is to plan ***no blocks longer than a typical exam period*** (usually 45-60 minutes, depending on the course involved). This limit helps you develop the habit of working something through to completion at a rate similar to the rate that you ***must*** use on exams.

*The things you do and the thoughts you have during your FREE time can have a major impact on your academic work. For some thoughts on this topic, see Chapter 9.

You can make an initial estimate of your "attention span" for each course by a rather simple technique. For each class, select a "typical homework assignment" (or, before classes have started, use the first chapter in each textbook). Record the time when you start work on the assignment (or when you start reading the chapter). As soon as you notice that you are becoming restless, feeling frustrated, or reading the same passage over and over, record the time. The time interval elapsed is a good ***first estimate*** of your "attention span" for this course. Although you can (and will want to) increase your "attention spans", you should plan your initial schedule with time blocks that are not much longer than your estimated "attention span" for each course.

3. Whether you start your work early in the morning ***or*** continue it late into the night depends on whether you are a "day person" or a "night person", and on what times you have classes or other activities. Uniform wake-up time ***is*** important, and one thing you DO NOT DO is to reduce sleep time! (Although the "all-nighter" is a tradition on many campuses, it is one of the ***STUPIDEST*** things you can do. All night cramming is ***very*** likely to leave you tired enough to make lots of "dumb" mistakes the next day. All studies indicate that it ***also*** has a ***negative*** affect on long-range retention.)

   Studying is very much like training for an athletic event, with the exam being the "big game". Consider how a regular daily physical training program compares with saving all the exercises for a solid twenty-four hours just before the big game.



   Although caffeine and other stimulants can make you FEEL alert, they CANNOT significantly improve your "mental performance". That WILL suffer if you miss needed sleep.

4. All of us have some "least efficient" work times, such as early mornings (for "night persons") or late evenings (for "day persons"). Try to schedule your study time ***mainly*** at times when you are reasonably efficient. (However, the best time for "memorization" type study, for most persons, is the block ***just before*** bedtime.)

5. It is very helpful to "shift gears" periodically between quantitative material (e.g., physical science, engineering, or math) and descriptive material (e.g., history, literature, or philosophy). Other "gear-shifting" techniques involve alternating between different "concentration-levels" of the same course material (skimming an assigned reading in physics for a while, then switching to working physics problems). You can also use short breaks at intervals when "gear-shifting" is needed to improve efficiency.

6. Be sure to schedule some hours each week for ***regular*** review of all previously covered material in each course, especially for those courses employing "cumulative" exams. Also schedule "catch-up" blocks that can be used when study for one or more courses is not completed in the time blocks allocated.

   "Catch up" times have many potential uses. You should NOT plan to use them REGULARLY for uncompleted scheduled work. To do so reinforces the bad habit of procrastination. However, these times are especially important if you miss some regular work

because of illness or other problems. "Catch-up" times are also useful for getting ahead on a long range project, such as a term paper. When you don't need "catch-up" hours, use this time for a hobby or other "fun" project to reward yourself for keeping up with your work.

7. To decide how much time to allocate for each course, a good "rule of thumb" for the initial estimates (that you will revise periodically as you develop a better "feel" for the demands of each specific course) is:

   1 to 2 hours study time for each credit hour in "nonquantitative" courses (e.g., English, history, languages) [use 1 hour only for those courses which are "easy" for you]

   2 to 3 hours of study time for each credit hour in "quantitative" or "project" courses (e.g., math, chemistry, engineering graphics) [use 2 hours only for those courses you DON'T expect to be "tough"]

   3 to 5 hours study time for each credit hour in "special demand" courses (e.g., some manipulations courses or classes with very large reading assignments).

   If you are carrying, for example, 17 semester hours consisting of 8 hours of science and math, 8 hours of history and English and 1 hour of a physical education "games" course, then your maximum* total study time would be (as an initial estimate):

$$8 \text{ credits} \times \frac{3 \text{ hours}}{\text{credit}} = 24 \text{ hours}$$

$$8 \text{ credits} \times \frac{2 \text{ hours}}{\text{credit}} = 16 \text{ hours}$$

$$1 \text{ credit} \times \frac{0 \text{ hours}}{\text{credit}} \qquad \frac{0 \text{ hours}}{40 \text{ hours}}$$

Note that membership in a "Student ***Union***" does not guarantee a 40 hour work week or the "right to strike". With 40 study hours, plus class and lab time, you really have a work week of around 60 or more hours. That isn't as bad as it sounds. There are 168 hours in a week. With optimum sleep time (about 8 hours per night) that still leaves you:

168 hours
-60 hours (work)
-56 hours (sleep)
52 FREE HOURS

(or an average of 7.5 hours per day for eating, drinking, visiting, partying, and reading silly books on how to study).

*A recent study (page 22) at the University of California indicates that EFFICIENT study can reduce total study time by as much as 40%.

Realistically, of course, you cannot expect to "notice" 7.5 hours of really "free" time per day during a college term. On a typical class day, most students will average 1–2 hours in "travel" (to and from classes), 2–3 hours eating and preparing meals, and 1½ hours showering, dressing, etc. The "real" free time in the average academic day is, therefore, less than 5 hours. Efficient use of your nonacademic time (Chapter 9) can still net you a significant amount of "fun" time per week.

8. If you want to become a better PERSON, as well as a better student, schedule at least one 30 minute block each week for "thoughtfulness time". This is a time to write a "thank you" note to a favorite professor or to someone who did something you appreciated. It is a time to send a flower to your mother or a special friend. It can also be a time to ***just think about yourself***—what you like or don't like about your life, and how you might improve it. For further suggestions, see Chapter 9 and the Backward-Foreword.

9. Cultural events, such as concerts and/or lecture series, should become a valuable part of your ***true*** education. If these fall regularly on Wednesday evenings, for example, schedule "variable" or "catchup" time for that period.

Whatever study schedule you design, you MUST stick to it consistently for a fixed time period of at least one week **IF YOU REALLY WANT TO ACHIEVE EFFICIENCY AND AN INCREASE OF FREE TIME.** (The interval that you use a particular schedule will become longer as you get further into your studies and develop a better revised schedule.) The total working time scheduled should be designed for the achievement of the success level ***you*** want for your academic work.

DON'T FORGET:

Pre-Class Preparation Time just before each class
(or as close to that as possible)

AND

Post-Class Reinforcement Time just after each class
(or as close to that as possible).

1.4a Case Histories:

1. Joe Cool, whose course schedule (page 6) was "ideal", is a chemistry major. He really enjoys chemistry and math, thinks biology is "OK", and has no real interest in courses such as history or English. He studies best at night and his most effective "wake-up" time is around 7 am. He wants Saturday afternoons and evenings and most of Sunday free. His initial learning schedule is shown in Table 1.2. His basis for designing this schedule is shown in Table 1.3.

2. Frank Lee Fehling, whose course schedule was far from ideal (page 6) because he did not ask an advisor for help, but filled out his own schedule for afternoons free for "fun" and caught the advisor at a hurried moment for a quick signature, has an "undeclared" major. Frank really likes P.E. and thinks Chem lab is fun, but all other courses are bad news. He likes to get to sleep by 10 pm but wakes up eager to go by 5:30 am. He works Saturdays to earn "fun" money. Now Frank isn't really a Fehling. (Unknown to himself, he was adopted). So he discovers he has problems and seeks the advice of a good academic counselor. (He also buys 3 copies of this book and gives 2 to his girlfriends). With proper advice, Frank can devise a learning schedule (page 16) that—although less than ideal—

Table 1.2

LEARNING SCHEDULE for Joe Cool prepared 8/26 to use until 9/10

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
12 m.	SLEEP	SLEEP	SLEEP	SLEEP	SLEEP	SLEEP	SLEEP
6 a.m.	↓	↓	↓	↓	↓	↓	↓
7 a.m.	Eat, Shower, etc.	Shower, etc. Eat + Pre-Biol	Eat, Shower, etc.	Shower, etc. Eat + Pre-Biol	Eat, Shower, etc.	Eat, Shower, etc.	Eat, Shower, etc.
8 a.m.	FREE Pre-Chem	BIOL	FREE Pre-Chem	BIOL	FREE Pre-Chem	"CHORES"	FREE
9 a.m.	CHEM	Post-Biol	CHEM	Post-Biol	CHEM	↓	↓
10 a.m.	Post-Chem Pre-Engl	FREE	Post-Chem Pre-Engl	FREE Pre-Chem Lab	Post-Chem Pre-Engl	Biol REVIEW	CHURCH
11 a.m.	ENGL	Learning Center	ENGL	CHEM LAB	ENGL	Chem REVIEW	↓
12 n.	Post-Engl lunch	lunch	Post-Engl lunch	↓	Post-Engl lunch	lunch	lunch
1 p.m.	P.E.	Learning Center	P.E.	↓	Pre-Biol Lab	FREE	Thoughtful-ness Time
2 p.m.	FREE Pre-Math	FREE Pre-Math	FREE Pre-Math	lunch & Post-Chem Lab Pre-Math	BIOL LAB	↓	FREE
3 p.m.	MATH	MATH	MATH	MATH	↓	↓	↓
4 p.m.	Post-Math Math Study	Post-Math Math Study	Post-Math Math Study	Post-Math Math Study	↓	↓	↓
5 p.m.	FREE	FREE	FREE	FREE	CHEM GROUP SESSION	↓	↓
6 p.m.	Dinner	Dinner	Dinner	Dinner	Dinner	Dinner	Dinner
7 p.m.	Math Study Engl Study	Math Study Biol Study	Math Study FREE	Chem Lab Report	Biol Lab Report	FREE	Math REVIEW
8 p.m.	Break Chem Study	Break Chem Study	CHEM CLUB	Math Study Break	Math Study Break	↓	Engl REVIEW
9 p.m.	Engl Study	Biol Study	↓	Biol Study Chem Study	Biol Study Chem Study	↓	CATCH-UP
10 p.m.	Biol Study CATCH-UP	CATCH-UP	Engl Study CATCH-UP	CATCH-UP	CATCH-UP	↓	↓
11 p.m.	Biol Memory SLEEP	Chem Memory SLEEP	SLEEP	Biol Memory SLEEP	SLEEP	SLEEP	Chem Memory SLEEP

Table 1.3

LEARNING SCHEDULE WORKSHEET
for

JOE COOL

☑ Initial Trial ☐ First Revision ☐ Later Revision

		A	B	C	D	E	F	G
CLASS OR LAB	ESTIMATED ATTENTION SPAN	CREDITS	ESTIMATED OUT-OF-CLASS HOURS PER CREDIT	TOTAL (A×B)	SCHEDULED PRE-AND POST-CLASS HOURS	HOURS LEFT (C-D)	DAYS TO STUDY (3 TO 7)	ADDITIONAL AVERAGE HOURS PER DAY (E÷F)
BIOL 113	30 MIN.	3	3	9	2	7	5	1.4
BIOL LAB	45 MIN.	1	2	2	1	1	1	1
CHEM 101	60 MIN.	3	3	9	3	6	5	1.2
CHEM LAB	60 MIN.	1	2	2	1	1	1	1
ENGL 103	30 MIN.	3	2	6	3	3	3	1
MATH 121	45 MIN.	4	3	12	4	8	6	1.33
P.E. 199	—	1	0	0	0	0	0	0

"Lowest Efficiency" Times: 7-8am, after 11:30 pm

Best "Wake-Up" Time: 7 am

Work (Job) Times: NONE

Organization & Activities Times: CHEM CLUB, W 8-10pm

Minimum Regular Sleep Time for "Alertness": 7-7.5 hours per night

Planned "Thoughtfulness" Time: 45-60 minutes per week

Really Desired "Free" Times: SATURDAY AFTERNOON AND EVENING, PLUS MOST OF SUNDAY

will permit him to survive. (Next term, Frank will get better advice in planning his class schedule. Then he'll do fine.) Frank's basis for making "this term's" initial schedule is shown in Table 1.5 on page 17.

1.4b Your Trial Schedule

Tear out a blank Learning Schedule Form from the back of this book. Get your course schedule (or, if you don't have one yet, make one the way you hope it will be) and a pencil and eraser. Make out a tentative schedule and have it checked by a good academic advisor (or, if no advisor is available, by someone familiar with the study techniques described in this book).

To Facilitate Making the Schedule:

1. First, fill in the information needed on the "worksheet" (on the back of the Schedule Form).

2. Second, on the Schedule Form, fill in all the time blocks scheduled for CLASSES and LABS, marking a horizontal line at half-hour or other class/lab times that start or end at other than "about on the hour". (Don't count 10 or 15 minute between-class times.)

3. Third, fill in PRE-CLASS and POST-CLASS "special study" times, getting these as close as possible to the respective classes. (If you have two or more classes in a row, use PRE-CLASS and POST-CLASS times in ***reverse*** order to classes so that at least two classes will be directly associated with some pre- or post- time for them.)

4. Fourth, fill in essential SLEEP times (for most persons, about 7–8 hours per night). Don't forget to plan a uniform "wake-up" time.

5. Fifth, fill in other ***essential*** times (i.e., those for meals, getting ready in the morning, etc.). DO NOT fill in FREE times for "fun", yet.

6. Use item G from your worksheet ("additional average hours per day") for ***each*** course. Spread this time fairly uniformly over the days you plan to study. The object is to have an approximately equal number of "class-plus-study" hours for each working day.

7. Now take these times per day and fit them into empty time slots on your Learning Schedule Form allocated for such activities as "study", "review", "memory work", "learning center", etc. (Remember the guidelines discussed about maximum times, "attention spans", "shifting gears", optimum times, etc.)

8. If you wish to use a regular "thoughtfulness" time, schedule that.

9. Finally, take the remaining empty time blocks, allocate an appropriate number for "catch-up" activities and mark the rest as FREE. (In subsequent ***revisions*** of your work schedule, you will be trying to increase the amount of FREE time by improving the ***efficiency*** of use of other times.) If possible, allow some time during the class days for visiting faculty offices when you have problems.

Table 1.4

LEARNING SCHEDULE for F.L. Fehling (nee Doe) prepared 9/1 to use until 9/11

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
12 m.	SLEEP	SLEEP	SLEEP	SLEEP	SLEEP	SLEEP	SLEEP
6:30 a.m.	Eat, shower, etc.	Eat, shower, etc.	Eat, shower, etc.	Eat, shower, etc.	Eat, shower, etc.	Eat, shower, etc.	Eat, shower, etc.
6 a.m.	Pre-Hist	FREE	Pre-Hist	FREE	FREE	FREE	FREE
7 a.m.	Pre-Math Pre-Chem	Chem Study Hist Study	Pre-Math Pre-Chem	Chem Study Hist Study	Hist Study Pre-Chem	"CHORES"	"CHORES"
8 a.m.	CHEM	Engl Study Pre-Math	CHEM	Engl Study Pre-Math	CHEM	WORK	Engl REVIEW
9 a.m.	MATH	MATH	MATH	MATH	Post-Chem Pre-Hist		Math REVIEW
10 a.m.	HIST -snack-	Post-Math Math Study	HIST	Post-Math Math Study	HIST		CHURCH
11 a.m.	CHEM LAB	Learning Center	P.E.	FREE	P.E.		
12 n.		lunch	lunch & Post-Hist	lunch	lunch & Post-Hist	lunch	lunch
1 p.m.		FREE	Post-Math Pre-Engl	FREE	Hist Study Pre-Engl	WORK	Thought-fulness Time
2 p.m.	ENGL	CATCH-UP	ENGL	CATCH-UP	ENGL		FREE
3 p.m.	Post-Engl Chem Lab Report		Post-Engl Post-Chem		Post-Engl Chem Study		
4 p.m.	Post-Hist	Chem Study	Chem Study Hist Study	Chem Study	Learning Center		
5 p.m.	FREE	Math Study	Math Study	Math Study	CHEM GROUP SESSION	FREE	
6 p.m.	Dinner	Dinner	Dinner	Dinner	Dinner	Dinner	Dinner
7 p.m.	Post-Math Math Study	Hist Study Math Study	Chem Study Math Study	Hist Study Math Study	Chem Study Math Study	Hist REVIEW	CATCH-UP
8 p.m.	Post-Chem Break	Break Chem Study	Break Engl Study	Break Chem Study	Break Engl Study	Chem REVIEW Break	Pre-Chem Lab
9 p.m.	Engl Study Chem Memory	Engl Study Chem Memory	CATCH-UP Hist Memory	Engl Study Chem Memory	CATCH-UP Hist Memory	Math Study CATCH-UP	Pre-Engl CATCH-UP
10 p.m.	SLEEP	SLEEP	SLEEP	SLEEP	SLEEP	SLEEP	SLEEP
11 p.m.							

Table 1.5

LEARNING SCHEDULE WORKSHEET
for

FRANK LEE (NOT REALLY) FENLING

☑ Initial Trial ☐ First Revision

		A	B	C	D	E	F	G
CLASS OR LAB	ESTIMATED ATTENTION SPAN	CREDITS	ESTIMATED OUT-OF-CLASS HOURS PER CREDIT	TOTAL (A×B)	SCHEDULED PRE-AND POST-CLASS HOURS	HOURS LEFT (C-D)	DAYS TO STUDY (3 TO 7)	ADDITIONAL AVERAGE HOURS PER DAY (E÷F)
CHEM 101	30 MIN.	3	3	9	3	6	5	1.2
CHEM LAB	60 MIN.	1	2	2	1	1	1	1
ENGL 103	30 MIN.	3	2	6	3	3	6	0.5
HIST 105	20 MIN.	3	3	9	3	6	5	1.2
MATH 121	30 MIN.	4	4	16	4	12	6	2
P.E. 199	—	1	0	0	0	0	0	0

"Lowest Efficiency" Times: NOON - 3 PM, AFTER 10 PM
Best "Wake-Up" Time: 5:30 am
Work (Job) Times: SATURDAY 8-12, 1-5
Organization & Activities Times: NONE
Minimum Regular Sleep Time for "Alertness": 7.5 - 8 hours per night
Planned "Thoughtfulness" Time: 45 minutes per week
Really Desired "Free" Times: AS MUCH AS POSSIBLE (WITHOUT "FLUNKING OUT")

REMEMBER:

MAKING A SCHEDULE IS PRETTY EASY.

STICKING TO A SCHEDULE IS *NOT* SO EASY.

IF YOU *DON'T* STICK TO A SCHEDULE (until appropriate revision time), YOU *WASTED* TIME MAKING THE SCHEDULE.

1.5 PREPARATION FOR THE FIRST CLASS DAY

Before classes start, you should take a tour to locate the classrooms and labs you will be using. Also be sure to locate the library, the Learning Resources Center, and a day-time study area. If you know who your professors will be, you should also locate their offices (and other areas where help will be available).

Be ***sure*** that you have all the supplies needed. In addition to textbooks, you will need plenty of pencils, pens, notebooks, paper, erasers, paper clips, a calculator, etc. If you are taking a lab or shop class, you will probably need approved eye protection.

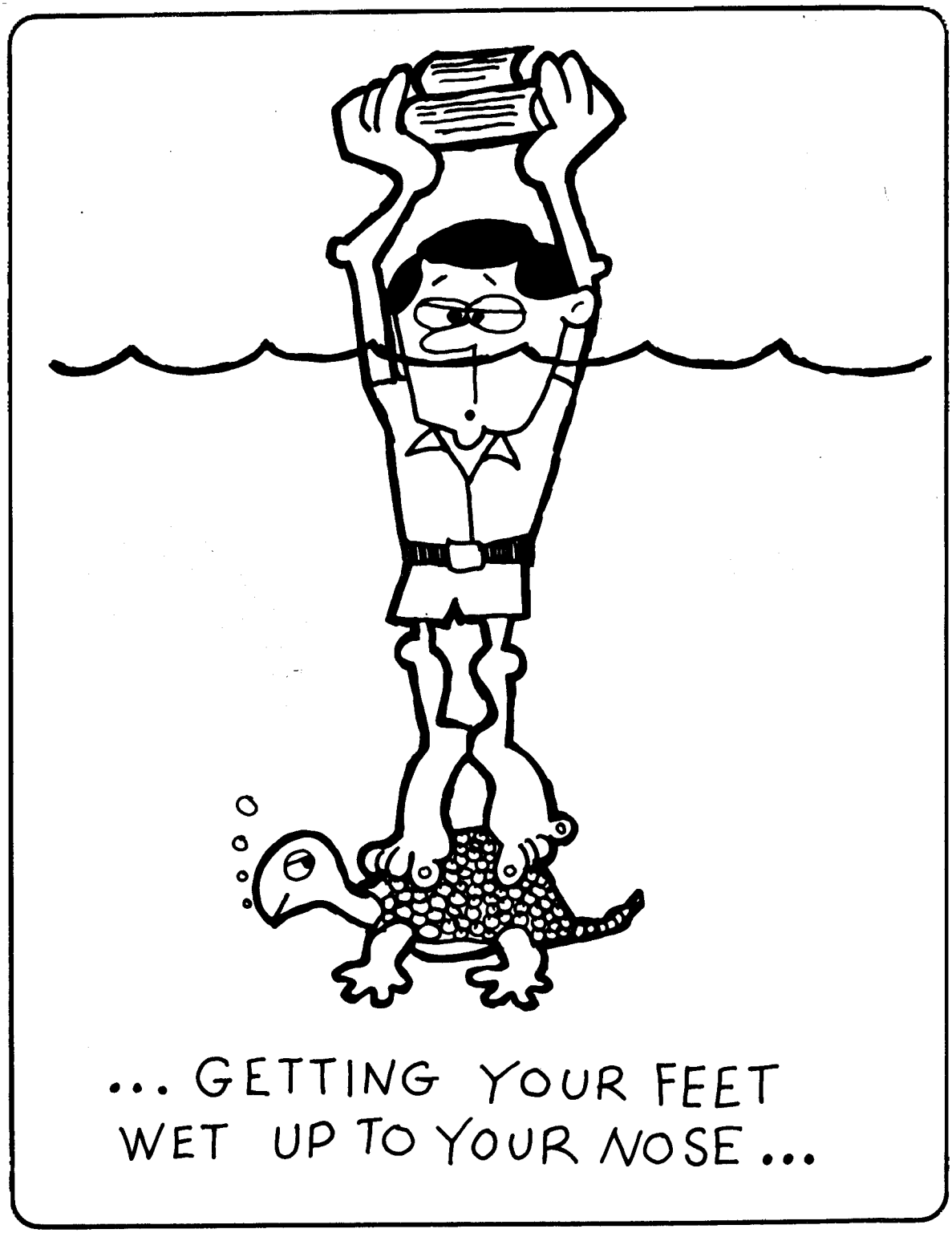
To get an initial feeling for how your study schedule might work, try it out for a while (a week before classes, if possible), even though you have no class assignments yet. You can test your ability to stick with a schedule and, at the same time, gain ***very*** valuable knowledge by using time blocks allocated for out-of-class study to survey the textbook and other materials for each course. In each course, try to pre-guess what the professor will emphasize in the first day of class. It's fun AND an extremely efficient way to start.

1.5a Pre-Flight Checklist

- ☐ Course schedule as good as possible (page 5)
- ☐ Study schedule (tentative) prepared (page 15)
- ☐ Normal study area (Monk's Cell) ready (page 7)
- ☐ "Day-time Study Area(s)" and other areas located (page 8)
- ☐ All books and supplies ready (this page)
- ☐ All of this book completed so far (up to this point)

OK! YOU ARE CLEARED FOR TAKEOFF. (See you in Chapter 2).

chapter 2 THE FIRST WEEK:
Getting Your Feet Wet, Up to Your Nose

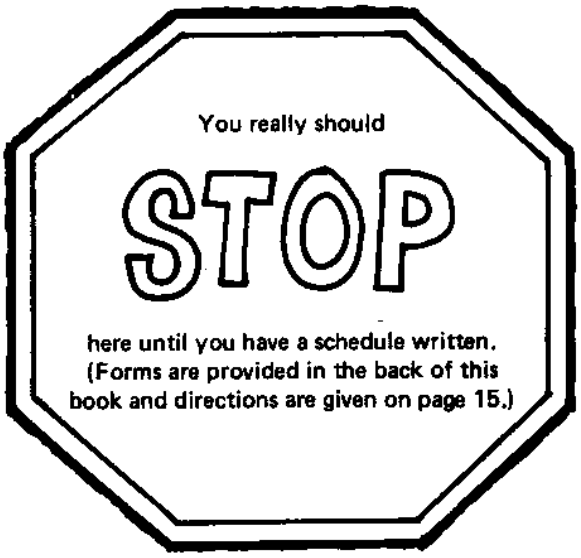


chapter 2
THE FIRST WEEK:
Getting Your Feet Wet, Up to Your Nose

This is it! Classes; study; lectures; reading; homework; assignments; references;

IF you followed the suggestions of Chapter 1, your classes should really go surprisingly smoothly. If you are a more typical student, you may have lost this headstart. Don't worry, however ———— you're still very much in the race.

DO YOU HAVE A SCHEDULE?



Even if you don't have a ***written*** schedule, you will still be following a schedule . . . . . probably a rather erratic (and possibly self-defeating) one.

Now take the oath:

"I solemnly swear to abide by my WRITTEN schedule for a period of one week."

You really should DO IT! (regardless of
the temptations
the worries
the "other things that must be done"*)

*See Chapter 9

Next week you can change your schedule as necessary, but you should resist all temptations to change it now.

During this week you should divide your academic work into 4 parts:

1. What I do ***before*** class. (Section 2.1)
2. What I do ***in*** class. (Section 2.2)
3. What I do ***immediately after*** class. (Section 2.3)
4. What I do during other ***scheduled study*** times. (Section 2.4)

The use of these four parts will help you develop your academic ***efficiency***. And efficiency is the "time saver" that will provide you with the maximum freedom in the long run. (A study at the University of California has shown that 30 hours of EFFICIENT study resulted in grades just as high as those obtained in ***50 HOURS*** of "typical" studying for the same classes). Successful professionals plan their time carefully. ***So do*** successful students!

2.1 PREPARATION FOR CLASS

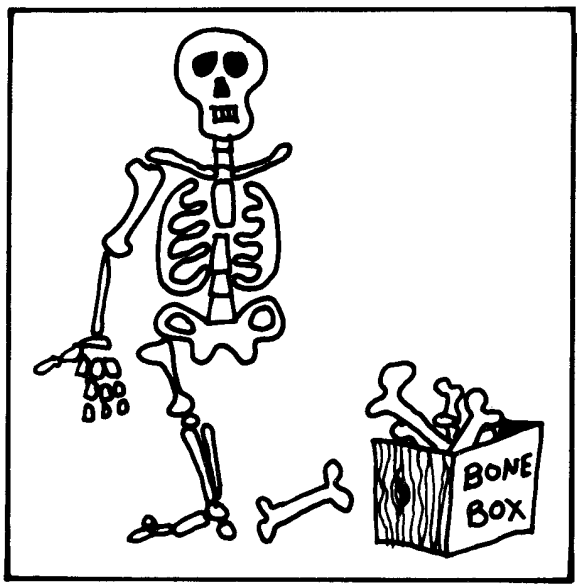
The class is usually the ***best*** place to learn, but to get the real benefit from it, you must go prepared. The game is to ***guess what the professor is going to discuss.***

To see how this is done, get one of your textbooks and do the following:

> AW, COME ON! YOU SHOULDN'T BE READING THIS UNTIL YOU ACTUALLY GET YOUR TEXTBOOK!

Thank you for getting the book. Now look at the material for your next class. (Introduction and 1st Chapter for your first class.) On scratch paper, ***write*** the CHAPTER TITLE while you try to imagine what will be discussed. (The Guessing Game has started!) Note that ***zero*** knowledge is required to ***guess***; it really doesn't matter whether your guesses are correct or not at this stage.

Now check the following to build a better overview of the chapter material:



SECTION HEADINGS

FIGURE AND TABLE HEADINGS

ITALICIZED TERMS

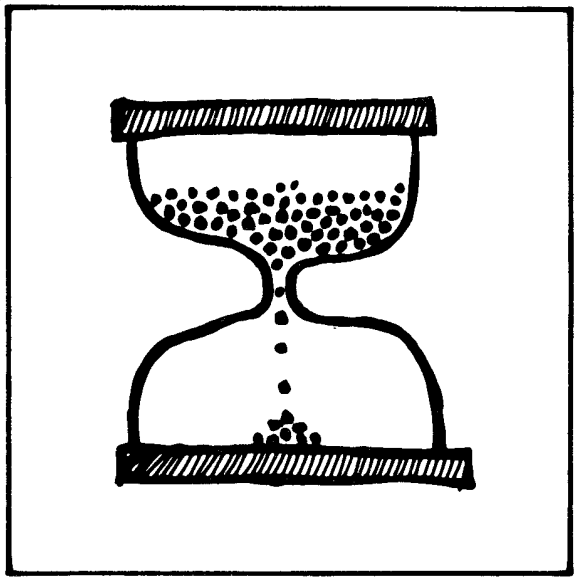
SUMMARY (Try the first and last paragraphs if no summary is given.)

OBJECTIVES* (if given)

The first time through the chapter, you are ***NOT even trying*** to "learn" the material. You are simply SCANNING the chapter to see how it's organized. You are only ***looking for the skeleton*** on which the chapter will be built.

*Objectives are brief statements, which may be phrased as questions, indicating precisely what you need to learn. These must cover the major ideas important to the course and how they are interconnected. For further information, see pages 23 and 68.

The first SCAN should take no more than three minutes. If you use more time than this, you are trying to LEARN some of the material. Please, don't do that . . . . . yet!



If the objectives are given, ***write*** them (but in your own words) on the scratch sheet under the chapter title. If objectives are given for each section, that's even better. Write them together with the section heading. If objectives are not stated, make a ***short*** list of your guesses of the major ideas the chapter intends to teach. ***These*** are your learning objectives. Questions and problems at the end of the chapter can also help (never mind that you can't answer them yet).

Has your opinion of what the chapter intends to teach changed since you originally wrote the title down? STOP and think about that for one full minute—these changes in your concepts can truly save you hours of wheel-spinning.

Now, *IF* your schedule permits, READ through the chapter rapidly. How carefully you read will depend on how much time you have. As you read, make your best guess about what the professor will discuss in his lecture. The better your guesses, the more TIME you will save in the long run. Formulate your "guesses" as a written "main-topic" outline, leaving space for notes to be taken during class.

Proper PRE-CLASS preparation will ***increase*** the amount that you learn DURING THE CLASS PERIOD. In most cases, you can ***nearly double*** the effectiveness of class-time learning by appropriate pre-class preparation. Research has shown that this ***increase in efficiency*** averages ***a factor of 1.75.***

DO allow time to arrive just a bit early for class. Get a seat as close to the front and center as possible. If you are assigned a seat where you have difficulty hearing or seeing, ask the professor for a better seat assignment. YOU SHOULD GO TO SECTION 2.2 NOW, UNLESS YOU GOT LOST IN THE PRECEDING SECTION.

If you are reading this, you are scared by the course(s) in a way that is ***not reasonable.*** If you are honest with yourself, you will see that you have not been asked to get anything correct up to this point. If the chapter title was Glazes for Pottery and you guessed that it dealt with the love life of garter snakes, that's OK. In class you

may find that it deals with solid-state transducers–so far you are only guessing and there's no penalty (now) for bad guesses. Good guesses will save you TIME, and this book will help you make good guesses well before you get to the exams.

2.2 WHAT TO DO IN CLASS

Don't get disappointed–not every oyster sends forth a continuous string of pearls!

2.2a Do Go To Class!

All studies show that students who attend class faithfully come out, on the average, a full grade higher than those who take even allowable cuts!

2.2b Stay Awake!

If this prof is a real bore, you should be able to preguess him very accurately and thus pick up virtually all his exam questions right in class. When you realize this, you will remain wide awake in the very worst class. If ***you*** start to fall asleep in class, ***you*** are doing something wrong–play the game to ***your*** advantage.

The worst case is the prof who reads from the book. (Boring, isn't it?) But, even in this case, LISTEN for the EMPHASIS. For the prof who reads directly from the book in a MONOTONE, be ready with questions for each part that you didn't understand clearly. For the prof who reads from the book in a monotone AND won't answer questions, consult your advisor IMMEDIATELY concerning a change of classes.

2.2c Pre-Guess

You used your pre-class study time to outline what you expected to hear from the prof. NOW, listen ***intently*** when your guesses are either wrong or incomplete. If the prof is dynamic and fascinating, still play the game–you are looking for his personal additions, plus the more subtle nuances.

2.2d Take Notes

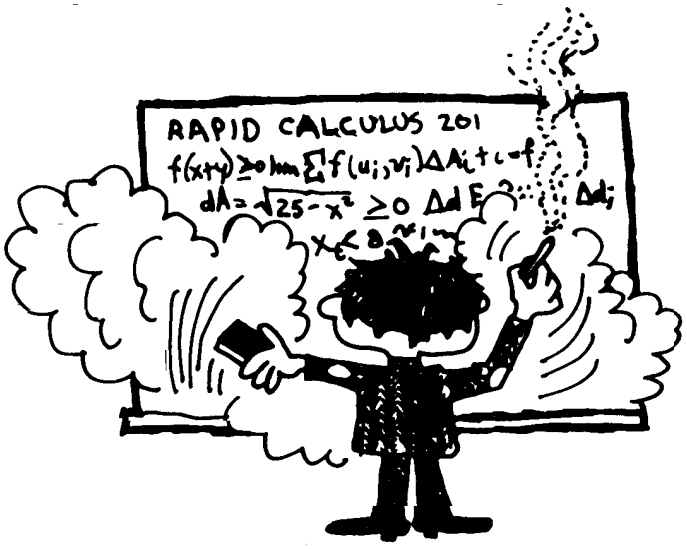
But don't spend the entire hour as a poor stenographer. Good notes have:

1. An OUTLINE form (your "guessed" main topic outline), indicating subject matter organization. Revise this IMMEDIATELY after class if necessary.

2. Your own SHORTHAND, e.g., $\rightarrow$, $\overline{c}$, &, (any symbols that ***you*** understand).

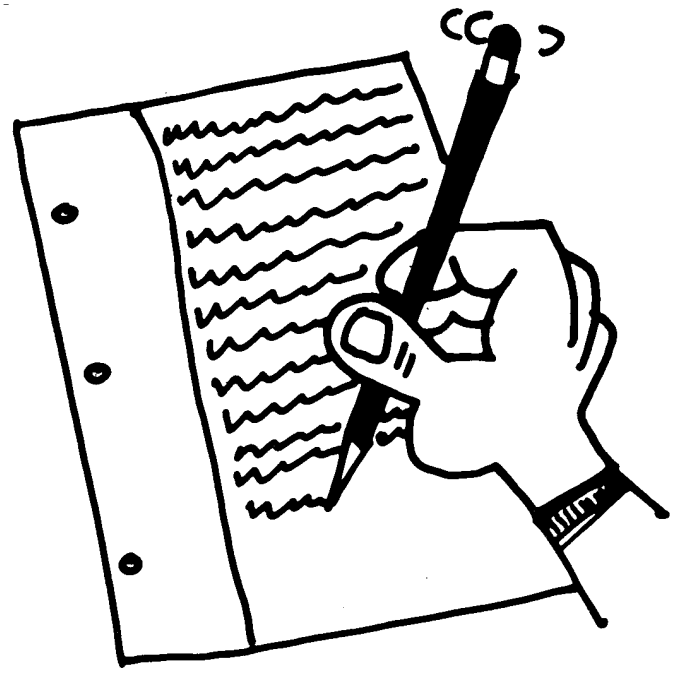
3. SPACES to be filled in after class. (If you are blessed with 100% retention of spoken words and a photographic memory, don't write any notes until after class. If you're like the authors, TAKE NOTES!) Do not write items that come directly from the text. Save time for listening.

4. Indications of what the prof STRESSED.$*$*$*$ The student who copies everything the prof writes (and nothing else) is completely unprepared for class ***and*** is learning only a minimum amount of material in class.



If the prof writes so rapidly that the chalk catches on fire in one hand, while his other hand is busy erasing, YOU NEED HELP. The good news is that you HAVE help available. There are people sitting beside you and THEY have the same problem! With advance planning, three students cooperating can get a good "collective set" of notes. (You can get together after class to pool information and fill in your private lecture notes.) See also "groups-of-three" (page 44).

Another special case involves lectures in which ***nothing*** (or almost nothing) is ever WRITTEN by the prof. In such cases, a tape recorder is a good ally. Listen carefully. Do take notes, but be happy that you also have it on tape. Later, you can listen to the tape in segments to develop good notes. The prof who uses a lot of audiovisual aids (movies, slides, models, etc.) can give excellent lectures, but note-taking can be a problem. Your tape recorder and two fellow students can solve the problem. Plan for each of you to take notes on selected portions of the AV materials. Then get together after class, with your tape recorder (if necessary) to combine information into good lecture outlines.



5. Leave a BLANK COLUMN on the side of the page. When you study these notes, this space will be used to insert *"cues"* by which you can organize and associate the various pieces. When you check your notes for understanding, you will ONLY look at the cues to see if you can remember the rest of the material. Some of these "cues" will eventually become "Read and Destroy Mental Crib Notes" on exam day (Chapter 4).

2.2e Listen

As silly as it sounds, few students ***really*** listen. Good listening requires you to be on the same wavelength as the Prof. That is why you "pre-guessed" the lecture material. Good listeners spot potential exam questions quite readily. Concentrate on ***relative emphasis*** and anything you failed to predict as lecture material. ***Zoom*** in on the items you guessed incorrectly or incompletely. As you listen, ***tune*** in to the IDEAS. Keep asking yourself, "What is the point of this?"

2.2f Participate

Get involved at every opportunity. If the prof asks rhetorical questions, ***answer them.*** This is your opportunity to respond to what this prof considers important before it can cost you exam points. What does the ***prof*** want as an answer? (See also Chapter 4.)

2.2g Study Your Prof

What makes him tick? What are his pet ideas? What are his prejudices? The prof's vanity will be flattered by the attention. You will also get a lot more out of his lectures.

Finally notice who are the STUDENTS in this class (not to be confused with all who occupy seats). To qualify as a genuine ***student***, a person should be obviously prepared, be alert, and participate. This type of student can be a big help to you later on, so make a mental note of those who qualify.

2.3 ACTIVITIES FOR IMMEDIATELY AFTER CLASS

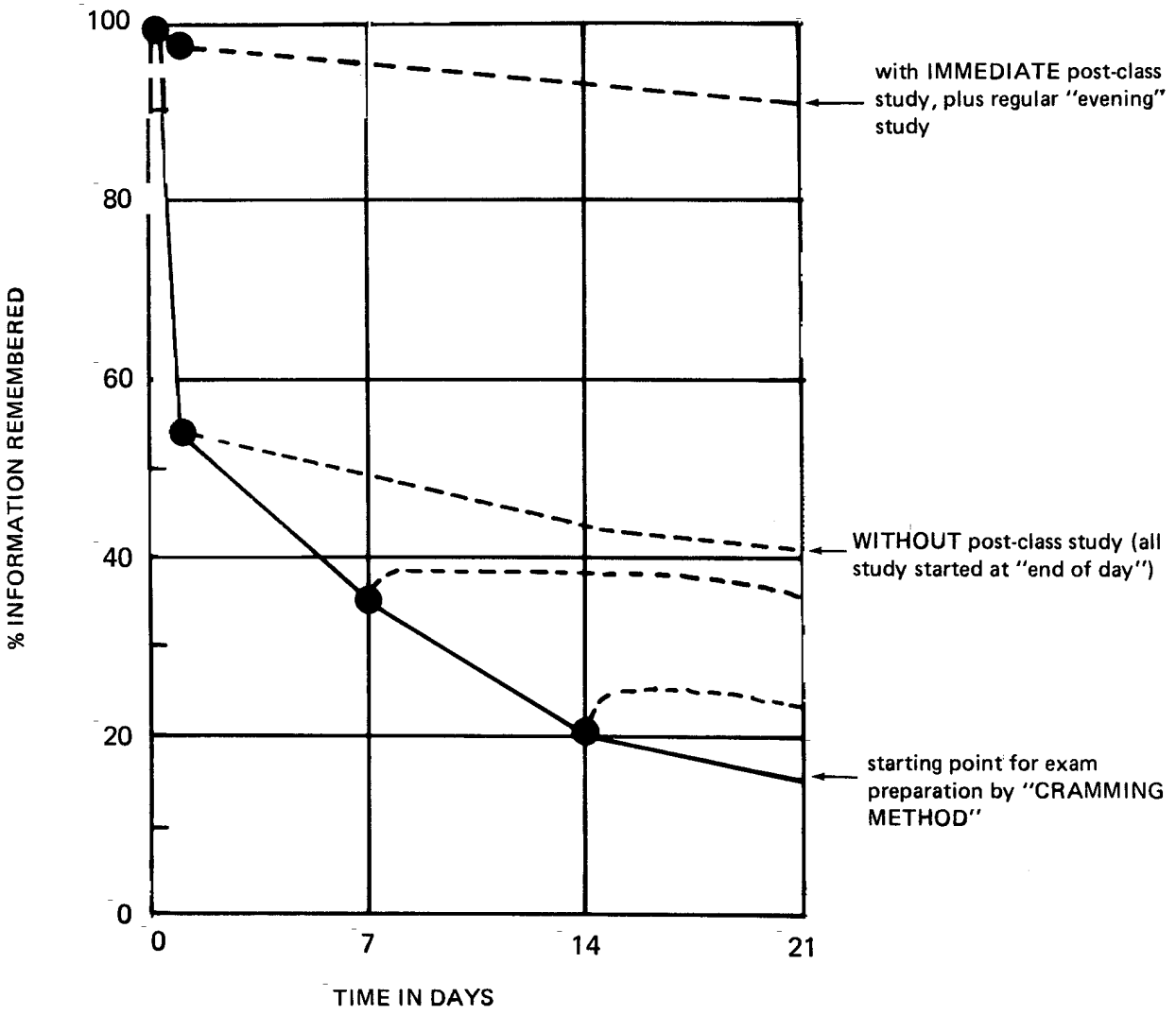
IMMEDIATELY AFTER CLASS you should go over your notes. Now you can FILL IN ANY BLANKS, using what you remember hearing and seeing during class. (Use the text as necessary). Fix the notes so that THEY WILL MAKE SENSE TO YOU LATER ON! This evening will be too late to catch such things as a "not" left out of a sentence or a formula that is incomplete.

While the lecture is still fresh in your mind, get as far as possible on your HOMEWORK. Don't spend time "stuck" on a particular problem. It is more important to REINFORCE what you ***did*** learn than it is to struggle with what you missed. Your efficiency will be much greater now and will save you many hours of struggle later on. Ideally, you can do this work together with a couple of other genuine students. Between you, you will be able to settle practically all of the questions that arise.

Back in Chapter 1 you were advised to schedule your classes to have these "sandwich hours" for study between classes. USE part of this time for the class you just finished. If you have two "sandwich hours" together, it's best to use the first to study the class just finished; then use the second to prepare for the next class. (If you have only one hour between classes, split this time into "post-class" and "pre-class" work.)

To understand the real importance of doing this work IMMEDIATELY after class look at the graph on page 27. We forget very rapidly until we do something to halt that process. Unless you halt the leak in your memory when the retention level is still high, you are going to have a tremendous ***relearning*** job to do later on.

"But, prof, I ***do*** know the material; I just keep goofing-up the exams!" That cry of frustration should more accurately be stated, "But, prof, I ***DID*** know the material." We are simply telling you



KEY: ——————— = percentage of information remembered, *without* reinforcing review, as a function of time

– – – – – = percentage remembered *after* reinforcing review at indicated time points

[Based on data from "Studies in Retention", H. F. Spitzer, *J. Educ. Psych.*, Dec. 1939.]

how to avoid having to go back to the material when you're down below the 20% retention level. SINCE YOU ARE GOING TO HAVE TO PLUG THE MEMORY LEAK SOMETIME, WHY NOT DO IT WHEN THE TANK'S STILL NEARLY FULL?

Remember that one important purpose of your post-class activity is to produce a MEANINGFUL set of lecture notes. Good lecture notes are invaluable in reviewing for exams!

If you do have time in the post-class block for some of your homework, do it ***efficiently***. At this stage you will benefit most from outlining homework (or "setting up" several problems), rather than working intensively on just the first part of your assignment.

In "thought" or "opinion" type courses in which you have little or no specific material to "learn", keep the flow of the class discussion going during your post-class time with a couple of the BETTER students.

2.4 SCHEDULED STUDY TIME

"What a day!"

1st interpretation: "What a day! Boy, am I bushed."

2nd interpretation: "What a day! Hooray! I'm going to be a success!"

The first is natural for people who are completely out of shape (academically) and for those who entered the day without a warm-up (pre-class activities).

The second interpretation is equally natural for those who have ***followed*** the recommended procedures and are now close to the end of their work day!

Your relaxation and recreation time is coming up soon–now finish earning it!

2.4a When to Study?

Follow the learning schedule you set up and follow it religiously (this week). Give it a full week to see how you like it and how well it works. Above all ***DON'T*** change your schedule until you give it a fair trial. Don't knock it if you haven't tried it! This schedule is one of the REAL differences between high school and college.

2.4b Where to Study?

You should study in that "Monk's cell" you prepared according to the instructions in Chapter 1 (page 7) of course! (But take down those pictures and pin-ups before you start–no cheating!) If pandemonium reigns near your cell and you can't control it, you may have to go to the library or a learning resources center. If this becomes necessary, look for a setting as similar to your prescribed "Monk's Cell" as you can find.

During the class day, use a place (your "daytime study area", page 8) very close to your classrooms. The idea is to ***utilize*** as much as possible of the ***valuable*** pre-class and post-class times.

2.4c What to Study?

Study what you have scheduled in each time slot. IF you have followed all the suggestions so far (a big "if" isn't it?), you will feel that you've almost finished everything already. That's where you ***want*** to be. Now you will just polish it a little to add security and slow the forgetting rate. If your work in one course is not up to the desired level, you can "borrow" a bit of excess study time from another course. But do NOT eliminate one course from the schedule. You do some work in each course ***daily***.

2.4d Who Should Study?

The old idea that you should do all your work by yourself is just that–an old idea, and not a very good one. All studies indicate that a group of three students who learn at a similar pace can be much more efficient. To make it work, however, you need to be studying the same material in the same way (preparation for class, participation in class, review immediately after class). Don't work in a group unless everyone contributes, especially you. (See page 44 for more details.)

2.4e Why Study?

"The more you study, the more you learn.
The more you learn, the more you know.
The more you know, the more you forget.
The more you forget, the less you know.
So, why study?"

–an old Sophomore saying–
(original author unknown)

If you really don't want to study, you should not be in school. But if you want to ***cut down*** on the time required and ***still*** get better results, keep on with this guide!

2.4f How to Study?

Efficiently, of course. (TOO simple an answer–but it's still correct.) To be efficient:

1. Stick by your SCHEDULE. In other words, be organized.

2. REWARD YOURSELF with scheduled breaks, scheduled recreation, scheduled goof-off time. Do note that the old schedule does not get sacrificed. (Remember, you ***swore*** to stick it out for a week.)

3. WRITE notes, summaries, key concepts, flashcards (page 86) for terms, and all problems. To organize your material so you can remember it, try to produce clear outlines with headings, subheadings, terminology, rules, concepts . . . . . In the margin of your notes improve those CUES which will key you to this organization.

   Some very successful students take time to REDO their notes at least once each week in a special way. The notes are rewritten (using the textbook and other references) as though the student were to USE THESE NOTES TO GIVE THE LECTURES. The success of this method may lend credence to the old axiom: "To learn something really well, teach it."

4. PROBLEMS are a special case because they are the closest thing to practice exams for many courses. Work all problems just as you would take an exam:
   a. ONLY look up material that will be provided in the exam.
   b. NEVER look at the answers until you have finished the problem.
   c. DON'T look at the answer even then ***until*** you have decided that your answer is reasonable. (Estimate the answer and check that you ANSWERED THE QUESTION ASKED.)

   For details of tackling ***numerical*** problems, see Section 8.2, page 87.

5. Get a CRITIC (someone who gets good grades) to check any written reports or papers that are going to be graded. (If they will also criticize practice items, that's fine, but such persons are harder to find!)

Try these questions on material you feel you have mastered. Can you:

a. ***List*** the objectives for studying this material?
b. ***Write*** accurate definitions of the terms?
c. ***Write*** a clear outline?
d. ***Answer*** the questions and solve the problems in the text?

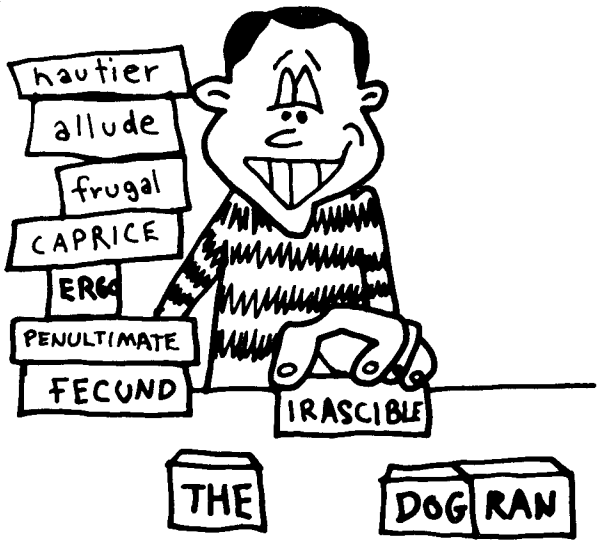
Notice the emphasis on WRITING. You ***can't*** tell whether you're really ready for an examination until you do a few practice laps. You are taking exams as you study—they just aren't being graded yet.

A little note on READING may also be appropriate here. Sometimes reading is NOT as simple as we might expect. In some texts the ideas seem very complex; the sentences may be exceedingly complicated; many new terms pop up without definition; vocabulary that you never saw before is used; continuity from the prior material is not apparent. BOY! The previous sentence was 37 words long! Was it hard to understand? You probably didn't have too much trouble because that giant sentence was broken into five obvious parts. You can rephrase ANY complicated sentence into a series of simpler statements. At first, simply get the main sentence parts. Then add the phrases and modifiers one at a time. When you finish, you will have more understandable prose.

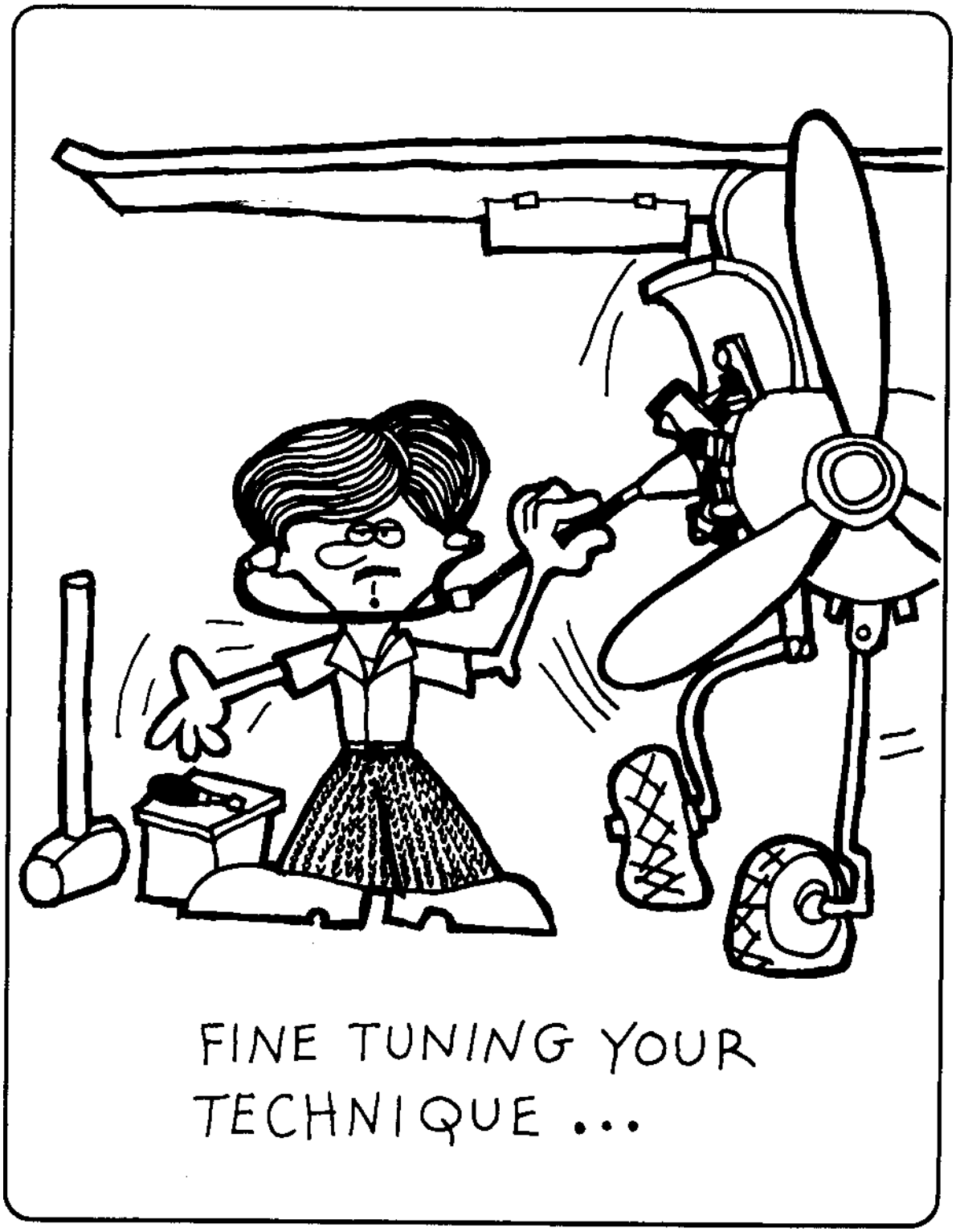
For unfamiliar vocabulary, you don't need to look up every word. The context may make it obvious. If it doesn't, DO look it up. If your textbook has a glossary or terms list, use that to get the specific meaning of a word within the special field of the text.

****

During this first (trial) week you should make notes on WHAT you like, WHEN you make recognizable progress, WHEN you feel frustrated, etc. But do NOT modify your schedule (or depart from it) until the second week. By that time, you will have developed much better criteria for any possible changes. If you fall from grace at any time during this week, make a WRITTEN note of what you actually did. You will need such notes for next week's reorganization of the schedule. (That's discussed in Chapter 3.)



chapter 3 THE SECOND WEEK TO THE FIRST EXAM



chapter 3

THE SECOND WEEK TO THE FIRST EXAM:

Fine Tuning Your Techniques

Did you just buy this book and the first week of classes is already over? If "yes", you should read through the first chapter and then try the suggestions of Chapter 2 for this week. (If "no", you don't need to read this and can move directly to the next paragraph. Ha!)

If you have honestly tried the procedure outlined for the first week, you are now ready to make profitable modifications of your study plans. You will be able to:

1. Design definite plans to get an A (or a B, or a C, or a D, or even flunk) in each course.
2. Do the required work in the MINIMUM amount of time.
3. Become a Superstar in those areas you like best and are good at. (Of course, there are non-academic areas where you're largely on your own. This book is designed to supply you with more time for those activities, and Chapter 9 does have a few good suggestions.)

If you did ***not*** really follow the procedures recommended for the first week, we suggest you go back and DO IT for a week. This chapter is of no real value until you have tried Chapter 2 for a ***full week***. You need to collect data before you can fine-tune a good program.

HOW DO THINGS LOOK SO FAR?

Choose between

Things look reasonably good. How can I make them better?	and	I've got ***serious*** problems!
↓		↓
(Go to page 42.)		(Find your problem(s) in Table 3.1)

Table 3.1. Serious Problems List (Check your *worst* "symptoms" first)

PROBLEMS	SYMPTOMS	SEE PAGE	SEE BOX
HOURS TOO SHORT (Out of time!) 	"I cut out some recommended steps to save time."	35	A
	"I follow all the steps, but never get finished."	35	B
	"I spend too much time on little things like eating, laundry, etc."	36	C
	"I'm constantly interrupted."	36	D
	"I have so many VALID activities that I don't have time for all my studies."	36	E
EASILY DISTRACTED (Can't concentrate!) 	"It's impossible to keep your mind on your studies around this place."	36	F
	"I keep thinking about being behind in another class, or about other problems, while trying to study."	37	G
	"I really do like fun better than studying."	37	H
	"I'm too much in love to think of anything else."	37	I
LACK OF UNDERSTANDING (Don't get it!) 	"I can't understand the textbook(s)."	38	J
	"I'm not feeling prepared for the class."	38	K
	"I can finally understand, but it seems to take forever."	38	L
POOPED OUT (SO tired!) 	"I fall asleep while trying to study."	39	M
	"I fall asleep in class."	39	N
	"I'm trying to survive on less than seven hours of sleep per night."	39	O
	"I'm not *that* sleepy, but I don't seem to have enough energy to keep going."	39	P
FEMORY FAILURE (Can't remember!) 	"I can't seem to learn required memory material."	40	Q
	"I can learn things, but I keep forgetting them when I need them."	40	R
EXASPERATION (Schedule's a mess!) 	"I'm using a schedule, but worrying because my friends study differently."	41	S
	"I just *couldn't* stick to my schedule, so now I'm behind in most of my classes."	41	T
	"I found my schedule absolutely unrealistic!"	41	U
	"I'm trying to follow the advice in this book, but I just know the exams will kill me dead!"	42	V

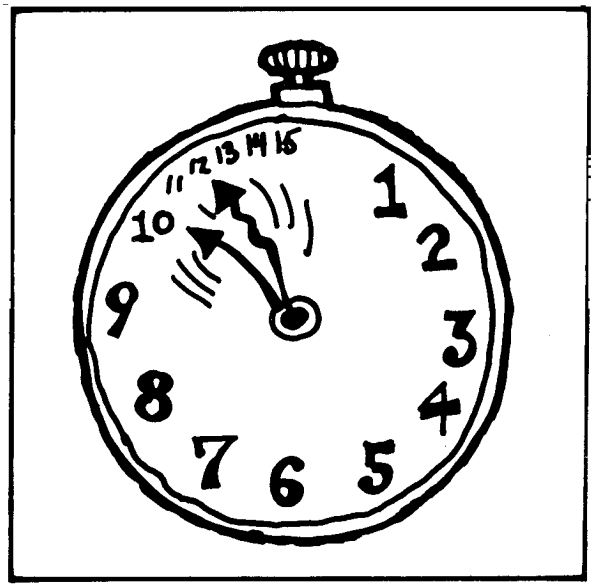


Table 3.2.
Solving "Time" Problems

BOX	ANALYSIS & SOLUTION
A "I cut out some recommended steps to save time."	This kind of saving is like driving an extra 100 miles to save a 50 cent bridge toll. The only *real* way to save time in the long run is to be *efficient.* For the next week, concentrate on building the *habit* of doing the RIGHT THINGS AT THE RIGHT TIMES (as described in Chapter 2). Both pre-class and post-class activities are *especially* important. They result in "more learning per minute" than most other times. In subsequent weeks, reinforcing this habit will get easier.
B "I follow all the steps, but never get finished."	This might result from any of a number of problems. See if one or more of the following applies. (1) You *can* finish work for all classes except one or two. If this is the case, simply revise your schedule (Section 3.2) to add more time for more demanding classes. Perhaps you can do this by removing some time now scheduled for less demanding classes.
	(2) You *can* understand what you read, but it takes a long time to read each paragraph. Reading "speed" can be improved. See page 47. (3) You have to go back over each section several times before you understand it. This is less of a "time" problem than an "understanding" problem. For the solution, see Table 3.4, Box L.
	(4) You find that a sizable fraction of your study block time is inefficient because your ability to work productively begins to decline. In this case, your scheduled study time is too long. Rework your schedule to plan more separate times to study the material. The maximum time should correspond to your "attention span" for this course (pages 9 and 10).
	(5) The first 5–20 minutes of your study time is usually spent trying to focus your mind on the task at hand. Most of us have this problem, which is caused by "brain clutter" (having many extraneous thoughts unrelated to the job to be done). For the solution, see "Brain-Flushing" (page 46).
	(6) You find, by looking over old exam files or talking with students who have previously had the class, that you are studying a lot of material that is unlikely to be covered by exams. "Overstudying" is a special problem for the conscientious student. The total amount of material covered by lectures and out-of-class assignments *can* be overwhelming. The solution to this problem is to spend *all* of your study time on those topics expected to correspond to 95% of the exam coverage until this information is thoroughly learned. (If you are planning for less than an A, reduce the percent accordingly.) *Only* after you have mastered the "essential exam material" should you study other topics. Even then, you should select only those topics of interest and importance to *you.* Defining the "essential exam material" will become easier for you after you have taken one or more exams in the course.

Table 3.2. Solving "Time" Problems *(continued)*

BOX	ANALYSIS & SOLUTION
C "I spend too much time on little things (like eating, laundry, etc.)	Your problem is not really "Time", it's organization. Plan ways to do some of your studying while eating, doing laundry, etc. In this way, you will turn "unproductive" time into "useful study" time. (However, many dieticians recommend that you have at least one meal each day "without distractions".) For further suggestions, see Chapter 9.
D "I'm constantly interrupted."	Although interruptions can certainly cost you time, this is really a "distractions" problem. See Table 3.3, Box F.
E "I have so many VALID activities that I don't have time for all my studies."	This is really a joint time-schedule problem. However, you can only tackle it as a schedule problem. Rework your schedule (page 15). When you are at maximum efficiency, drop: (1) some "Free" time, or (2) some activities, or (3) some courses, or (4) grade expectations, or (5) your chosen profession [Trying to "drop" SLEEP *won't* work. That will only decrease efficiency and compound the problem (page 39)!]

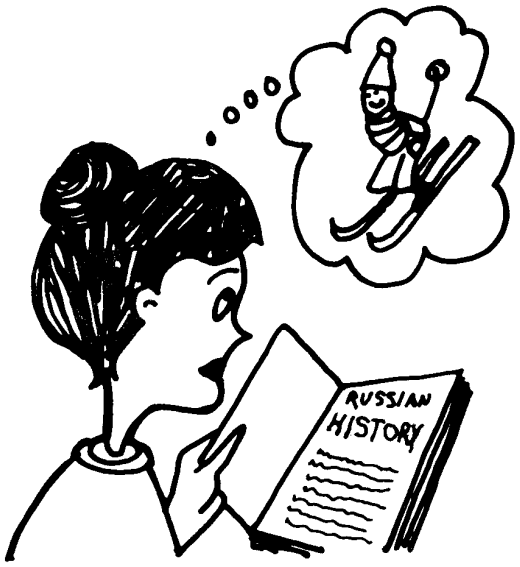


Table 3.3.
Solving "Distractions" Problems

BOX	ANALYSIS & SOLUTION
F "It's impossible to keep your mind on your studies around this place."	Are the distractions *inside* the "study" room or from outside the room? If the distractions are *inside* the room, do something about it *immediately.* Ask your roommate to use an earplug or headphones with the radio, TV, or stereo. (Such items can be obtained at appliance or electronic shops.) Don't worry if he/she gets upset. If you're too close a friend, he/she will spend his/her life trying to impose on you since you "graduated from college and all he/she got was tough breaks". If your work area doesn't match the "Monk's Cell" (page 7), fix it or find another place to study that *is* quiet, uncluttered, and dedicated to study activities. If the distractions are from *outside* the room (phone calls, visitors, hard rock group in the shower, sunbathers on the neighboring roof, smell of pizza and beer, etc.), try ways of turning them off. Requests for phone calls only during scheduled "free" times may help. (Or you can ask the phone company to install a bell switch on your phone.) A sign on the door may help discourage visitors:

Table 3.3. Solving "Distraction" Problems *(continued)*

BOX	ANALYSIS & SOLUTION
F (con't)	I AM TRYING TO STUDY. PLEASE DO NOT DISTURB. I'LL BE FREE TO VISIT AT _____. Actually moving your desk away from the window may help. If problems persist, be prepared to move your study activities to another area meeting the "Monk's Cell" requirements (page 7). You may still sleep and change clothes in your room, but it's no longer your STUDY area.
G "I keep thinking about being behind in another class, or about other problems, while trying to study."	This is a *very* normal problem. Learning to solve it can really improve your study efficiency, as well as the efficiency of your work in your ultimate career. Part of the solution lies in reworking your schedule (page 15) so that you can trust your plans to keep you from getting behind in any classes. In reworking your schedule, be sure to plan study blocks corresponding to your attention spans (page 9). "Mind wandering" during a later portion of your study may indicate that you've passed your attention span limit. If "cluttered thoughts" occur frequently as a hindrance to getting started in your work, learn and practice the techniques of "Brain Flushing" (page 46). Working in a group-of-three (page 44) *will* help you keep your mind on the subject.
H "I really do like fun better than studying."	Welcome to the human race! But if you *do* like "fun", why are you methodically eliminating it from your life? If you let yourself think about "fun" when you should be studying, you get down to two choices: (1) This inefficiency will require more hours for studying, thus reducing the time available for fun, or (2) You won't be able to stay in school to enjoy the fun of it at all! The solution to having more time for fun while doing well in college is *still* to improve study efficiency. Rework your schedule as appropriate (page 15) and start practicing the self-discipline needed for success in college (and in all of life). A "group-of-three" (page 44) can help!
I "I'm too much in love to think of anything else."	This poses two choices: (1) You can improve your study efficiency to permit you to spend more "free" time with the one you love, or (2) You can flunk out of school, whereupon he/she may drop you like a hot potato and marry someone successful. Revise your schedule to improve study efficiency (page 15) and, if distraction persists, join with two other students in a study group (page 44). This will help you concentrate on the subject matter.

Table 3.4.
Solving "Understanding" Problems

BOX	ANALYSIS & SOLUTION
J "I can't understand the textbook."	Your textbook(s) and professor(s) may assume that you know a lot of terms and concepts that you never learned. See "Reading" (page 30). If that doesn't help, find an easier (lower level) textbook in the field. If your professor can't recommend one, go to the library or bookstore and ask for a book in the field that is designed for "non-majors" courses (or even for a high school course). If your college has a Learning Resources Center, go there for other types of supplementary material. Remember that other books or supplements are *only* to clarify the text and lectures. Any attempt to *replace* the text is dangerous. Visit with your professor regarding other "remedial" suggestions. Note that providing time for supplementary work may necessitate revising your schedule (page 15).
K "I'm not feeling prepared for class."	If the lecture coverage seems to take you by surprise, the lectures seem "from out of left field", or you are afraid you might be called upon for class participation, then you need to improve your pre-class work. Rework your schedule as necessary to increase pre-class time blocks (page 15). Be sure that you are doing the *right kinds* of pre-class activities (page 22). Discuss, with some "obviously prepared" students, the methods that they find useful. To improve your image in class participation, *volunteer* on those topics you feel you best understand. (This will also lower the odds of being called upon to discuss topics you feel unsure of. However, be willing to admit your uncertainties, but give a valid explanation of why you feel insecure about the topic.)
L "I can finally understand, but it seems to take forever."	This might be a "Time" problem. (See Table 3.2, Box B). It might also result from insufficient background or from trying to "understand" too large a block of material at once. If your background of terminology, concepts or skills is insufficient, seek supplementary "remedial" materials. Your instructor, a librarian, or a Learning Resources Center manager can offer some good suggestions. If you are trying to tackle too much material, break it down into smaller sub-sections. As problems in understanding arise, seek help immediately from your instructor or another "tutorial" person. Be prepared to ask specific questions or to explain the nature of your confusion. As these smaller blocks become clear to you, the "larger picture" will also develop clarity. You may also profit from looking over the discussions of "reading" (pages 30, 47).

Table 3.5.
Solving "Tiredness" Problems

BOX	ANALYSIS & SOLUTION
M "I fall asleep while trying to study."	This is not just a "problem". *It's a crisis!* Change your "Monk's Cell" *now*! This is urgent, because you now associate this place with sleep. Sitting down there will trigger sleepiness as effectively as a heavy meal and low lights. You may be able to avoid moving out by rearranging the furniture with *strict* attention to the "Monk's Cell" design (page 7). However, the change must be *dramatic* if it is to be effective. Also check that you have scheduled (and are *getting*) sufficient sleep. Working in a study group (page 44) can also help keep you alert.
N "I fall asleep in class."	If you are getting enough sleep regularly, but still feeling drowsy in class, you are not following the recommendations for in-class activities. You can't fall asleep even with a monotone lecturer in a hot room right after lunch *if* you play the guessing game (page 24) thoroughly. If you tried the guessing game and still fell asleep, it means that you didn't do it in sufficient detail. You may need to shift some of the after-class study time to pre-class preparation. If you pre-guessed accurately, now is the time to add more detail to your guesses (page 67). If your pre-class guesses were wrong, work on improving them. *The more boring the class, the greater your need to pre-guess very accurately and in detail.* When you get it down to nearly item-by-item prediction, the class will become an excellent review session.
O "I'm trying to survive on less than seven hours of sleep per night."	YOU have to determine how much sleep you need. To do this, get up at exactly the same time every day. If you pop out of bed easily, you have had enough sleep. If getting up is a chore, your body and mind NEED more sleep. The average requirement is 7½ hours, but individuals vary. We will assume that you need 8 hours of sleep but are trying to get by on less. You can't afford this! Simple arithmetic can show that it won't work: 8 hours sleep: 100% efficiency X 16 hrs awake = 1600 work and play units 6 hours sleep: 70% efficiency X 18 hrs awake = 1260 work and play units 4 hours sleep: 45% efficiency X 20 hrs awake = 900 work and play units 0 hours sleep: 5% efficiency X 24 hrs awake = 120 work and play units You can afford to cut down on sleep *only* if the work load *decreases.* Note that 12 hours sleep will not help. It is about the same as 6 hours! (100% efficiency X 12 hrs awake = 1200 units.)
P "I'm not *that* sleepy, but I don't seem to have enough energy to keep going."	This might result from improper diet (especially vitamin deficiency), improper exercise (too much *or* too little), or illness. The only safe solution to this problem is to consult your personal physician or the campus health center. Request simple blood tests or other analyses to detect possible illness. If nothing "serious" is detected, discuss ways of improving your exercise regimen, your diet, and your regular vitamin intake. What you MUST NOT do is to try to "cure" tiredness by a steady intake of caffeine or other stimulants!

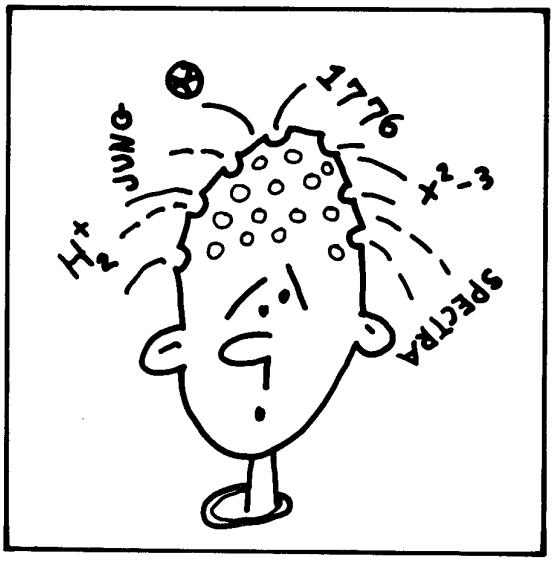


Table 3.6.
Solving "Memory" Problems

BOX	ANALYSIS & SOLUTION
Q "I can't seem to learn required memory material."	"Memorizing" is actually the easiest type of learning, if you use the *right* techniques (pages 10 and pages 83-87). Efficient memory work is best done in small time blocks (usually 30 minutes or less). For most people the time *just* before going to sleep is most effective. (You do not need to be nearly as alert to memorize as you do to study conceptual material or to work problems.) Try "flashcards" (page 86), but be sure that you *write* your "recall" at least half of the time that you work with the flashcards. At other times, say them aloud. That helps reinforce your memory. For "nonwriting" use, try going through flashcards with a friend, or alone while eating a meal or otherwise "routinely" occupied. Associating groups of terms, using "mental picture association", or using "letter codes" are all useful tricks to try. (For details, see pages 83-87).
R "I can learn things, but I keep forgetting them when I need them."	If this problem occurs mainly during exams, you may need to consult a counselor about "exam trauma". However, there are some tricks that can help. If you forget "all of the time", you are probably not reviewing enough to reinforce your memory or not using the memorizing "tricks" (pages 83-87). You should review all memory material on a regular basis. Rework your schedule as necessary to include regular "memory review" times and use "pre-guessing" (page 22) so that class time also helps with review. Regular review during post-class time (page 26) is also *very* important. For the special trick to avoid critical memory lapse *during exams,* see "Mental Crib Notes" (page 53).

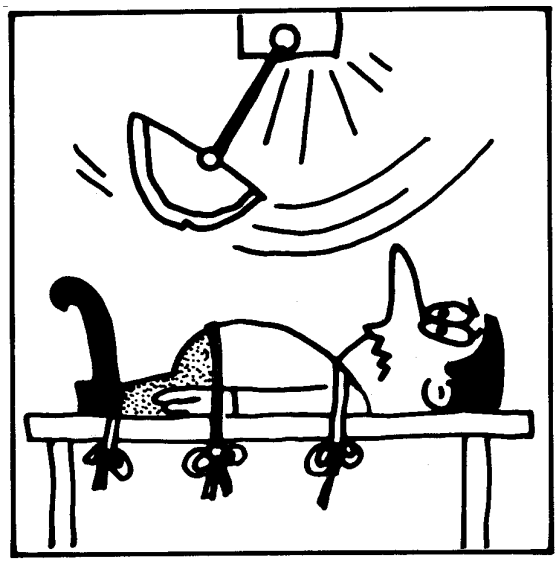


Table 3.7.
Solving "Exasperation" Problems

BOX	ANALYSIS & SOLUTION
S "I'm using my schedule, but worrying because my friends study differently."	Most students do not work efficiently. Even those who succeed usually do it the hard way, especially in the beginning. Stick to your schedule. Don't be tempted by those who "cram", "study all night before the test", or "only study old exams". None of these procedures is truly efficient in the long run. Most "crammers" find that they are dreadfully unprepared for cumulative exams, such as "finals". Regular, consistent study is the key to effective learning and long range retention. If your friends won't let you try *your* way for just one week, you surely don't need any enemies.
T "I just *couldn't* stick to my schedule, so now I'm behind in most of my classes."	This might be the result of improper use of time (see Table 3.2). Otherwise it is a "lack of determination" problem (a very common disease). The two major causes are old habits (bad ones) and a lack of maturity. (If you are truly immature, seal this book in a time capsule to be opened in a few years when you come back to college.) If you have bad habits START BREAKING THEM NOW! If you have just entered college, this will be one of the easiest times in your life to do it. (Easi*est* is not saying "easy".) This is a new life style and that can really help you to make changes. Check the following list: TRUE FALSE ☐ ☐ 1. I did set up an honest "Monk's Cell". (Chapter 1) ☐ ☐ 2. I wrote a schedule. (Chapter 1) ☐ ☐ 3. I did prepare for each class. (Chapter 2) ☐ ☐ 4. I was intently pre-guessing the professor *in* class. (Chapter 2) ☐ ☐ 5. I reworked notes and studied IMMEDIATELY after class. (Chapter 2) If you marked any "False", *those* are your problems. If you marked them all "True", your problem is the daily study routine. The next thing to try might be a group-of-three (see page 44). When working with others who are truly trying, you won't get off the schedule.
U "I found my schedule *absolutely* unrealistic."	If it was a schedule of 16 hours of pure work, plus 8 hours of sleep, you simply didn't follow the directions of Chapter 1. There should be times for dates, for exercise, and for other "fun" activities. Efficient study will maximize the hours available for these things. To find out how many hours you can spare, however, you still need to follow a good schedule for 1 full week (back to Chapter 2). If the schedule didn't work because you lost the economics assignment; had to go down the hall to find out what it was; got into a debate on sexual awareness; decided on a cold shower; took a TV break; went out for life-sustaining pizza (plus a couple of beers); came back via the pool room; called your girl/fellow to reassure her/him of your devotion; and, finally, found you had lost both your economics text and notes somewhere along the line—then, my friend, your problem is ORGANIZATION. Keep everything (including the sharp pencils) in its place and follow your schedule religiously. If you had too much time scheduled for history and not enough for physics, go to page 45 for rescheduling. If you have bitten off more than you can chew, go to GOALS (page 42). But don't assume it's too much until you are working at 100% efficiency.

Table 3.7. Solving "Exasperation" Problems *(continued)*

BOX	ANALYSIS & SOLUTION
V "I'm trying to follow the advice of this book, but I *just know* the exams will kill me dead."	This worry is as valid as worrying about finding a dragon in your closet. Worry is counterproductive. If worry is a constant dark cloud over your life, go to your personal counseling center for help. If you only have those "small nagging doubts" about handling exams, well, we've got good news for you. Read Chapter 4 and learn how the "pros" do it!

3.2 MAKING A GOOD THING BETTER

Unless your technique is already good, you're at the wrong page in this book, and need to spend time in Chapters 1 and 2 to get the background data, or in Table 3.1 to solve specific problems.

3.2a Goals: How High Shall I Aim?

That first week should have convinced you that you have undertaken a formidable job; but, more importantly, it's a job that CAN be done. You may not be up to maximum efficiency yet, but you should be well above the 50% level. Let's assume you're at about 60% efficiency. How high can you raise your goals? (If you're cheating and reading this without having one good week of trial, you're probably not even close to 60% yet.)

The choice of goals is two-fold:

(1) What is your overall professional goal? and (2) What is your goal in each course? If you are a pre-med student the answer to both questions is A's. You don't get through the doors of medical school without exceptional grades. But if you are an electrical engineer, you probably want a decent average but are more concerned with getting a thorough understanding of mathematics than of English literature, for example.

At this point, you should have a feeling for the "cost" in hours to learn 95%, 85%, 75% or 65% of the course material (A, B, C and D respectively). Weigh this cost against the benefits:

1. Is the course likely to be useful for your planned career?
2. Does the course provide necessary background for further required programs?
3. Is the grade for this course of particular importance for something you want? (For example, medical schools consider grades in science courses more heavily than grades in most nonscience courses.)
4. Is the course ***required*** for your particular major?
5. Is the course one that you find particularly interesting, even if not potentially "useful to your career"?

If your answer is "yes" to three or more of these questions, then the "benefit" is large and a grade of A or B is important, no matter what the cost. If you answered "no" to three or more of these

questions, then you may wish to consider limiting your efforts to those necessary for a C, if your other courses have a large time requirement. A decision to "settle for a C" should always be weighed carefully and cannot really be justified unless your other commitments are quite heavy.

Now that you've decided, how do you go about getting an A or a B, or a C, or even a lowly D? (For an F, burn this book and drink more beer–that will work!) An A is simply 95% of the material (sure, a 90 will usually get you an A but we don't plan game strategy by cutting it that close). Similarly, use 85% for a B, 75% for a C and 65% for a D. Pick the necessary percentage of the material, starting with what has been stressed most in class. Regardless of the percentage you intend to learn, use the ***prof's*** scale of what is important. This is indicated by (a) stated objectives, (b) emphasis in lecture, (c) assignments and problems in the text, and (d) old exams. With complete calm you can blatantly ignore

1 point out of 20 and get an A,
1 point out of 6 and get a B,
1 point out of 4 and get a C,
1 point out of 3 and get a D.

That may sound like poor studying, but it's NOT. That is, very simply, how you get grades. The point of more thoroughly learning the subject matter (shooting for 100%) is covered later under SUPERSTAR areas (page 47).

Let's hope that grades will not be the ***only*** criteria ***YOU*** will use to evaluate your academic progress. Any passing grade in a truly inspiring course can ***far*** outweigh an "A" in "Drudgery 107".

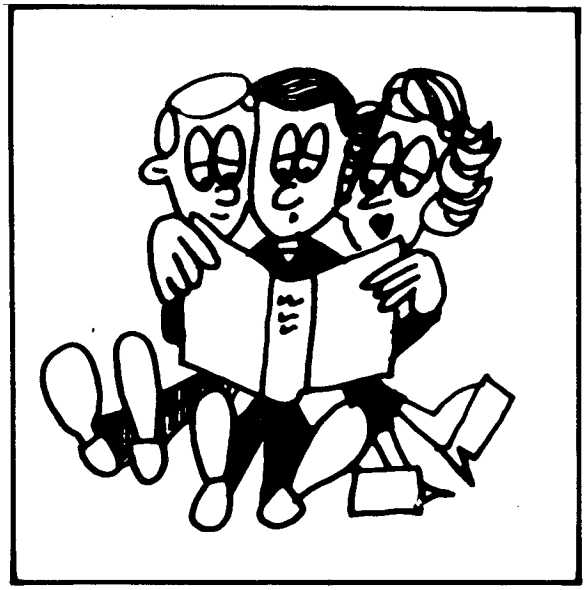
3.2b Idea Cards: "Instant Pictures" from the "Flash of Inspiration"

Have you ever tried unsuccessfully to remember a phone number and then later had it just "pop into your mind"? Very often, we seem to come up subconsciously with a solution to a problem or have a "great idea" at a time and place far away from our normal working area. Then the trouble is to remember it until we can find some way to write it down.

Purchase a package of 3" x 5" cards, wrap a few of them with a rubber band (along with a cheap pen) and stick them in your pocket or purse. Now when the solution or approach to a problem you've been grappling with "magically" comes to mind, you can write it down. If you're walking across campus and a spectacular idea "hits you" for that term paper, you can sketch a quick outline before you forget about it.

One of the authors of this book has written three songs and developed a number of inventions just because he had his "IDEA CARD" package when the "inspiration struck". Having those cards on your bedside table also allows you to go back to sleep peacefully when you really did "dream up" that great idea.

3.2c Group Study: Cooperation Comes in Groups-of-Three



Way back in the early parts of Chapter 2, it was suggested that you identify ***good*** students in the class (well prepared; active participants; those who review instead of stampeding for the coffeeshop when class ends). Recent studies have shown that for most students a good study group is MORE efficient than studying alone. The ***optimum*** group size is three persons. Larger groups do not allow each member enough opportunity to CONTRIBUTE, and your increase in efficiency depends on how much YOU contribute. Groups of two do not work nearly as well because too many problems are not resolved and it's easier to become distracted. In particular, if you form a group-of-two with your sweetheart, what you study may never appear on an exam.

Consider the possibility of group study carefully. In an experimental class, it raised the level of two-thirds of the participating students above 90%. Perhaps more importantly, NO failures occurred with students who consistently worked in these groups. DON'T try to carry other students. The group-of-three concept is valid only if all three participate fully. If you decide to try it, you must get together for RESCHEDULING (page 45).

If you work in a group-of-three, make a note each time you must get help from another member. That's an item you need to review again.

3.2d Tutors

Many students will consider the use of a tutor for help in one or more courses. A good tutor can help you understand ideas, concepts, and problem solving. A tutor can also give you the one-on-one attention and instant response to questions that may not be possible in large classes.

To make most efficient use of a tutorial session, ***you*** must be prepared. Only ***you*** can do the required readings and memory work for a class. The tutor ***cannot*** help you in these areas (except to refer you to the parts of this book that ***can*** help you). You ***must*** come to the tutorial session with as much knowledge as you can gain in advance, and with ***specific*** questions and problems you need help with. You should show the tutor the attempts you have made to tackle problems or grasp ideas. ***Then*** the tutor can help you effectively.

If you feel that tutorial help is necessary, ***first*** check out possible ***free*** help before you invest in a paid tutor. Most faculty provide office hours for at least limited "tutorial" work. Many campus groups, such as "honor societies" and "service" fraternity/sorority organizations offer free tutorial services. Frequently, you can arrange with other students for an exchange of tutorial services. (e.g., You help a friend with English and the friend helps you with math). The "group-of-three" study plan (Section 3.2c) involves you in a continuing give-and-take tutorial program.

College expenses are high enough. Only when all else fails should you engage a paid tutor. Even then, you should work to improve your study skills and self-sufficiency to minimize the need for prolonged tutorial expenses.

If you decide to seek a paid tutor, ask your professor for recommendations. You do not want to invest in an unskilled tutor or in one unfamiliar with the course. Proper study of the techniques described in this book will minimize, or eliminate, extra tutorial expenses.

3.2e Rescheduling: Making a Good Schedule Better

The minor schedule adjustments you can now ***wisely*** make may be repeated at regular intervals.

(1) To Add Time To One Activity You Must Remove It From Another.

Adding time to items is too simple–the place to start is where you can remove it from another.

Don't remove time from your sleep schedule (see page 39).
Don't remove all your recreation and break times.
(Such a schedule is too tough to follow.)

The ideal time is removed from courses that are presently ABOVE your goals levels. Remove the time from your evening study schedule but leave the pre-class preparation and the immediately-after-class "special study" intact.

The second choice is to remove PART of the time from the non-specified ("catch-up") study hours and make them specified-course study hours.

The third place to remove time is from your longer breaks or "free" times. Don't eliminate the breaks–but perhaps you can cut them down. If you have "all day breaks" (free-time) on Saturday or Sunday, these can be cut easily. Sleep is NOT a break! It is an ESSENTIAL ingredient in the success formula (see page 39). Meals are also necessary parts of the formula. But, if you want to, you can work on flash-cards during a meal. If you have been devoting scheduled study time to flash cards, some of this can probably be shifted to walking, waiting, and eating times.

When you have tried everything else, remove a few of your breaks. If you decide to add more hours to dates, playing pool, or other "fun", remove the specific hours from the schedule with a ***full awareness*** of what you are taking the time away from.

(2) Time May Be Exchanged Between Activities.

If you have discovered that some supplementary remedial work is needed (page 38) or that you have to make up for getting behind in some classes, use some of your "free" time. Once you are "caught up", you can replace this as "free" time without disturbing the rest of your schedule.

Your original schedule was based, in part, on your view of which courses were most difficult. If your view has changed, you may wish to exchange hours so that the most difficult courses are moved to earlier (fresher) hours.

Memorization is tedious (hateful, $\phi\Diamond\xi\#\Lambda\chi$) but it is not intellectually difficult. It can be done very late in the day–just before you go to sleep. What you MEMORIZE immediately before going to sleep will also stay with you better.

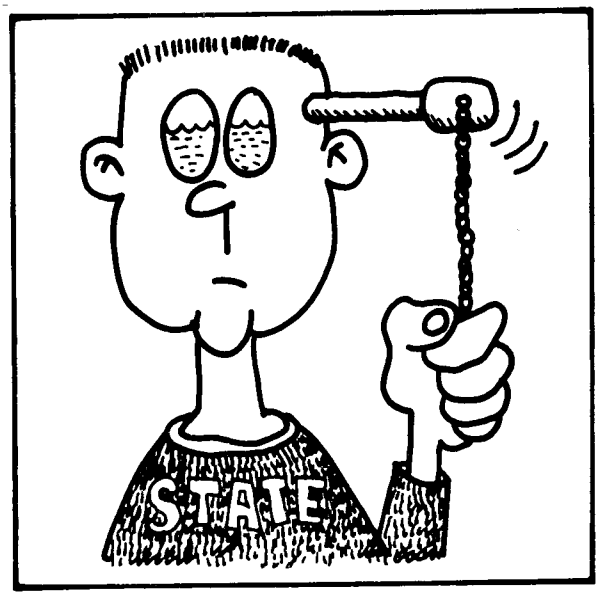
(3) Getting Off Schedule

If you strayed seriously from your schedule in the first (trial) week, when did this happen? If you consistently got away from your studies at 7:00 pm every day, consider SCHEDULING a break at that time. Do this by exchanging break times. Remember that several shorter break times are better than a few long breaks.

3.2f Brain-Flushing: Getting Started on an Efficient Basis

If you are like most of us, you often find it difficult to sit down to study a scheduled block of material and to really start work on it right away. Random thoughts about things or people seen during the day, about additional tasks that will need to be done, or about other unrelated topics interfere with concentrating on the job at hand. This "brain clutter" can cause you to lose valuable time from a scheduled study block.

One way to solve this problem is to plan a 5–20 minute "brain-flushing" time just prior to your scheduled study time. The "brain-flushing" involves some activity that is quite diffierent from studying, but that ***does*** involve concentration. Examples of such activities include shoe shining, dish washing, balancing the checkbook, sorting books and notes into a sequence to match the evening's study plans, reading one chapter in a novel, or playing some music. You can easily think of other similar activities. The key is to use the activity, whatever it is, as a focus of your attention. Thus, you are "erasing the mental blackboard" of all the extraneous thoughts that would otherwise interfere with concentrating on your studies. This activity MUST be a ***private*** activity, and one that you can ***finish***, so that it does not become an additional distraction.



One easy way to use "brain-flushing" is to write various suitable activities on small cards and keep them in an envelope, but ***not*** at your desk. Go to your desk 5–20 minutes before your first scheduled study time. Take a look at the work planned for your first study block. If you can easily start on it, with good concentration, do so. (That way you can finish your work ahead of schedule.) But, if you don't feel quite ready to start, get up and go get a "brain-flushing card" and do that activity. ***Then*** start your studying. You'll be amazed how your initial level of concentration has improved.

Some persons have successfully used "yoga-like" mental exercises as "brain-flushing". If you are interested in such techniques, you should contact one of the staff at the personal counseling center or discuss this with a professor in the Psychology Department.

Incidentally, one of the reasons that post-class activities are so important (page 26) is that the class itself has served to focus your attention on that subject. "Brain-flushing" has already been done for you and you can start post-class activities efficiently.

3.2g Speed: If You Can Go Faster, You Will Have More Free Time

EFFICIENCY is the first key to speed. All of the preceding discussions were aimed at getting better and better efficiency.

Rapid READING is the second key to speed. But even rapid reading starts with efficiency. What do you want to learn when you are reading? Skip what you don't need. Reading can be done:

1. to get a specific fact. (VERY fast glance.)
2. to get an overview. (SLIGHTLY slower but still very fast.)
3. to learn in detail. (The greatest time requirement.)

Have the ***objective*** of your reading in mind and ***don't*** read a calculus text like a novel.* When you finish reading a passage and have studied MORE than ***your*** objectives, you are going too slow. That is not EFFICIENT. [See the SUPERSTAR section (below) if this is something you love to do!]

To increase your reading speed (and anybody can ***without*** losing comprehension), force yourself to go a little faster. The best practice material is the reading you do for pleasure—magazines, newspapers, captions on cartoons, or the rules in the poolroom. If you force yourself to read VERY FAST with these examples, your "comfortable" reading rate will also increase gradually. If you are a very slow reader (e.g., reading single words instead of word groups) you may wish to enroll in a reading improvement course. One of the best books for the self-teaching of better reading is *Developing Reading Versatility* by W. Royce Adams (Holt, Rinehart and Winston, 1977). The same author has an additional series of books on "How to Read" in specific subject areas.

3.2h Superstar: The Things You Do For Personal Satisfaction

Some students will devote all their free time to athletics (with hopes of spending 10 years as a professional athlete).

Others will spend this time searching for a rich spouse (and may spend over 10 years without working).

Still others will spend this time on activities which will make them uniquely well-trained in their field (and get 10 more job choices when they finish school).

Some thinkers will devote all of this time to reflection and inquiry into new and different fields (and perhaps become one of the 10 most fascinating people in the world).

Of course, some will spend this time playing pool, drinking beer, and telling tall tales. (They will get conned by pool sharks, join AA in 10 years, and have a surprising repertoire of tired jokes when leaving school without a diploma).

Great* novels should be read slowly enough to catch hidden irony, wit and feeling. Read between the lines and listen to the rhythm of the words. Developing an "ear" for language ***at its best* can open unexpected doors.

For athletics, see the coaches and trainers; for rich spouses, see what cars they drive; for academics see the following; (for the last choice, see a doctor—a psychiatrist).

If you have a desire to become an outstanding professional, there are many non-obvious routes to follow. Virtually every field has a trade journal which serves as a news magazine for the profession. Here is an excellent way to see what professionals are doing, what problems need to be solved, what job opportunities (or surplus of personnel) may exist, and how the other courses you are taking tie in with your major. Scan this journal regularly with close attention to anything that has popped up in one of your courses.

If you're at a school with an active research program, get a copy of the departmental brochure and list of publications. This will tell you what your prof (and future profs) are especially interested in. After you wade through the decoding of the technical vocabulary, you may find a particular part of the field that is of special interest to you. If you pursue this further, and still have some free time, go talk with the people working in this area. Many students have entered into research programs by this mechanism very early in their careers.

For a richer cultural experience, identify who the THINKERS on the campus are. (They are NOT limited to the undergraduates that you currently know.) Many will be faculty worth having as friends. Hopefully, you can identify these BEST and MOST ACTIVE minds from a wide variety of disciplines. Do they have groups they sponsor? Do they hold non-class meetings? Will they suggest new avenues and/or readings? The ***real*** thinkers will welcome your MIND PICKING more than you might expect!

3.2i Some Special Uses of "Catch-Up" Times

You originally scheduled some "catch-up" times to permit you to finish any work not completed during regular study times. If you are now working fairly efficiently, or if you have revised your schedule for better study times, you will rarely need "catch-up" hours for the original purposes. You should not, however, eliminate all of these time blocks from your schedule.

Use some of your "catch-up" blocks to get ahead on long range assignments, such as term papers or projects. Working well ahead of deadlines will avoid a last minute rush. It can also produce a much better term paper or project—and a pleasant surprise for the prof (who just might remember your diligence with a higher grade).

Sometimes you will need "catch-up" time because you got behind for reasons beyond your control. (***Not*** following your schedule ***is*** something ***you*** controlled.) In catching up on missed work, be sure that you do ***no more*** than is necessary (page 43). "Catching up" often ***SEEMS easier*** than "keeping up". That's because "hindsight" can rather easily identify the ***important*** parts of past work. However, don't let this fool you into a pattern of procrastination. Too much "catching up" can accumulate into an overload in the critical later weeks of the term.

Use some of your scheduled "catch-up" time for hobbies or "superstar" activities (page 47). In addition, when you feel you've ***earned*** it, use some unneeded "catch-up" time to reward yourself for finishing your studies as planned. Take in a movie, go out to dinner, or do something else "just for fun". When you are doing your work efficiently you deserve to "pat yourself on the back" sometimes. Successful people value their ***own*** judgment of a "job well done".

3.3 SUMMARY

1. Use your SCHEDULE.
2. Study EACH course daily.
3. Work to the level of your GOALS.

    a. PREPARE for class.
    b. PRE-GUESS the prof in class.
    c. REVIEW immediately after class.
    d. STOP when you have reached your objectives.
    e. Make each day's study a PRACTICE for EXAMS.

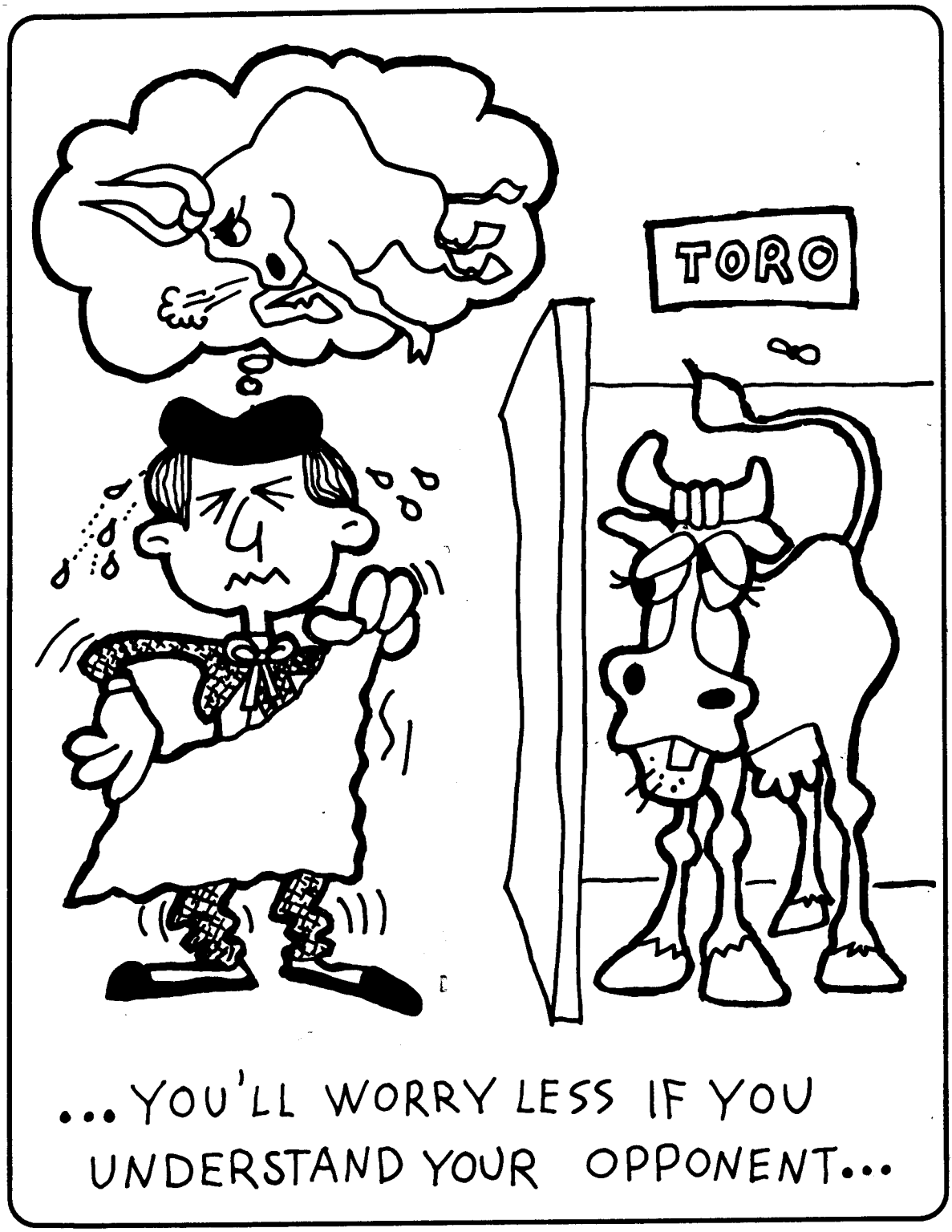
In addition to the ideas presented in this chapter, you may find a need for some special procedures that are particularly useful for certain types of courses. For the following special techniques, refer to Chapter 8:

1. Memorizing (page 83)
2. Problem Solving (page 87)
3. Lab Courses (page 91)
4. Analyzing (page 92)
5. Writing (page 95)
6. Library Work (page 97)

NOW, IF YOU NEED MORE DETAILS OF "SPECIAL TECHNIQUES", TAKE A LOOK AT CHAPTER 8. OTHERWISE, GO DIRECTLY TO THE "GOOD NEWS" OF CHAPTER 4.

chapter 4 THE EXAM:

"Day of Terror", or "Hooray! The Big Game!"?



chapter 4

THE EXAM:

"Day of Terror", or "Hooray! The Big Game!"?*

Many students dread and fear exams and quizzes. Such an attitude suggests that:

PROPER STUDY WAS NOT DONE!

(Solution: See Chapters 2 and 3)

OR

THERE'S AN "INFERIORITY COMPLEX" PROBLEM!

(Solution: Nonsense! That's not a complex! The ***good*** news is that you are probably superior in many more respects than those in which you are inferior. Proper study (Chapter 2) and "examsmanship" (Sect. 4.1) will convince everyone that you are ***not*** inferior.)

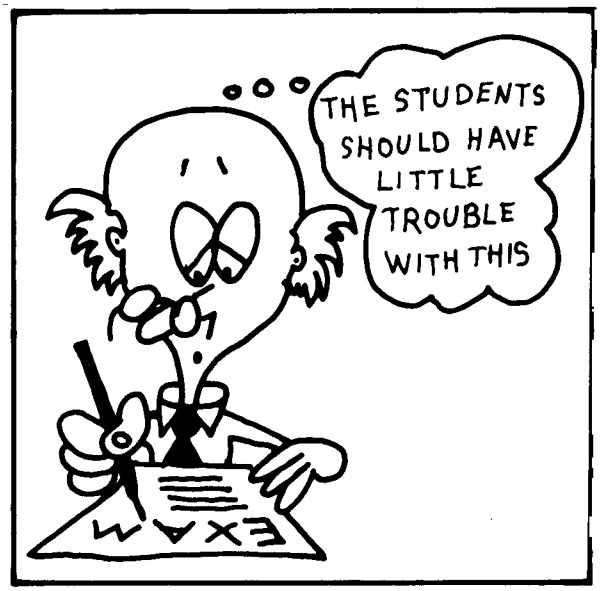
OR

THE WRONG PHILOSOPHY IS RAMPANT!

(Solution: An exam is ***not*** a murder trial where, in spite of your innocence, you might get hanged. An exam is a game, with you pitted against the professor. But the good news is that your "opponent" really wants you to ***win*** the game. The professor is more coach than opponent in this game and would rather you won to confirm a "good coaching job"!)

*For those rare courses in which you are simply enthralled with learning AND disinterested in the grade, you can skip this chapter and go directly to Section 5.2. The exam in this type of course is simply one more opportunity to communicate with your prof. ENJOY IT!

From a professor's point of view, the ideal exam is one that accurately measures the student's knowledge and skills. This rarely occurs, since most exams ***also*** measure how tired the student is, how tense the student is, how the student feels about personal problems, etc. and—most critical—how well the professor designed the test and the test environment!



From a student's point of view, the ideal exam is one that gives the student a better grade than his/her knowledge of the material deserves. This rarely occurs, for the reasons noted above ***and*** because most students will lose points for "dumb mistakes" (e.g., 2 X 2 = 22) ***in addition to*** those lost for lack of knowledge (or time).

EXAMSMANSHIP CONSISTS OF TECHNIQUES ("TRICKS OF THE TRADE") TO HELP ENSURE THAT YOUR GRADE WILL REFLECT YOUR KNOWLEDGE AND (with a bit of luck) MAYBE MORE! EXAMSMANSHIP consists of two stages: what you do to ***get ready*** for the test and what you do ***during*** the test.

4.1 "TRICKS" TO GET READY FOR EXAMS

The ***most important*** "trick" is ***really sneaky***. Your professor will ***never*** expect this one!

STUDY

(consistently and efficiently, to ***really know*** as much as you can).

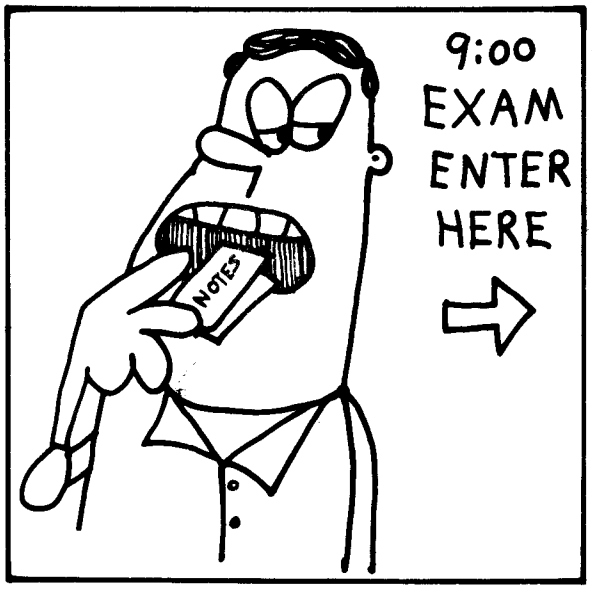
The ***second*** more important "trick" is to be ***rested*** for the exam. "ALL-NIGHTERS ARE ***STUPID***!" "Dumb" mistakes made when you're tired can offset whatever points you gain from cramming. In addition, all studies confirm that the method of "cram/goof off/cram", etc. can be ***disastrous*** in courses with comprehensive exams. It is the ***least efficient*** method known for long-term retention. (See page 27).

So far, these discussions don't seem to ***really*** offer any "tricks", just old-fogey advice. Well, here come some tricks that can ***very simply*** result in improved grades.

4.1a Prepare Written "Read-and-Destroy Crib Notes"

Having determined, as thoroughly as possible, (the "guessing game", page 24) what the exam is most likely to cover, prepare a ***brief*** list of "crib notes" with ***key "cues"*** (page 25) from your lecture notes (plus names & dates for history, formulas for physics, terms or reactions for chemistry, etc.). Your "crib notes" should be brief. Limit them to just those ***crucial*** items you fear you might ***forget*** during the exam. Use these "crib notes" as needed on practice exams. Study them carefully UP TO THE POINT OF ENTERING THE EXAM ROOM.

BEFORE ENTERING THE EXAM ROOM, TEAR UP THE CRIB NOTES AND TOSS THEM IN A WASTEBASKET (OR HAND THEM TO A PROCTOR, IF THIS IS PERMITTED).



FAILURE TO DESTROY THE CRIB NOTES ***BEFORE*** ENTERING AN EXAM ROOM COMES UNDER THE HEADING OF ***CHEATING.*** (See page 60.)

Now, you ***can*** carry the information from the crib notes into the exam room, but ONLY INSIDE YOUR HEAD. When you have been seated, you can jot down the remembered information on paper (on the question set, if one is provided, on the back of an "answer form", ... on any piece of paper that won't be considered an illegal crib note).

The advantage of jotting these ***brief*** notes is that you have them handy if you need them and temporarily forget the information.

4.1b Plan for a Specific Grade

Decide in advance what grade you are after. If this is less than an A, you can concentrate both study time and exam work on only the ***necessary*** percentage of the total material.

4.1c Use "Real" Exams for Practice

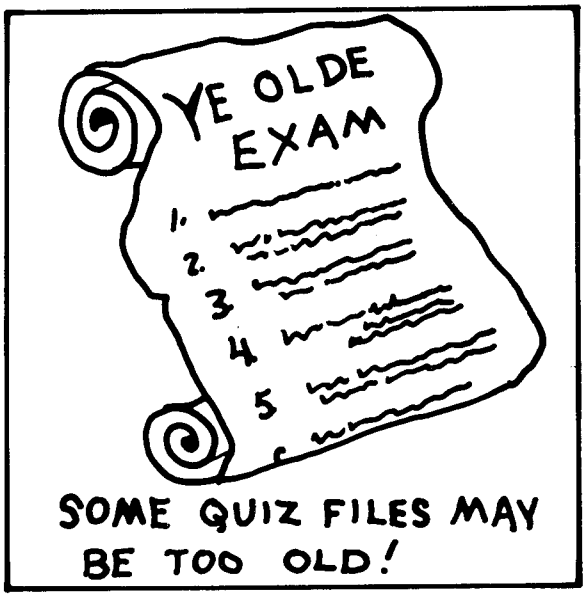
In many courses, the professor will announce the availability of old "quiz files". These are useful in determining specific learning objectives on which to concentrate your study efforts. They are also ***very*** useful in determining question ***formats*** and how "good" answers are expected to be presented. They further indicate the number of questions usually used, the relative points per

question, and the relative difficulty and time-demand per question. All of these clues will help you plan how to spend your time on the real exam TO GET THE MOST POINTS POSSIBLE.

(If no old exams are available, try to prepare some as you expect them to be–using class notes and homework assignments. Your skill in doing this will improve after you have taken some exams. You should probably not "swap sample exams" with your friends. Student-prepared exams are usually much tougher than those prepared by profs.)

4.1d Practice Exam *Situations*

In most cases, there will be a time limit on an exam. You want to get the most points possible within this time. You ***also want*** to avoid "dumb mistakes" caused by time pressure. Try using your "practice exams" in the following sequence:

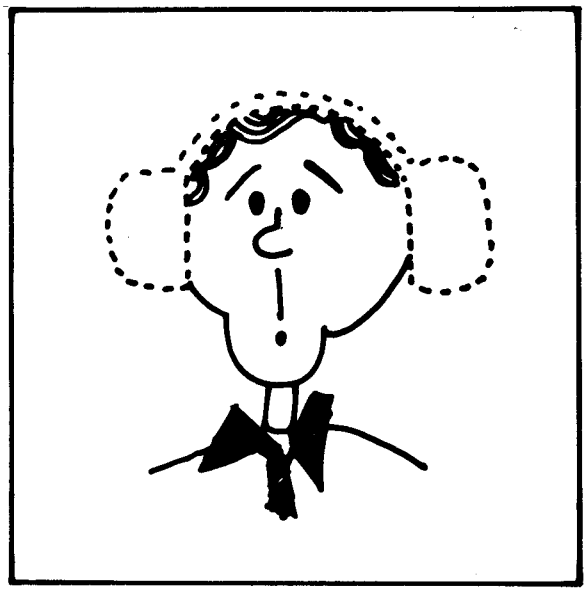


1. First complete all studying, reviewing, and "mental-crib-note-making" you had planned to do.

   (Also be sure you are familiar with the techniques of Section 4.2, page 56. These, too, need to be practiced. ***REMEMBER:*** If you're after less than an A, you don't have to worry about ***all*** questions.)

2. Second, go to your Monk's Cell with ***only*** the practice exam and other materials permitted ***in*** the real exam (i.e., ***no*** crib notes along at this stage), ***plus*** an alarm clock. SET THE ALARM CLOCK FOR FIVE MINUTES LESS THAN THE REAL EXAM. Start the clock. Take a few deep breaths and practice "CALM-DOWN" (Section 4.4, page 59) for about 30 seconds. Then start work. Use all the techniques described in Section 4.2. Stop work when the alarm goes off.

While you're working on the exam, practice focusing ALL of your attention on the exam. "Tune out" all other "audiovisual input" from your surroundings. This is important so that you can learn to work on a real exam without being distracted by the working of your neighbor, prowling proctors, etc. When you stop work, try to remember if you heard or saw anything distracting while you were working. If you did, practice some more on "tuning out" what goes on around you.



If you finished the planned percentage of work, checked your work to your satisfaction, covered your answers, and felt good BEFORE the alarm rang, GREAT! You are virtually ready for the big game. Check to see if you missed any questions, (if so, analyze ***why***), correct any errors by study and review if necessary, then play this game again for practice. You should also analyze why you got some answers RIGHT. (Did you REALLY know the material, or was it "lucky guessing"?)

If you did ***not*** finish* before the alarm went off, then you MUST:

—IMMEDIATELY ANALYZE WHAT YOU DID THAT ***WASTED*** TIME.

a. Did you try to check for errors in problems by hunting through scratch work?
That's very inefficient. Errors are often "simple accidents" and very hard to find. It is ***much*** more efficient to leave the problem, finish the next one or more, then come back and redo the problem entirely. It is important that you always do each problem in a numbered "block" (as provided on the exam or as marked yourself). Then you won't waste time hunting for it when you're checking. On a "re-try", make a new numbered block (marked "re-try"). If you still have trouble, compare the work in both original and re-try blocks for clues to errors.

b. Did you read too slowly?
If so, see pages 30 and 47 for improved-reading skills. You must practice "effective skimming" techniques.

c. Did you read ALL of the choices on multiple-choice questions, even ***after*** you were sure of the correct choice?
You should always stop after finding the correct choice and go immediately to the next question. The other choices can be looked at later when you're checking your work.

d. Did you spend too much time on early, lengthy questions, thus running out of time before you got to shorter questions later on?
You have to develop discipline to skip questions that appear too time-consuming. Finish all of the "quickies" (or "big pointers") first, ***then*** work on lengthier (or small point) questions.

e. Did you do something else that wasted time?
Identify and try to correct the problem.

*Some professors give exams on which ***no one*** can finish all questions in the allowed time. In such cases, you define "finish" as the part of the whole exam needed to get the grade you want.

3. Now, since you have done the necessary review and have analyzed and decided on corrections for your problems, take a break. ***Then,*** get a fresh practice exam and start over at step (1). Repeat as much as possible until you develop good techniques for handling timed exams. Along with these techniques comes INCREASED SELF-CONFIDENCE and a better chance to view the real exam as a ***game, not*** a murder trial.

4.2 "TRICKS" DURING THE EXAM

Here's your chance. You can walk out of this exam a winner! (If you don't, ***don't despair.*** There are many more games ahead and you can still end up with a fine "season average.")

4.2a General "Tricks"

1. Be sure that you have all necessary materials (page 60). Arrive on time, ***but*** avoid conversations with students who seem to be nervous about this exam.

2. Jot down your "mental crib notes" (page 53). Then take about 30 seconds to go through your "calm down" procedures (page 59).

3. READ the directions and questions ***carefully***, but ***not*** slowly. (WATCH FOR, and circle KEY WORDS such as ***"never"***, ***"always"***, "which is ***correct***" versus "which is ***incorrect***". These will also be keys to ***checking*** your work efficiently.)

4. PACE YOUR WORK, skipping time consuming or low point questions (temporarily), or any you can't handle quickly for ***any*** reason. (If you are after less than an A, you can spend ***most*** of your time on the pre-planned percentage, saving just a few minutes for possible "sensible guesses" on the rest).

5. Estimate answers for math problems as an immediate check on your work.

6. Don't ***waste*** TIME (see page 55).

7. Go back and answer all "necessary" questions temporarily skipped.

8. Allow time for at least a brief review of your work (including rechecking "key word" clues). If you feel unsure of an answer, ***check it!*** Evidence indicates that, on certain types of questions–particularly those of purely "recall" type –your "first guess" is probably (but not always) best, so don't change such answers unless you really spot an error.

HOWEVER, a recent study showed that 85% of the students in the group surveyed who changed answers got the "new" answer RIGHT. DON'T HESITATE to change an answer if your checking indicates an error. The secret to changing answers ***properly*** is to identify WHY the original answer was wrong and WHY the new answer is correct.

4.2b Special "Tricks"

There are a few "tricks" that can often net you some ***more*** points.

Unless the exam is the type (fortunately rare) on which no one is ***expected*** to be able to answer everything, ANSWER ALL QUESTIONS.

1. On a multiple-choice exam, every wrong choice you can eliminate increases your odds when you have to "guess". (Proper study will decrease the ***need*** to guess.) If you leave the answer space blank, you will ***certainly*** get zero points for the question. ***Any*** odds are better than "100% for ZERO", even on exams with a "penalty for guessing".

2. Rewrite questions, "key words", and answer choices to improve your chances. (If you are not allowed to write on the question pages, make "revision" notes on your scratch paper.) If a question contains unnecessary information (such as numbers not needed), scratch out the useless information. Change "key words" as useful (e.g., change "correct" to "TRUE" and "incorrect" to "FALSE"). On any multiple-choice question having all ***INDEPENDENT*** "real choice" answers, delete the ONE most confusing to you and insert in its place "NONE OF THE OTHERS". (Thus, you don't CARE what ***that*** choice said. If the other choices don't contain the right answer, your "NONE OF THE OTHERS" is ***IT***.)

3. On a fill-in-the-blank or "short answer" exam, ***always*** (well, ***almost*** always) write ***something***. (Sometimes graders other than professors, often pressed for time and perhaps less knowledgeable, will be grading your exams. If you put the ***exact*** answer the professor wrote on the "key", you will ***surely*** get full credit. If you leave it BLANK, you will ***surely*** get zero credit. But if you have put something ***reasonable***, even if not completely "right", you have a chance for partial credit).

4. On "problems" questions (e.g., math, chemical reactions, vector diagrams, etc.), ALWAYS put something, even if it is only a brief statement as to how the problem should be approached. Again, partial credit is possible, but a BLANK is a ***sure*** zero.

5. On discussion or "essay" exams (or English "themes" or "papers"), ALWAYS write something, even if it is only a logical outline. Write neatly and use correct grammar and spelling. Even if you have only a ***vague*** idea of the subject, partial credit is possible. (It is not unknown for a neatly done "snow job" to get more points than a sloppily done discussion with quite accurate content.)

6. There is a word of caution to consider. A ***sensible*** (but wrong) answer may get some points, but a ***really*** ridiculous answer might lead the grader to look at your other answers with more prejudice (and more care) than you might like. A blank ***is*** better than authenticated stupidity.

4.2c Pacing

Pacing your work is the key to completing the exam and avoiding "time-panic".

1. Practice in a simulated exam environment, using an alarm clock set for 5 minutes less than the real exam time (page 54).

2. During practice ***and*** during the exam, quickly divide the number of questions into (the available time−5)* to get the average time-per-question. On exams with questions with different numbers of points, the "time per 10 points" is better. Make a habit of checking your watch at ***this*** interval. (Checking too frequently increases nervousness. Not checking often enough spoils smooth pacing and increases the chances for "last minute rush".) When you find that you're spending more than the average time on a question (or for the number of points available), leave that question temporarily. Finish "quicker" questions, then come back.

3. If you can't see how to answer a question or you ***know*** you made an error, but can't spot it, leave this question immediately. Work a few others (all you can, in fact), ***then*** come back and tackle this question ***afresh*** (i.e., ignore anything you wrote the first time). Fumbling with a question or searching for an error is a DANGEROUS WASTE OF TIME.

4. If you complete the exam early (as you SHOULD), check all of your work VERY carefully. Be sure that you can see WHY each answer is right or WHY an answer should be changed. (If you still have some time left, have fun by analyzing the prof's questions to discover how the unwary student could have been "caught". But DON'T read the questions like a Philadelphia lawyer looking for "tricks".)

4.2d Using Other Information

Know and use every available resource.

1. If a professor supplies data tables or an information list (e.g., physical constants or formulas), find out in advance the kind of information available and see how you can get ***maximum*** use from it. (For example, a Table of Solubility Products for a chemistry exam can often be used to check a chemical formula that you feel doubtful about.)

2. If the exam room has posted charts or tables, familiarize yourself with these in advance. Try to get a seat from which you can see these easily, without giving the impression that you just might be looking at another person's work instead.

3. On open-book exams, make index tabs for key passages.

4. If the prof or proctors will answer questions during the exam, ***don't hesitate to ask*** when you need ***clarification*** of a question.

4.3 CLASS PARTICIPATION AND QUIZZES

In courses for which "class participation" and/or quizzes count along with exams, BE PREPARED and PARTICIPATE.

*This allows 5 minutes for rechecking.

1. If you understand only ***parts*** of what is covered in discussions, VOLUNTEER PARTICIPATION ON THE PARTS YOU ***KNOW.*** (This reduces your chances of being called on to discuss something you ***don't*** understand.)

2. If you ***are*** called on to discuss something you don't understand, DON'T BLUFF. (Also, don't snore, faint, or ask to go to the bathroom instead.) DO RESPOND, by explaining that you don't know the answer and stating as clearly and concisely as possible ***why*** you don't know. (However, few profs will be enchanted if that "why" is a lack of study, so think of a better reason.)

3. For quizzes, especially "pop quizzes", the key to success is your REGULAR STUDY SCHEDULE! ***Scheduled*** quizzes are "mini-exams", for which standard examsmanship techniques apply (pages 56-57).

4.4 "CALM-DOWN" TECHNIQUES

It is not uncommon for students to be nervous about an exam. A certain amount of nervousness is acceptable and may actually improve your performance. However, being TOO nervous can cause you to make "dumb" mistakes and to use time inefficiently. Some students actually experience severe "exam trauma", in which they really panic during the exam. Memories "go blank"; familiar situations appear totally new; and problems seem impossible.

Many college counseling centers offer special programs to help avoid or overcome "exam trauma". If this is a serious problem for you, consult a trained counselor.

There is, however, a simple CALM-DOWN technique that works surprisingly well for most persons. If this technique is used just before you start work on an exam (and again, if necessary, when you suddenly feel nervous because you can't answer a question), it can have dramatic results in overcoming counterproductive nervousness. (Although this technique is unlikely to have any adverse side effects, you should consult your physician before using it if you have any type of health problem.)

4.4a Calm-Down Method

STEP 1. Close your eyes.
STEP 2. Rest your elbows on the desk and squeeze your ear lobes tightly. (But not tightly enough to HURT!)
STEP 3. Take a deep breath while counting to 7. (Push your "tummy" out while inhaling.)
STEP 4. Hold your breath while counting to 7.
STEP 5. Exhale fully while counting to 7. (Pull your "tummy" in while exhaling.)
STEP 6. Repeat steps 3, 4, & 5 ***two*** more times.
STEP 7. Open your eyes, release your ear lobes, and FEEL CALMER.

Thousands of students have used this method successfully in reducing nervousness during exams or just before a public performance (such as a speech, a play, or a musical solo). There IS a physiological basis to the method. If you're interested in WHY it works, consult a physician or a clinical psychologist.

4.5 CHEATING

The best, and *ONLY* "Trick" here is:

DON'T

(*DON'T* EVER)

(Even if your morals are those of a hybrid of a raunchy tomcat and a con man, at most colleges it ISN'T WORTH THE RISK. Penalities for cheating are often like hanging for jaywalking.)

4.6 EXAM EQUIPMENT

Find out what sports of materials are needed ***and permitted*** for exams in each of your classes. Also find out what items are FORBIDDEN. (Many profs, for example, forbid having any loose books or papers during an exam. In such cases, have a briefcase or backpack in which you can place ALL of your materials.)

For each class, prepare a checklist similar to the following example. Use it to check that you have ALL appropriate materials BEFORE you go to the exam.

Table 4.1. Sample Checklist of Exam Equipment

- ☐ "Mental Crib Notes" (to be destroyed *before* entering the exam room)
- ☐ SHARPENED pencils (more than 1) [or GOOD pens, if required]
- ☐ Eraser
- ☐ "Pocket" pencil sharpener
- ☐ Calculator (or Slide Rule)
  - ☐ Calculator checked for full charge and proper functioning
- ☐ Spare calculator batteries
- ☐ Allowed "resource materials" (e.g., data tables, index-tabbed books, etc.)
- ☐ Briefcase or backpack
- ☐ BLANK "scratch paper" (if allowed)
- ☐ Others _____

IF YOU TAKE YOUR EXAMS PREPARED, RESTED AND CALM, AND IF YOU PRACTICE "GOOD EXAMSMANSHIP", YOU SHOULD DO QUITE WELL. When you do, reward yourself for a job well done (page 64).

chapter 5 POST EXAM REORGANIZATION: Even a Wake Can Be a Good Party

chapter 5
POST EXAM REORGANIZATION:
Even a Wake Can Be a Good Party

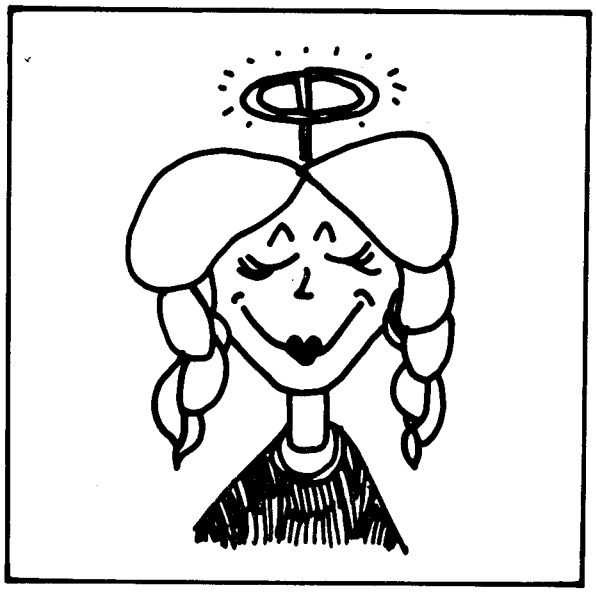
5.1 MONDAY MORNING QUARTERBACKING

Regardless of whether you are celebrating VICTORY or agonizing over a SETBACK, run through the following checklist.

Table 5.1. Post Exam Checklist

Things you did RIGHT	Things you did WRONG
☐ I was fully rested and working at 100% efficiency.	☐ "There was too much to do", so I got less than 8 hours sleep.
☐ After all the daily "practice exams", this was nothing new.	☐ It was a life-and-death situation. This was a "must" exam.
☐ Easy problems were answered first. Others were read carefully, then passed over on the first round.	☐ I did problems in the order given. There was no time to "mess around" looking for easy ones.
☐ I carefully considered whether my response answered the question that was *asked.*	☐ I got each answer down and MOVED ON!
☐ Time was divided to get maximum points per minute.	☐ I got the answers down. Let the prof handle the points business (and I hope he's/she's compassionate).
☐ I recalled the objectives and the prof's relative emphasis.	☐ I was watching for those *#@$% SNEAKY MISERABLE TRICK questions.
☐ I utilized all of the time allotted.	☐ I finished early, but didn't check my answers.
☐ I made mental estimates to see if my answers were reasonable.	☐ Whatever the calculator said should have been right.
☐ I used a VERY SHORT "mental crib" list. (Chapter 4)	☐ I had a ton of things to memorize just before the exam.
☐ My work was neat and well organized.	☐ I got it down any old way. Organization is an "outside of exams" activity.

That's 10 comparisons for you to make. If you marked them honestly, compare your test grade and your responses–it should tell you something. If you're celebrating a victory, continue with section 5.2. If you're agonizing over a set-back, go to section 5.3, page 65.

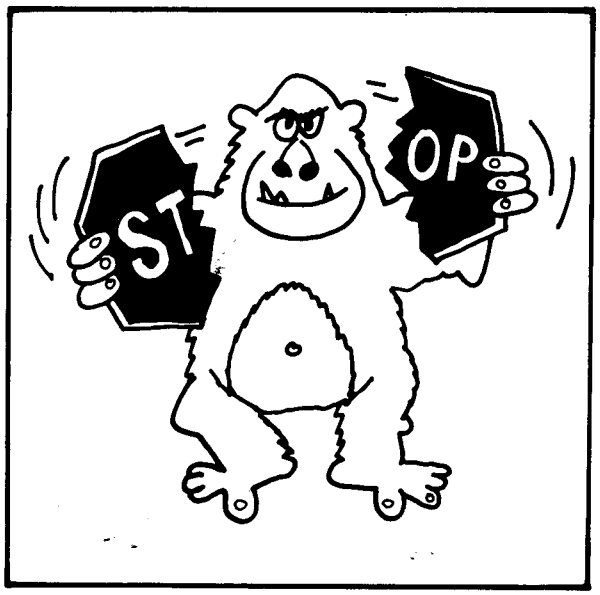


5.2 TURNING ONE VICTORY INTO A WINNING CAMPAIGN

5.2a Good for You! Congratulations!

Doesn't it feel good?!! Reach around and pat yourself on the back. You deserve it! (If that seems too mild, you can send $1000, in small bills, in a plain brown wrapper, to the authors. They will send you a personal "congratulations" card and think kindly of you while having one heck of a fine party!) Of course, YOU could just have your own celebration by going to a movie, indulging in your favorite pastime, or just sharing the good news with your friends.

DO REWARD YOURSELF! However, ...



5.2b Don't Stop! (Don't Even Pause!)

Even on exam day you should do your scheduled studying in this course. On this day try to identify thin ice successfully crossed.

Go over your exam and grade it HARDER than your prof did (or will). On multiple-choice and true-false questions, mark off all guesses and answers you ***doubted.*** Now check these items, plus any you missed, according to the directions for ADVANCED PRE-GUESSING on page 67. Then return here for an analysis of what you got right on the exam.

5.2c Keeping the Act Rolling

EFFICIENCY is still the watchword. Did you answer exam items correctly for the CORRECT reason? That is, how well did the objectives you had ***identified*** cover these questions? Did your list of objectives cover a lot of material that was not needed on the exam? How could you have done a better job of pre-guessing which questions would appear on the exam? How was the exam material covered in class? In the text?

The ideal expenditure of effort should lead you to meeting your chosen goal in each course–but not much more except in your SUPERSTAR areas. If that sounds non-professional, you need to reassess your GOALS (page 42) until it sounds just fine.

5.2d Was this Exam Easy, But the Next One Might Be a Terror?

Sometimes first exams ***are*** easier. But the usual reason they seem so easy is that you already knew a lot of the information before the course started. As you proceed toward the next exam, ask yourself whether the amount of NEW material is larger. If it is, you will have to use more time.

BUT, the best possible procedure is ***still*** the SAME. The way to evaluate your progress is ***still*** the SAME. Play the game the SAME way (but be prepared to spend more time IF meeting your objectives requires it).

5.3 STRIKE ONE?

OK, BUT YOU'RE *NOT* OUT YET!

If things did ***not*** go your way on the exam, it's time to figure out why. If you DID reach your stated goal, you simply want to make sure you'll also do it next time (that's Section 5.2).

5.3a Why Did You Miss?

POSSIBILITY (1): Not enough study.

This is *NOT* the real reason if you have followed your schedule. (If you ***didn't*** use your schedule, you ***really should*** go back and repeat Chapter 2 for a week–then go to Chapter 3 again. You'll come back to this chapter after the next exam.)

POSSIBILITY (2): You studied the wrong material.

The fact that the exam did not cover 100% of the material you studied does not say that you studied the wrong material. If you really ***did*** study the wrong material, you must now polish up your pre-guessing techniques. How well are you doing in pre-guessing the lectures? The most likely case is that you never got deeply into the pre-guessing process at all (page 22). If you ***really*** tried to pre-guess, take a look at ADVANCED PRE-GUESSING (page 67), to improve your skills.

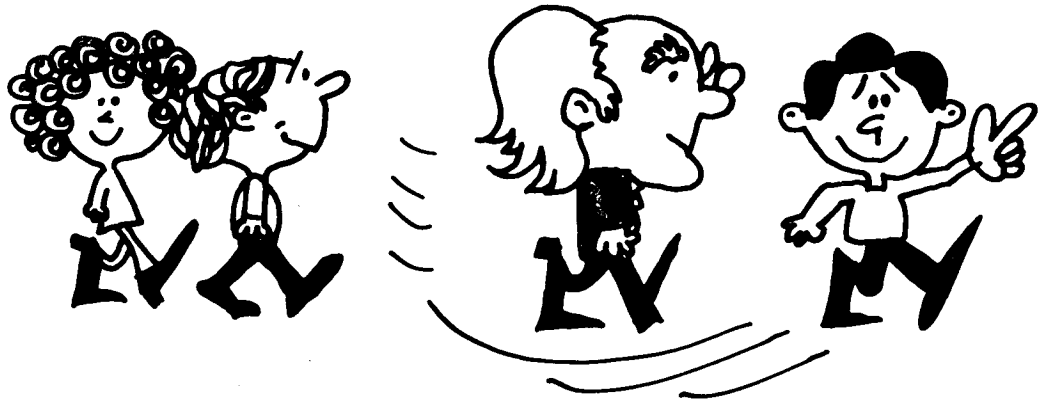
Were the areas (items) you either missed or were in doubt about covered in class? In the text? In both? Were they obviously major points or ***seemingly*** minor details?

Use this analysis to define a set of objectives (pages 23 and 68) which ***would*** cover the questions that were asked. Did the OBJECTIVES you had identified before the exam cover these questions? Were the objectives you had identified sufficiently ***detailed*** to predict each question?

POSSIBILITY (3): You could kick yourself because you missed problems you SHOULD have answered correctly.

The usual reason for this feeling is that the exam served as the review that brought you up to that level. Many students are lulled into a ***false*** sense of security during class. They find that they can "follow the prof" easily. They nod

(and perhaps even smile) as something is explained. They "understand what the prof is doing" as examples are worked. The logic all seems "reasonable". However, this is very much like watching an Olympic skater. FOLLOWING the movements, leaps and spins seems easy enough. It's NOT so easy when you first try to do it yourself.



In fact, FOLLOWING is **MUCH** easier than leading. But in exam situations, YOU must LEAD. There is no longer anyone to follow. The pre-guessing and the "practice exam" studying are the exercises that produce winning LEADERS.

Were your review CUES (page 25) reduced to a ***small number*** of "MENTAL CRIB NOTES" (page 53)? They ***should*** have been!

POSSIBILITY (4): You made a lot of STUPID mistakes!

Stupid mistakes are similar to "stupid questions". A "stupid question" is merely one that SHOULD HAVE BEEN ASKED, but WASN'T. A stupid mistake is merely one that you ***did not analyze properly***. That's the ONLY reason the mistake is ***really*** "stupid". The following are actual examples which the students thought were "stupid mistakes".

Table 5.2. Mistake Analysis

"STUPID" MISTAKE	ANALYSIS
23 + 1 +16 50	You did NOT come to college to learn to add! This student's REAL mistake was RUSHING TOO FAST on the "simple" parts.
The question was: "Which of the following statements is incorrect? Choice (a) was CORRECT so the student chose it.	The student's *real* mistake was failure to circle the key word, (incorrect), and to write "F" (for "false") next to it.
The question was: "What mass of N_2 would result from explosive decomposition of 40g of ammonium nitrate at 300°C and 700 torr? The student correctly calculated the VOLUME of N_2 (which was harder to do).	The student's real mistake was in failure to circle the key phrase, (mass of N_2), and then to cross out the "300°C and 700 torr", as "distracting data" with no relationship to the *answer requested.*

Everyone makes a stupid mistake once in a while. SUCCESSFUL people analyze their mistakes and plan (and practice) to avoid repeating the same kinds of mistakes. Rushing too fast on "easy parts", failure to circle key words, failure to read questions (or answer choices) carefully, mentally changing a question to match a similar (but really different) question that you practiced are mistakes that YOU CAN CURE. Hang in there and keep practicing those "examsmanship skills" that were discussed in Chapter 4.

POSSIBILITY (5): You panicked!

This is rarely the ***real*** cause. In ***true*** panic cases you add 13 + 12 and get 52; you subtract 47–13 and get 60; you spell April as "aperill". You ***don't*** selectively forget the course material that was ***properly*** learned. Your prof won't buy that story, so don't try to sell it to yourself either. Panic is different from the more serious "exam trauma" discussed in Chapter 4. If nervousness and anxiety caused you problems DURING the exam, you should have stopped work for 20–30 seconds and used the "calm down" method discussed on page 59. Practice tests taken regularly will eliminate any ***real*** panic cases.

POSSIBILITY (6): You are a poor exam taker.

Then simply study Chapter 4 and join the experts.

5.4 ADVANCED PRE-GUESSING

If this is your first contact with pre-guessing, you'll sprain the head muscle at this level. (See Chapter 2 for the starting process.)

For practiced pre-guessers, the following may help to sharpen the technique a bit.

5.4a Quantitative and Qualitative

Have your guesses included quantity (amounts) and mathematical procedures as well as concepts? Use both aspects.

5.4b Emphasis

How accurately have you pre-guessed the ***relative emphasis*** placed on each item presented in lecture or assigned as homework? Don't overlook homework problems and questions as objectives. For each assigned problem or question, ask yourself what objectives it represents. Very few assigned problems appear on tests, but the ***objectives*** they represent certainly do!

5.4c References

When lectures (and exams) deviate significantly from the text, which reference work follows the material more closely? If your prof shows enough imagination to read more than a single book, you can profitably follow his lead. It may take a bit of looking, but it makes fine speed-reading practice,

too. The activity is especially important if you pre-guessed accurately EXCEPT for the material covered on the exam.

5.4d Order (Organization)

Have you pre-guessed the ***logical sequence*** your prof uses? Sure, it may not seem logical when you listen, but even old Prof "Grizzly Bear" has a logic pattern ***in his mind.*** The poorer the lecture seems to you, the more you need to untangle the prof's logic. How your prof sees these parts tied together will reveal amazing new degrees of emphasis.

5.4e Exam Review

What quirks did your prof exhibit when he covered the specific items that subsequently appeared on the exam? This is just like a quarterback who grits his teeth only when he intends to throw a screen-pass to the left. Does your prof grit his teeth? Raise his hand in benediction? Erase quickly? Underline? Mumble into his hand? Direct you to homework problems? Smile like a fox eating yellow-jackets? Don't get lost in mannerisms, but ***do*** learn how this prof indicates relative importance. That's what he uses to write his exam questions.

5.4f Self-Grading

As the course has progressed, how much has your pre-guessing IMPROVED? Was the IMPROVEMENT reflected in which questions you were able to answer fully and correctly?

5.5 HELP!

If you still need help, it is ***to define those objectives accurately.*** Use the suggestions from Chapters 2 and 3 first, because they are more complete and give you an easier mechanism for checking yourself. If you have done that and are still in trouble, it's time to GO for HELP. This help can be obtained from your prof and/or from former students. Many profs often tend to give you more to do than is necessary, while former students sometimes tend to oversimplify what needs to be done. Anything that sounds like a list of "things to learn" is the ***wrong*** advice. Good objectives really outline a set of questions you should be able to answer. Objectives should serve as practice exams, just as much as they are guides to what to study. Really good students can write these objectives quite well. Start with the pre-guessing. Then use assignments, lectures, text questions, and the exam items to improve the pre-guessing and fill in details.

POSTSCRIPT:

Now recycle through Chapters 3, 4, and 5 until you reach the Drop Date or other "Reassessment Time". (Chapter 6)

chapter 6 REASSESSMENT TIME/DROP DATE: Forget About "To Be or Not To Be?". The Question Now is "To Run or to Punt?"

chapter 6

REASSESSMENT TIME/DROP DATE:

Forget About "To Be or Not To Be?". The Question Now is "To Run or to Punt?"

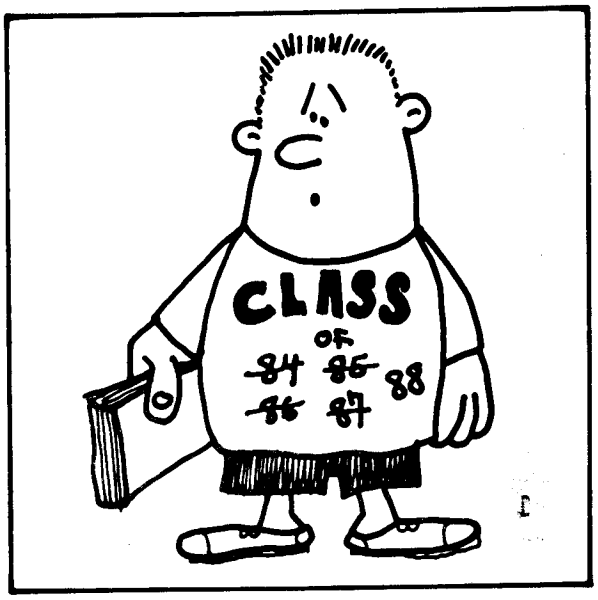
4th down and 87 yards to go; shall I punt? DECISIONS, Decisions, decisions, decisions, ...

On this fateful date, many students are deciding to decrease course loads (see Sections 6.1 and 6.2) or deciding to change their majors (see Section 6.3). These are really important decisions, so think them through carefully.

6.1 SHOULD I DECREASE THE LOAD?

6.1a Minimum Load

Most schools have a minimum course load for full-time students. Check the regulations before you drop anything. If you are considering dropping below the minimum load, find out what problems this might cause you.



6.1b Graduation Date

A decrease in course load can mean either an excessive load later on or an extension of your graduation date. If you extend your undergraduate education for an extra term (or some summer sessions), that need not be serious. If you drop a course which is a prerequisite in a sequence, it has more serious consequences than dropping a course which leads to nothing else. Before dropping a "prerequisite" course, consult a *good* advisor.

6.1c Grade Point Average

Most courses are dropped to help maintain (or improve) the student's average. All too often it doesn't work. Dropping a course may prolong the time during which you will be forgetting prerequisite knowledge. Is a drop the only reasonable way to improve your average?

6.1d Your Credibility

Dropped courses usually appear on your record. But even when they don't, the reduced load will be there. This could make you appear to be a less-than-serious student, especially if you do this often. But an F is clearly worse.

6.1e Time for Employment (or Beer, or Movies, or . . . . .)

First of all, be sure that the other activity is ***more*** important to you than the progress that you will lose toward your professional career. Time for employment so that you can earn enough to afford to ***eat*** IS that important. Most other activities are not. If financial problems are your main reason for dropping, check with your financial aid office first. Your college or other local agencies may have grants or loans that could solve temporary financial problems so that you could continue your full course of studies.

6.1f Professional Requirements

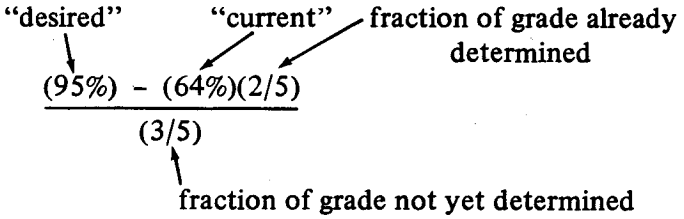
If you plan to go to graduate school or a professional school, the requirements are higher than just for graduation. For medical school, for example, an extremely high average must be maintained. Even if you don't plan to go further, a good average will increase the job possibilities when you graduate. If dropping a course is the ***only*** reasonable way to improve your grade average, it may be worthwhile.

6.2 THE ULTIMATE DECISION: SHOULD I DROP AND, IF SO, WHAT?

The best answer is usually "drop nothing", ... but there are exceptions! If you have determined that your best interests might be served by a decreased load, construct an analysis chart for your courses similar to the ***example*** given in Table 6.1. (Blank copies of this chart are included in the back of this book.) In this EXAMPLE the student has an 18 hour load (with approximately equal amounts of technical and nontechnical courses), in which he is doing poorly.

To see how this chart works, consider the first line (for a "3 hour", chemistry course). The student must decide upon the "Desired" (here an A) and the "Minimum Acceptable" (here a B) letter grades and then convert these to percents (using 95%, 85%, 75%, 65% for A through D respectively). He then enters his present grade (as a percent) and the corresponding letter equivalent. Next, he consults the course syllabus (or his professor) and finds that 2/5 of the total points possible have already been covered. Thus far he has actually been using six hours per week in out-of-class study for this course.

With this data collected, it is now possible to calculate the remaining entries. For the "Desired" chemistry grade of A the "GRADE AVG (%) NEEDED" is:



This calculates to be 116%. (Since it's greater than 100%, it just CAN'T be done). The same calculation for the "Minimum Acceptable" grade, a B for this student, shows that a 99% average for the rest of the course will get him a "B". (That borders on the impossible, but CAN be done since the 85% that we used to represent a B does leave a little cushion.)

To calculate the "NEW STUDY TIME" for this course we assume that, with proper techniques, a ***proportional*** increase in study time ***could*** raise the grade. Thus:

$$\left[(6 \text{ hrs} + 3 \text{ hrs}) \times \left(\frac{99\%}{64\%}\right) - (3 \text{ hrs})\right] = 10.9 \text{ hrs}$$

This is a reasonable estimate of the ***new*** time requirement for this course if the student is to earn a "B". IF the extra time is available (about 11 hrs ***vs*** the former 6 hrs), AND the student "intuitively" feels that he ***can*** do it, he should "go for a B"! (Note that "credit hours" were included in the calculation of "new study time", since credit hours provide a rough approximation of the "class-time equivalent of study".)

In making your decisions, consider whether or not you could truly understand, remember, and apply the material satisfactorily in the planned study time. Consider also what help you can expect from the professor and other resources. Although increased study time, especially if it involves improved study techniques, ***can*** help your grade, there are limits. The reason for filling in the numbers in the chart is to help you avoid unreasonable expectations. The "intuitive factor", if honestly determined, will further help you make ***good*** decisions.

If the student in our example (Table 6.1) ***must have*** an A in chemistry and ***must have*** an A in math, he should drop them and start all over in another term. If you redo these calculations with the ***modified goals*** of a B in chemistry and a B in math, you will see that averages of 99 and 97 are required respectively. The factor for increased work would require 3-5 more hours per week for each class. Will the schedule allow an increase of study time by this much? Dropping history is obviously necessary and the freed time is almost half of the other needs. If the student's "intuition" suggests that raising his average in psychology enough to get a B is most unlikely, he should plan to settle for a C. The reason for doing the calculations is to use realistic numbers instead of wishful thinking in making the correct decisions.

One final word: Under the "intuitive factor", consider whether this is the key course that makes your academic life livable. (If it's in deep grade trouble, this is rarely the case.)

6.3 SHOULD I CHANGE MY MAJOR?

This is a ***life-long*** decision. Getting yourself sterilized is also a life-long decision. Having children is a life-long decision. None of these should be taken lightly. If you are simply running away from work (as too many students do), you will probably make a dreadful mistake.

What do ***you*** want to do with your life? If you chose your major on this basis, ROLL UP YOUR SLEEVES AND GO AFTER YOUR GOAL! If the major you have is not ***your*** goal, you will probably not make it. If it is ***your*** decision, however, you probably will get there. Any goal worth having will involve considerable effort. If you have identified your "superstar" areas (see Chapter 3), you are progressing toward a mature choice of major.

Table 6.1. Analysis Chart

(FOR DECISION-MAKING NEAR "DROP DEADLINE" and IN PLANNING STUDY FOR FINAL EXAMS)

COURSE	DATA									CALCULATIONS				INTUITIVE FACTOR (What do you really think you can do if you honestly try?)
	CREDIT HOURS	GRADE						FRACTION** OF GRADE ALREADY DETERMINED*	PRESENT AVG. STUDY TIME [hrs/wk]	GRADE AVG. (%) NEEDED*** ON REMAINING WORK FOR:		NEW† STUDY TIME NECESSARY FOR:		
		Desired		Minimum Acceptable		Present								
		LETTER	%	LETTER	%	LETTER	%			Desired Grade	Minimum Grade	Desired Grade	Minimum Grade	
CHEMISTRY	3	A	95	B	85	D	64	2/5	6	(116)	99	X	10.9	"A" IS IMPOSSIBLE CAN GET B. INCREASE WORK!
CHEM LAB	1	A	95	B	85	A	93	7/12	2	98	94	2.2	1.4	CAN KEEP A. KEEP WORKING 2 HRS/WK!
ENGLISH	3	B	85	C	75	C	78	3/5	4	95	70	5.5	3.3	CAN GET B. INCREASE WORK TO 5 HRS/WK!
HISTORY	3	B	85	D	65	F	17	1/2	3	(153)	(113)	X	X	FORGET IT!
MATH	4	A	95	B	85	C	77	3/5	8	(130)	97	X	11.1	MIGHT GET B. INCREASE WORK TO 11 HRS/WK.!
PSYCH	3	B	85	C	75	D	67	1/2	3	(103)	83	X	4.4	GO FOR C! TRY 4 HRS/WK.
PHYS. ED.	1	PASS	—	PASS	—	PASS	—	—	—	—	—	—	—	—

*If in doubt, ask the PROF.

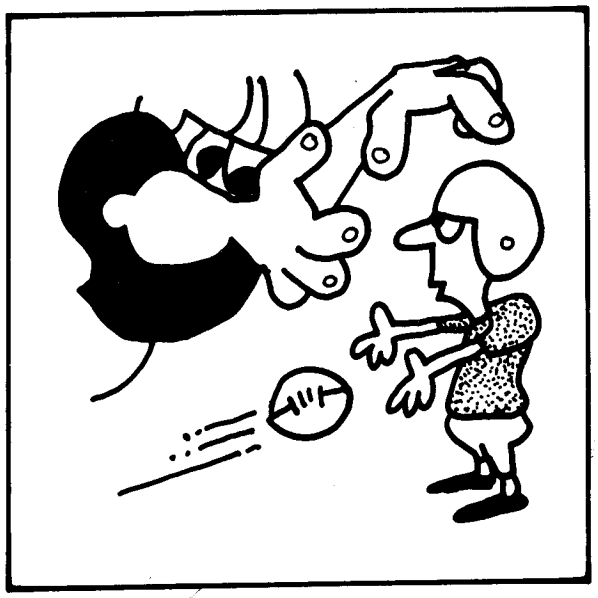
**For example, number of "points" to date divided by total possible "points".

***Calculate "GRADE AVG. NEEDED" by: $\left[\frac{\text{grade ("desired" or "minimum") - (present grade } \times \text{ fraction det'd)}}{\text{(fraction remaining)}}\right]$

†NEW STUDY TIME = $\left[\text{(Present avg. study time + credit hours)} \times \left(\frac{\text{grade avg. needed}}{\text{present grade}}\right) - \text{(credit hours)}\right]$

Drop date is the ***worst*** time to consider a change of major. Avoid the rush to "easier" majors. The job market there is flooded with too many people competing for low-paying and less challenging jobs.

6.4 DECIDING ON A RUN INSTEAD OF A PUNT. (REASSESSMENT WITHOUT DROPPING COURSES)



If you considered dropping but have now decided to hang in there, there are some procedures to consider. Perhaps your efforts have not produced the results you expected. Of course, we believe that the most important procedures are those presented in the previous chapters. Before trying anything else, you should carefully check that you are ***following*** those suggestions. But if you have faithfully followed those suggestions, it may be time to try a bit of modification.

If your ability to remember does not seem up to par, try mixing questions and problems into the process a bit earlier. As soon as you have studied a section of material, identify a question or problem covering the material. After writing your answer, try going back over the material to see what you might have missed. Next, check your notes to be sure that your ***cues*** will guide you to remember ***all*** the material. As you review from your notes, try covering up ***everything except*** your cues. Can you recreate your notes from the cues only? A full rereading of textbook material is usually ***not*** an effective use of your time. Use a mixture of notes, outlines, and problems. Reread ***important sections*** of the text as needed.

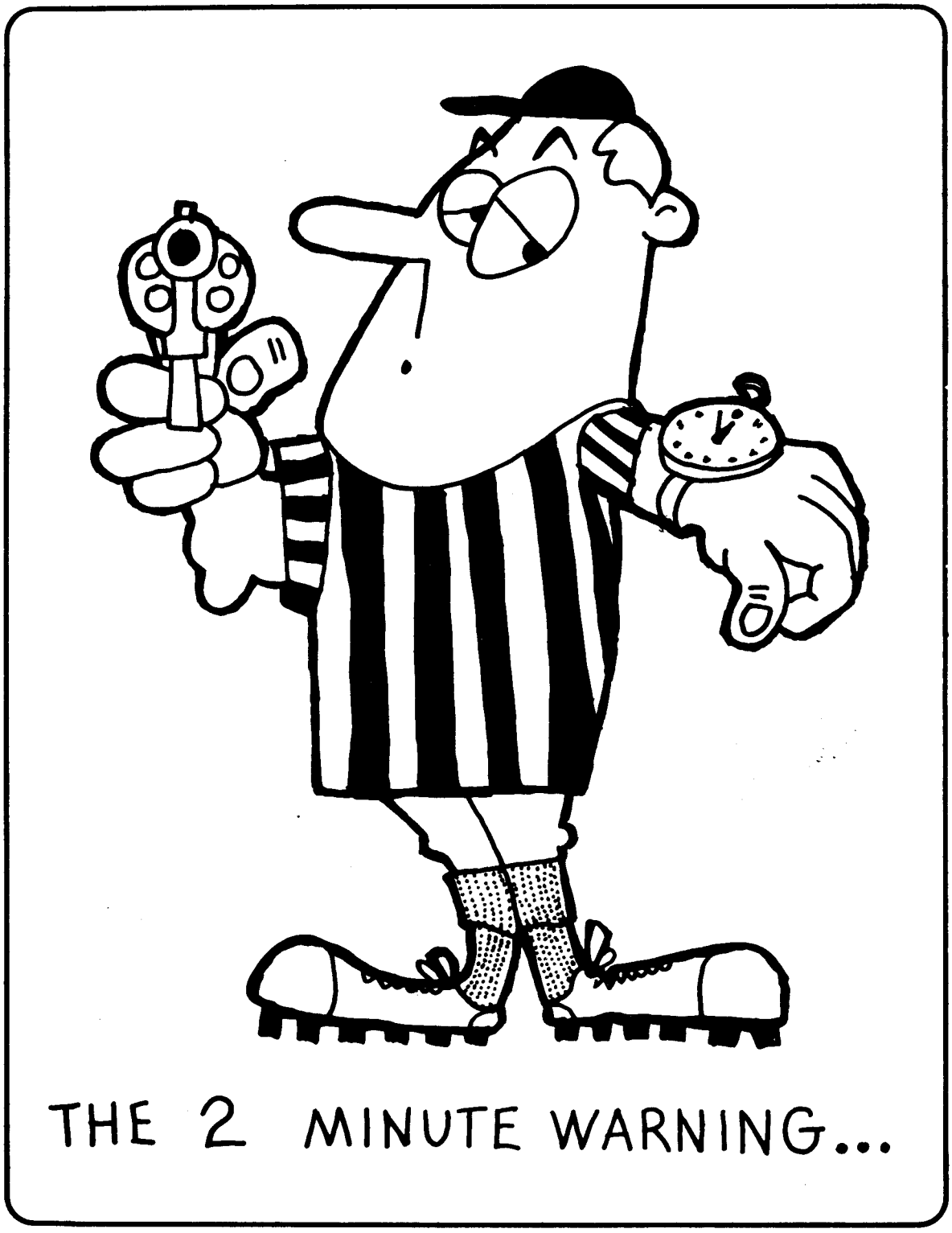
If you seem to be studying the wrong material, try turning each chapter title and section heading into a question. Write these questions down before you study that section. These questions, and their answers, are most effective when used in your pre-guessing procedure. Be careful not to let a lot of details obscure the ***major idea***. That is precisely why chapters are broken into sections, and sections into sub-sections, etc.

As an addition to the processes discussed previously, you might try "out loud" recitation as a way of both fixing ideas in your memory and self-testing how thoroughly you understand each section. This isn't really new, but sometimes it's easier to evaluate yourself if you can actually hear yourself. (If you have a tape recorder, try it in this process.)

Finally, try to find a personal interest in each of your courses. How does each course contribute to your ***superstar*** areas? How does it apply to your life beyond formal studies? If you can make it fun (or just less painful) you will also make it much easier.

GOOD LUCK IN THE SECOND HALF!

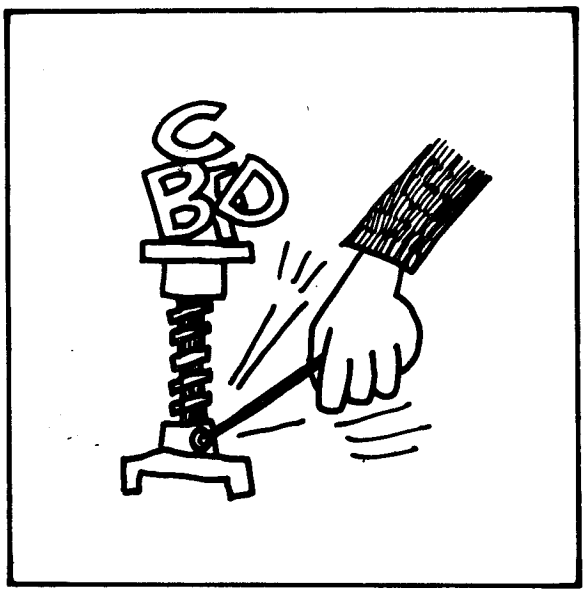
chapter 7 PREPARING FOR FINALS:



chapter 7
PREPARING FOR FINALS:
The Two Minute Warning

There once was a time in each class
When the students could lie in the grass.
But procrastination is DONE.
There's no more time for fun.
Or you'll get booted out on your *gluteus maximus!*

7.1 PREPARING FOR FINALS *IS* DIFFERENT



The object now is to pump as many extra grade points into your total as possible. The real "learning" time was mainly during the term, but now you can still improve the ***GRADE***. Start with an analysis of where you are and what is ***REALISTICALLY*** possible. This is done by listing the COURSES, the CREDITS, and your CURRENT LEVEL, using the same Analysis Chart used in Chapter 6, but with slightly different determinations. Study the example in Table 7.1. Notice that this is the same student we used for our example in Chapter 6, but after a modest improvement. (He ***must*** have been using at least a portion of this book.) ***Then*** use a blank chart from the back of this book to analyze your own situation.

Since we are now within the "final warning", we use 90 for an A (versus 95 when a margin-for-comfort was wiser), etc.

This analysis clearly shows that if this student stopped studying for every other course to concentrate on history, he ***still*** couldn't pass it. In addition, extra study could ***not*** raise his chemistry or math grades to A's, but a modest increase in study effort could ***raise*** his grades in chemistry and math (and possibly in psychology). Reducing study time for other courses (except history) is neither necessary nor wise. Now he can plan for improving some grades and ***forget*** about history.

Table 7.1. Analysis Chart

(FOR DECISION-MAKING NEAR "DROP DEADLINE" and IN PLANNING STUDY FOR FINAL EXAMS)

COURSE	DATA: CREDIT HOURS	DATA: GRADE — Desired LETTER	Desired * %	Minimum Acceptable LETTER	Minimum Acceptable %	Present LETTER	Present %	DATA: FRACTION** OF GRADE ALREADY DETERMINED*	DATA: PRESENT AVG. STUDY TIME [hrs/wk]	CALCULATIONS: GRADE AVG. (%) NEEDED*** ON REMAINING WORK FOR: Desired Grade	Minimum Grade	CALCULATIONS: NEW† STUDY TIME NECESSARY FOR: Desired Grade	Minimum Grade	INTUITIVE FACTOR (What do you really think you can do if you honestly try?)
CHEMISTRY	3	A	90	B	80	C	76	4/5	8	(145)	95	X	10.8	CAN GET B. INCREASE WORK TO 11 HRS/WK!
CHEM LAB	1	A	90	B	80	A	94	11/12	2	48	[-72] (0)	0.5	0	DON'T STOP. (IT'S FUN!)
ENGLISH	3	B	80	C	70	B	81	4/5	4	75	25	3.5	0.8	CAN KEEP B. CONTINUE AT ABOUT 4 HRS/WK.
HISTORY	3	B	80	D	60	F	37	5/6	0	(294)	(174)	X	X	STOPPING WORK WAS WISE!
MATH	4	A	90	B	80	C	78	4/5	10	(140)	90	X	11.5	CAN GET B. INCREASE WORK TO 12 HRS/WK!
PSYCH	3	B	80	C	70	C	75	2/3	3	90	60	4.2	1.8	MIGHT GET LUCKY. TRY FOR B WITH 4 HRS/WK!
PHYS. ED.	1	pass	—	pass	—	pass	—	100%!!	—	—	—	—	—	—

*If in doubt, ask the PROF.

**For example, number of "points" to date divided by total possible "points".

***Calculate "GRADE AVG. NEEDED" by: $\left[\frac{\text{grade ("desired" or "minimum") - (present grade } \times \text{ fraction det'd)}}{\text{(fraction remaining)}}\right]$

†NEW STUDY TIME = $\left[\text{(Present avg. study time + credit hours)} \times \left(\frac{\text{grade avg. needed}}{\text{present grade}}\right) - \text{(credit hours)}\right]$

7.2 A SPECIAL SCHEDULE FOR STUDYING FOR FINALS

7.2a Sleep Is First

Get up DAILY at the normal hour. You must be fresh and alert when you take the final exam. [Also be at 100% efficiency when you do your studying. (See Chapters 1-3.)]

7.2b Time Blocks

Many short study sessions are more effective than one marathon grind. ***DO NOT*** study only chemistry until you have finished the chemistry exam, then only math until you have finished the math exam, etc. Use uncommitted study hours, and some "free" hours, to get the EXTRA time you want for the first final. Study time for courses that are "safe" may be cut back SLIGHTLY but NEVER eliminated.

7.2c Time Block Changes

As the final exam week progresses, large blocks of time appear. Because large blocks are NOT efficient, they will do little to improve a grade. To MAXIMIZE the rewards, schedule more short breaks as the week progresses and study all the remaining courses on an alternating basis.

7.2d "Nerves"

NERVES can reduce your study efficiency to absolutely ***zero*** (or even make it negative). The moment your mind flits to "how much you don't know yet", you have reached zero efficiency. Quietly close the book at this point and do something else–study for another course, take a short break or use "Brain-Flushing" (page 46). For milder cases of nerves, switch to EASIER material. (Nerves interfere more with difficult tasks than with easier ones.)

7.2e Positive Thinking

Think positively! That refers not only to your state of mind but also to knowledge acquired. Each objective you master means more points on the final exam. Concentrate on ***getting more points.*** NEVER prepare for finals on the basis of "how far you are" from 95% (or 100%) mastery.

7.2f "Examsmanship" Review

Reread Chapter 4 during one of your breaks before EACH final exam.

7.2g *Selective* Review

Plan to omit the "most difficult and most time consuming" topics from your final exam review TO THE EXTENT THAT THIS WILL STILL INSURE THE GRADE YOU'RE SEEKING. ONLY after you have mastered the ***necessary*** "minimum" objectives and find that you have extra time should you study "more difficult" topics.

7.2h *Selective* Exam Work

DURING the exam, skip those topics you omitted from your review (Section 7.2g) until you have finished and checked your other work. THEN, if time remains, try some of the remaining questions.

7.2i "Surprises"

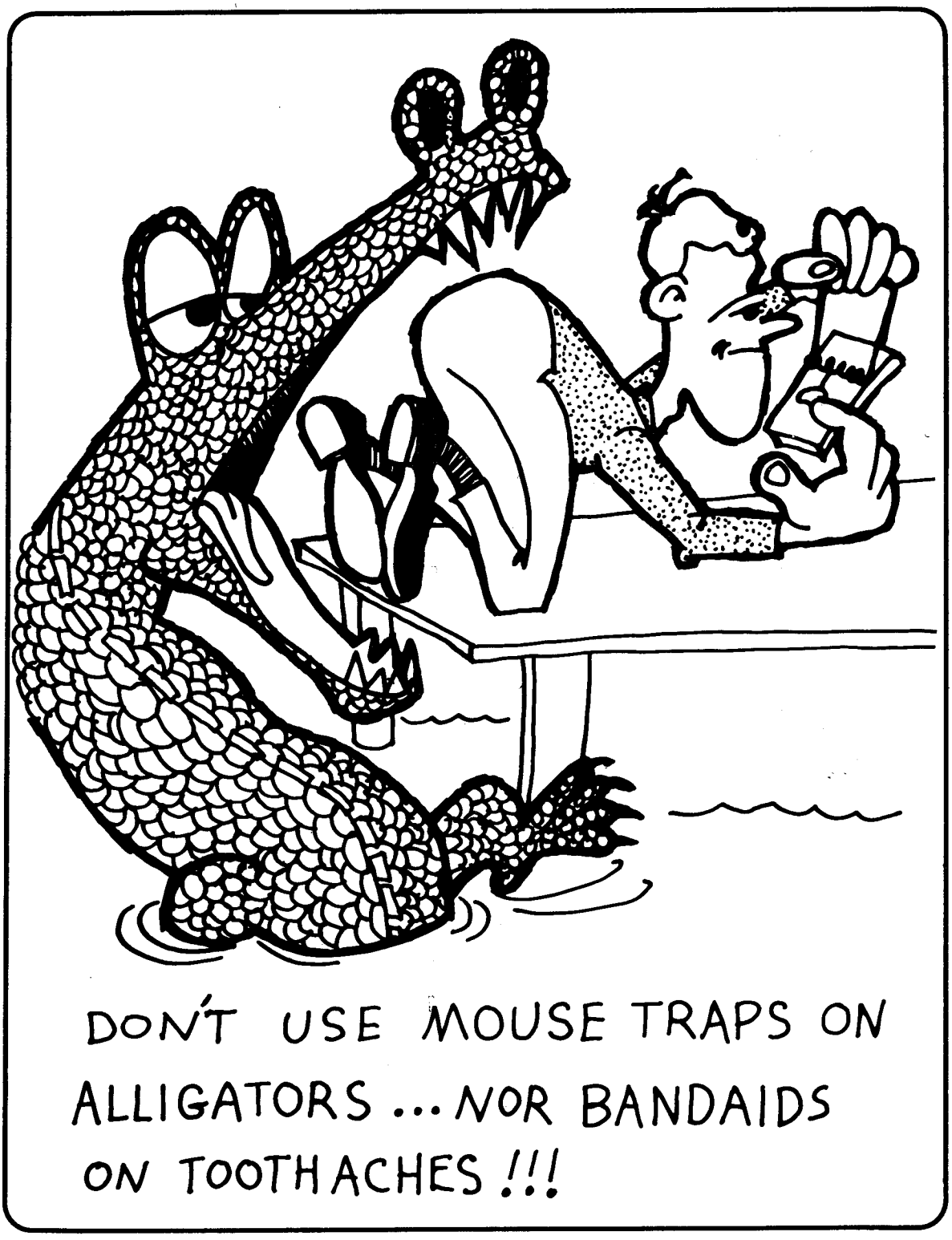
EXPECT to find at least one question on the final exam that seems to have been put there by mistake. (Maybe it really belongs to a final examination in some advanced course–and maybe it only SEEMS to. As you work through the exam, this STRANGE question may suddenly make sense.)

7.2j Work Time Use

STAY and utilize ***all*** the allotted exam time. Those who leave early almost always get a lower score on their final exam than their average to that point. If you run out of things to do, reread the OTHER questions to find clues to that extra-tough problem mentioned in Section 7.2i.

GOOD LUCK!

chapter 8 SPECIAL PROCEDURES:



chapter 8
SPECIAL PROCEDURES:
Don't Use Mousetraps on Alligators Nor Bandaids on Toothaches!

This chapter departs from the format used in most of this book. Instead of being a "time sequence" chapter, we will deal here with a few of the special cases that come up only in certain courses.

The 6 procedures we will discuss are:

Section 8.1 Memorization (in all courses, but especially in languages, biology, etc.)

Section 8.2 Problem Solving (e.g., engineering, chemistry, physics, etc.)

Section 8.3 Laboratory Courses (e.g., sciences, agriculture, etc.)

Section 8.4 Analyzing (e.g., philosophy, political science, architecture, etc.)

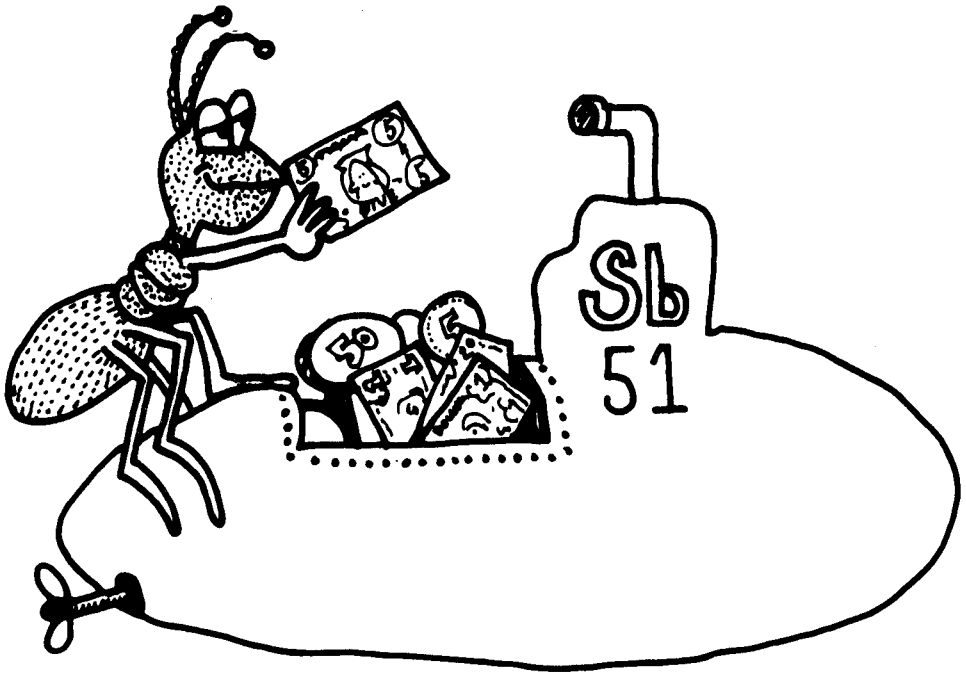
Section 8.5 Writing (e.g., English, journalism, etc.)

Section 8.6 Library Work (e.g., for term papers, etc.)

8.1 MEMORIZATION

This is an activity that most of us detest! Rote memory is the very *lowest* level of learning. Fortunately, it requires *NO* special talent. In addition to the standard procedures of "flash cards" (pages 86-87) and "late night" memory work (page 10), there are two special "tricks":

1. Make associations.
2. Use as many senses as possible.



Successful associations are CRAZY ones. The more ridiculous the association, the better it will stick. In chemistry, we have to ***memorize*** the symbol Sb for the element antimony. (Doesn't make sense, does it?) But a silly picture can relate it in a way that the word antimony (sounds like "ant-money") will make you recall the submarine (sub) and Sb (pronounced "Sb") will make us think of that rich ant.

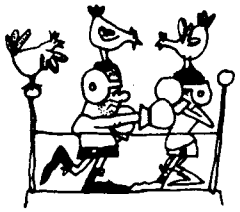
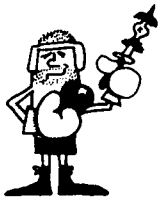
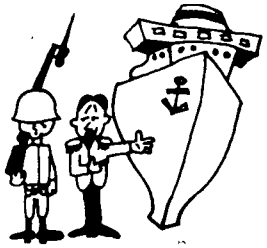
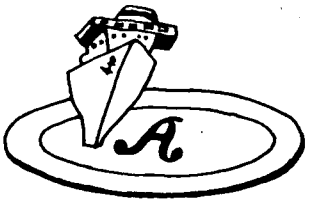
For ***lists*** that must be memorized, the associations should connect items 1 and 2; then they should connect items 2 and 3; then they should connect items 3 and 4; etc. For example, memorize the following list of names in order. (They were Greek City States.)

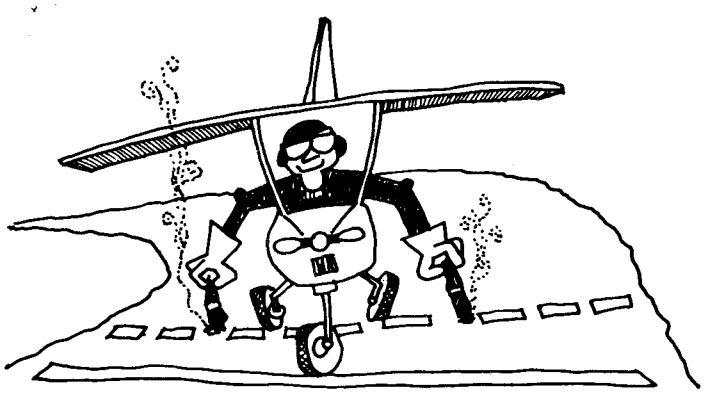
Athens
Sparta
Corinth
Militus
Syracuse
Platea

Again, "silly pictures" can be used to help in memorization, and to ***link*** items in a list (as shown in Table 8.1). At first, "silly mental pictures" may seem difficult to invent. If this is a problem, simply sit down ***with a group*** of students and have an ***ABSOLUTE NONSENSE*** party. Take any list you want and ***compete*** with each other at being silly. When you start to act like giggling five-year-olds at a slumber party, you've got the idea.

The "outlandish mental picture" can remind you of a word, of a phrase, of a listing, or of an acronym. One of the nuts writing this book must "put out all cigars" on the taxiway lines where airplanes stop before moving onto the runway. It makes absolutely no difference that he doesn't smoke cigars in the plane. He ***associates*** the broken lines in this area with cigars through a goofy mental picture. This ensures that he checks the critical pre-flight acronym: (page 86).

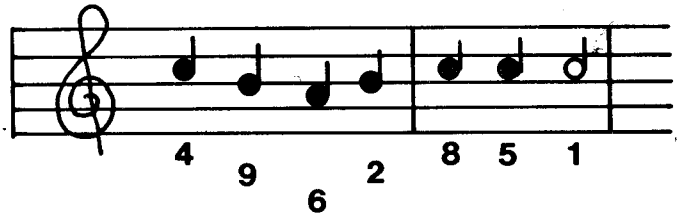
Table 8.1. "Silly Picture" Memory Aid/Linkage

CITY STATES	"MENTAL PICTURES"	LINKAGE
Athens		Jack*ass* (pronounce with a *lisp*, i.e., "ath") with *hens*
Sparta		*hens* → *spar* (boxers sparring)
Corinth		*spar* → *core* (boxer removes apple core)
Militus		*core* → *military* (apple core on a military bayonet)
Syracuse		*military* → *"sir, a cruise"* (sounds like "Syr-a-cruse")
Platea		*"sir, a cruise"* → *plate "A"* (spelling is Platea, even if pronunciation is different)



C ontrols movement
I nstrument settings
G as valve settings
A ttitude (trim) settings
R un up engine
S et radio frequencies.

The second memory "trick" is using as many senses as possible. The "cigar" acronym works better if you ***imagine*** the smell of cigars burning the paint from the taxiway line. It's even better if you ***imagine*** the sound of them being stubbed out. It's also better if you ***"feel"*** the plane being brought to a halt by "cigar brakes". The logic of this process is that we connect different paths of neurons in our brain with each way we view the "picture". You can easily prove this to yourself with something as simple as dialing a telephone number. Do you dial the first 3 numbers and then look back at the number before you dial the other four? You'll never have to do that again if you simply put a tune to it. 496-2851, for example, can be set to the tune of "Mary Had a Little Lamb". You don't have to sing it out loud–just thinking the numbers to the tune is enough.



It's true that we don't usually put telephone numbers into our permanent memory, but the principle is the same. The more neuron connections we make in the brain, the easier it is to find one that's still intact when we want to remember.

For many routine memory tasks (e.g., names and symbols of chemical elements, identification of skeletal parts in biology, names and dates of U.S. presidents, etc.), FLASHCARDS are ***very*** useful. To prepare these, cut 3" x 5" cards in half (to give 3" x 2½" cards). On one side of a card, write "half" of the information (e.g., symbol of a chemical element, sketch of a bone location, dates of a president's term in office). On the other side of the card, write the "other half" of the information (e.g., name of the chemical element, name of the bone, name of the president).

To use flashcards ***effectively***, most of your work ***must*** involve WRITING "what's on the other side of the card". Stack the flashcards so that all "top" sides have the same ***kind*** of information (e.g., symbols of chemical elements). Then write on a piece of paper the "matching information". Check if you got it right. If you did, put that card aside. If you got it ***wrong***, SCRATCH OUT YOUR WRONG ANSWER, WRITE THE CORRECT ANSWER, and place the card on the bottom of the stack for another trial.

After you've completed the stack once, turn all the cards over and repeat the process. For example, if you got the presidents' names ("given" their terms of office), now try to get the terms from looking at their names.

If you combine flashcards with the "mental picture tricks" (page 84), the process is even more effective. Use your flashcards on a ***regular*** basis for memory review. In some of your review times, recite the memory information aloud to yourself or work with a couple of friends in a "flashcard game". However, ***don't*** neglect a regular WRITING review, since this is especially effective ***and*** writing best helps recall proper ***spelling*** of the words involved.

If you want to pursue this "memory area" further, some of the best books are:

How to Improve Your Memory & Concentration; Kellet, Michael; New York: Monarch Press, 1977

Memory Matters; Brown, Mark; Newton Abbot [England] : David & Charles, 1977

Techniques for Efficient Remembering; Laird, Donald A. & Laird, Eleanor C.; New York: McGraw Hill, 1960

How to Master Your Memory; Lewis, Dave; Houston, Tex.: Gulf Publications Co., 1962

8.2 PROBLEM SOLVING

This section deals with "how to set up a problem so that you may calculate an answer". It deals with cases where some measurement is involved, such as in chemistry, physics, engineering, animal science, geology, finance, etc., etc., etc.

The process we will use simply assumes that the answer we seek is a fact (is true). It also assumes that the necessary data to make the calculation are somehow available (but often not entirely stated in the problem).

Step 1. The Answer

It may sound backwards at first, but you ***must*** start by identifying what you are looking for. To understand how necessary this is, try answering the following question: "What is the correct answer to the question the author of this section had in mind while he wrote this nonsense?" It's impossible to answer that because, if I don't tell you the question, you don't have a chance of being able to answer it. ***Read the question (problem) until you can definitely identify what you are trying to calculate.*** Now WRITE the answer, except for the unknown numerical value. Put an "equal sign", (=), in front of it and a question-mark, (?), for the numerical value of the answer.

Examples:

$= ? \frac{\text{cm}}{\text{sec}}$ horizontal velocity

$= ?$ g Na_2SO_4 used

$= ? \frac{\$ \text{ profit}}{1 \text{ day}}$

$= \frac{? \text{ lbs sorgum}}{1 \text{ ton of feed}}$

$= \frac{? \text{ lbs barite}}{100 \text{ lbs drilling mud}}$

Now re-read the preceding examples using the phrase "FOR EVERY" wherever the horizontal "divided by" line appears. $\frac{?\ \$\ \text{profit}}{1\ \text{day}}$ is read, "How many (the "?") dollars profit FOR EVERY one day?" The last example reads, "How many pounds of barite FOR EVERY 100 pounds of drilling mud". Notice that this is the same as, "What weight-percent barite is in the drilling mud?"

One final word about "writing the answer": You MUST distinguish the answer from any similar measurements. Thus, $\frac{\text{cm}}{\text{sec}}$ (cm FOR EVERY sec) is not enough if we want ***horizontal velocity*** in a problem that also contains non-horizontal velocity. Likewise, "grams" is not the answer in the second example. We need "grams of Na_2SO_4 ***used***" (note that "g Na_2SO_4" ***won't*** do if ***some*** of the Na_2SO_4 was ***used*** and some of it was ***not*** used). The words (and symbols) you use to state the answer don't matter as long as they clearly ***identify it to you AND they distinguish it from any other similar measurements.***

Step 2. Locate the Answer

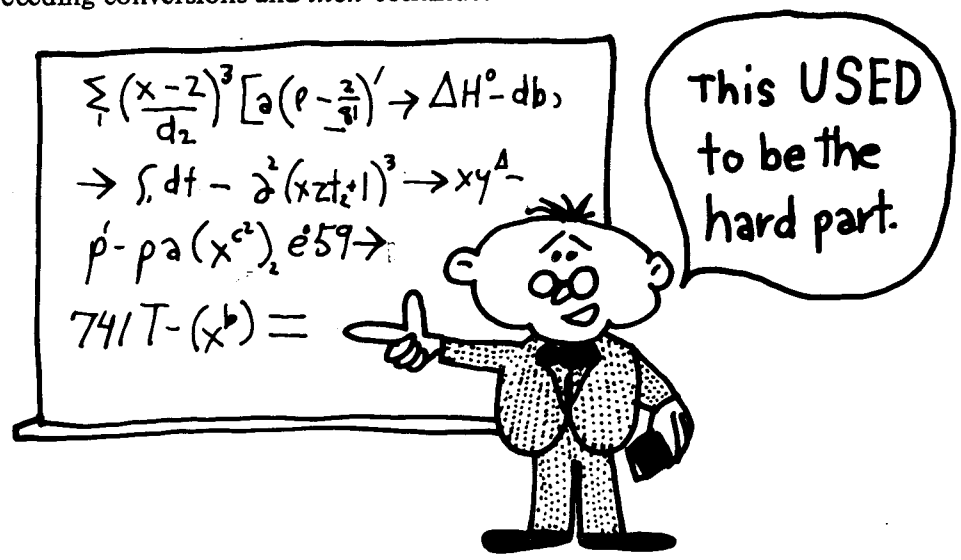
You MUST have some piece of data which "contains the answer", either totally or in part. If the total answer isn't given, look for the numerator of the answer. For example, 0.7g of calcium per lb of sorgum ***does*** contain the numerator of our fourth sample answer. This says 0.7g of calcium FOR EVERY pound of sorgum ($\frac{0.7\text{g Ca}}{1\text{ lb sorgum}}$) . It also says $\frac{1\text{ lb sorgum}}{0.7\text{g Ca}}$ (one pound of sorgum FOR EVERY 0.7 g of calcium). Any statement which does not include "FOR EVERY" simply states "THERE IS (ARE)". For example, "419 ft rope" simply says, "There are 419 feet of rope".

Step 3. Solve the Problem

In any simple problem, we are merely converting from one type of measurement to another. To see how this works, try converting (showing ***complete*** setups):

a. 4 feet to inches.
b. 34 quarters to dimes.
c. 10^6 ounces to tons.
d. 10^{-4} days to milliseconds.

Do the preceding conversions and ***then*** continue.



In "problem" (a) you used the "conversion factors" ($\frac{12 \text{ inch}}{1 \text{ foot}}$); in (b) you probably used the two "conversion factors" ($\frac{25 \text{ cents}}{1 \text{ quarter}}$) and ($\frac{1 \text{ dime}}{10 \text{ cents}}$); in (c) you used ($\frac{1 \text{ lb}}{16 \text{ oz}}$) and ($\frac{1 \text{ ton}}{2000 \text{ lb}}$); in (d) the "conversion factors" would be ($\frac{24 \text{ hr}}{1 \text{ day}}$), ($\frac{60 \text{ min}}{1 \text{ hr}}$), ($\frac{60 \text{ sec}}{1 \text{ min}}$), and ($\frac{1000 \text{ millisec}}{1 \text{ sec}}$). In each of these problems, you have used "conversion factor(s)" that you know well. Also in these cases you have not changed the ***type*** of measurement, i.e., length in (a), money in (b), mass in (c), and time in (d).

A second type of "conversion factor" relates different types of measurements. The following examples illustrate this second type of "conversion factor". Again, showing ***complete*** setups, convert:

	Problem	**Conversion Factor**
e.	20 feet to dollars.	(at a price of) $\frac{50 \text{ cents}}{1 \text{ foot}}$
f.	\$15 to lbs.	(at a fee of) $\frac{19 \text{ cents}}{1 \text{ lb}}$
g.	6 gallons to hours.	(at a flow of) $\frac{0.1 \text{ pint}}{1 \text{ hour}}$
h.	300 miles to seconds.	(at a speed of) $\frac{450 \text{ miles}}{1 \text{ hour}}$
i.	700 ml to kilograms.	(for a density of) $\frac{7.50 \text{ g}}{1 \text{ ml}}$

In these problems, of course, some other "conversion factors" are also required, i.e., $\frac{\$1}{100¢}$ in (e) and (f), $\frac{8 \text{ pints}}{1 \text{ gallon}}$ (or alternately $\frac{4 \text{ quarts}}{1 \text{ gallon}}$ ***and*** $\frac{2 \text{ pints}}{1 \text{ quart}}$) in (g), $\frac{3600 \text{ sec}}{1 \text{ hour}}$ (or $\frac{60 \text{ sec}}{1 \text{ min}}$ ***and*** $\frac{60 \text{ min}}{1 \text{ hour}}$) in (h), and $\frac{1 \text{ kilogram}}{1000 \text{ g}}$ in (i).

Note that every "conversion factor" simply makes a statement of the form:
"There are (X) FOR EVERY (Y)".
For example, we say,
"There are (36 inches) for every (1 yard)".
"There are (75 cents) for every (3 quarters)".
"There is (1 yard) for every (36 inches)".

We can express the known density of Pt by saying, "There are (21.3 g Pt) for every (1 ml Pt)", or from the same piece of data, "There is (1 ml Pt) for every (21.3 g Pt)". Any true statement which relates two quantities may be used as a "conversion factor" (e.g., the statements of price, fee, flow, speed, and density in examples (e) through (i) in the preceding discussion).

Remember that the horizontal line, which separates the numerator and the denominator of these statements when written as fractions, is called "for every". The same line may also be called "in a given", "in each", "per", or "per unit of". These are quite equivalent statements. Now, if you

make an "X for every Y" statement, you have it in a mathematical form. See how many different "conversion factors" you can obtain from the following statements.

> "Three chemists produced 41 grams of compound 'Q' in five days. Each chemist operated 5 extraction columns for a period of 8 hours each day. The compound 'Q' produced was bottled in 12 vials, each of which contains 1.5 ml of the material, and the entire lot was sold for $3000.00."

[Hint: Two or more "conversion factors" may be combined to give another "conversion factor" (see, e.g., $\frac{3600 \text{ sec}}{1 \text{ hour}}$) above.]

After you have written your list of "conversion factors", see if you have included the following: gross income of each chemist per day, density of compound 'Q', vials of product per chemist, vials produced per day, and gross income per column in one day. Did you identify others?

IN SETTING UP ANY SIMPLE PROBLEM, WE TAKE OUR DATA AND "CONVERT" IT TO THE DESIRED UNITS (i.e., to the units of the answer).

To check whether your setup of a problem is correct, just ask three simple questions:

1. Do all the units in the setup cancel, except those desired in the answer? (A simple "There is" statement can be in the numerator, e.g., 419 ft rope, or in the denominator, e.g., $\frac{1}{419 \text{ ft rope}}$.)
2. Is each separate statement in the setup true? (This is necessary to get a true answer.)
3. Have I made the numbers, as well as the units, ***the same*** on both sides of the mathematical equation?

Now check these three conditions for the following solutions to the sample problems (a) through (i) from our earlier discussion:

a. $(4 \text{ feet})\left(\frac{12 \text{ inches}}{1 \text{ foot}}\right) = 48 \text{ inches}$ (Note that there is no problem in "cancelling" a singular unit and a plural unit.)

b. $(34 \text{ quarters})\left(\frac{25¢}{1 \text{ quarter}}\right)\left(\frac{1 \text{ dime}}{10¢}\right) = 85 \text{ dimes}$ or

$(34 \text{ quarters})\left(\frac{10 \text{ dimes}}{4 \text{ quarters}}\right) = 85 \text{ dimes}$

c. $(10^6 \text{ ounces})\left(\frac{1 \text{ lb}}{16 \text{ oz}}\right)\left(\frac{1 \text{ ton}}{2000 \text{ lbs}}\right) = 31 \text{ tons}$

d. $(10^{-4} \text{ days})\left(\frac{24 \text{ hrs}}{1 \text{ day}}\right)\left(\frac{60 \text{ min}}{1 \text{ hr}}\right)\left(\frac{60 \text{ sec}}{1 \text{ min}}\right)\left(\frac{1000 \text{ millisec}}{1 \text{ sec}}\right) = 8.6 \times 10^3 \text{ millisec.}$

e. $(20 \text{ ft})\left(\frac{50¢}{1 \text{ ft}}\right)\left(\frac{\$1}{100¢}\right) = \$10$

f. ($15) $(\frac{19¢}{1\ lb})$ WRONG START!!! The statement "19¢ for *every* 1 lb" is true, but it places "money" in the numerator so that it can never cancel "money" (in $) which is ***also*** in the numerator. This partial setup is ***wrong***, because it does NOT give us the desired units (it would give us the correct number of $(\frac{\text{"\$ × ¢"}}{\text{lb}})$, but those units don't make any sense).

To get the correct setup, simply realize that if there is a fee of "19¢ ***for every*** lb". then it is ***also*** true that there is "1 lb ***for every*** 19¢" of fee paid.

$$(\$15)\left(\frac{1\ lb}{19¢}\right)\left(\frac{100¢}{\$1}\right) = 78.9\ lb.$$

g. $(6\ gal)\left(\frac{1\ hr}{0.1\ pt}\right)\left(\frac{8\ pt}{1\ gal}\right) = 480\ hrs.$

h. $(300\ ml)\left(\frac{60\ min}{450\ ml}\right)\left(\frac{60\ sec}{1\ min}\right) = 2400\ sec.$

(Some mental arithmetic was done here.)

i. $(700\ ml)\left(\frac{7.50g}{1\ ml}\right)\left(\frac{1\ kg}{1000g}\right) = 5.25\ kg$

It will be extremely helpful to your understanding to stop part-way through writing a mathematical setup and ask, "What have I calculated up to this point?". The units will tell you. The units will alert you to any errors you have made. When there are unnecessary data, the units will tell you what isn't needed. When there is not enough information given, the units will tell you ***what data*** are missing (so you can look it up, recall it from memory, or design an experiment to measure the needed data). But how do you write the correct units? Units are simply a description of what the number means—write your own units so that they clearly describe the meaning of the number ***to you.***

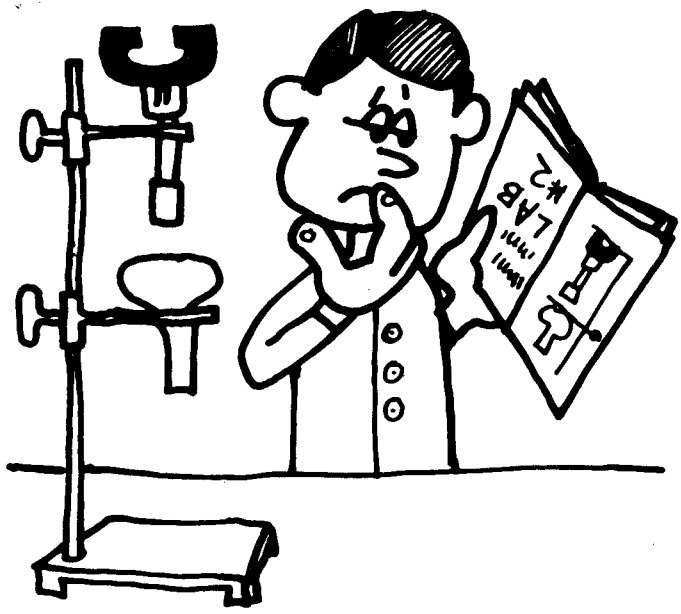
Many excellent "How to Solve Problems" type books are on the market if you wish to read further. Some are "Study Guides" that accompany texts (e.g., T. E. Taylor's *Study Guide for Chemical Principles*, Benjamin Cummings, 1971).* The Schaum's Outlines are also good aids for specific courses. W. A. Winkelgren's *How to Solve Problems*, W. H. Freeman & Co., 1974, is good for developing highly advanced reasoning to use with exceptionally complex problems.

8.3 LAB COURSES

Laboratories are usually the MOST FUN of all your courses ***or*** the MOST FRUSTRATING. But the difference is ***not*** manual dexterity! Those who love lab courses ***know*** what is going on and are thinking about ***why*** they are doing each step. The frustrated lab student will have one hand tied to the lab manual to keep his place while he simply "follows directions".

The good news is that the FUN way to do labs also requires the least TOTAL time. What it does require, however, is time spent BEFORE you actually enter the lab. This is a very specific PRE-GUESSING activity (see page 22). Each lab exercise will have a very specific OBJECTIVE (usually given in the title). Focus your attention on that objective and then figure out ***how*** each step in the procedure leads you toward that objective. One way to do this is to ask yourself, "What would go

*Much of the information in Section 8.2 was taken from this reference. The permission of Benjamin Cummings, publisher, is gratefully acknowledged.



wrong if this step were omitted?", or, "What would happen if this step were changed (e.g., by using a different piece of apparatus or a different reagent)?" This process will pinpoint those parts of the experiment that you still don't understand. If you can't figure them out or find the answers in your text, have the questions ready to ask your instructor as you ENTER THE LAB a few minutes before the class starts.

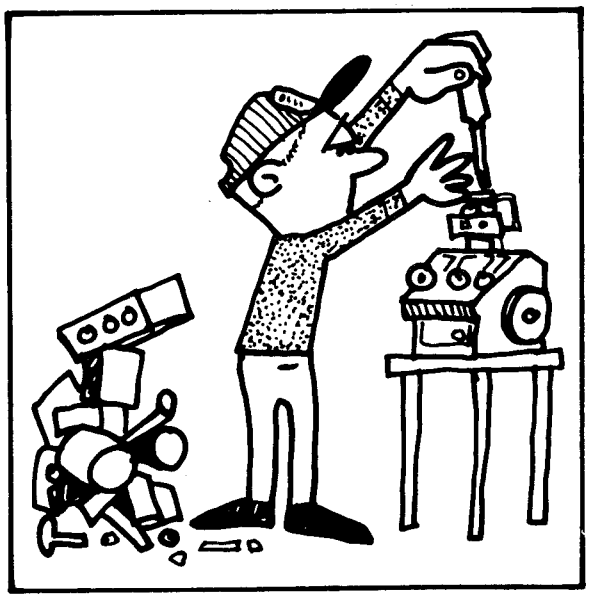
Now you WILL do the experiment correctly. You will know where special CARE must be taken. You will collect all the necessary DATA. And, finally, you will be ready to write your LAB REPORT. If you prepared for this lab properly, you will probably be able to finish most of your "rough draft" report BEFORE you actually leave the laboratory. This gives you the added advantage of having your instructor's expert advice available while you are developing the report.

It is important that you ***finish*** your lab report, in final form, as soon as possible after the laboratory. Remember the "forgetting curve" (page 27)? If you complete your lab report immediately after lab (or as soon as you have a time available), you will have a ***better report*** and you will spend ***much*** less time preparing it.

The GOOD LAB STUDENT spends most of his/her time BEFORE and during the lab session. The POOR LAB STUDENT spends his/her time inefficiently during the lab and LONG AFTER the lab session. (The poor student usually prepares the report badly, and just prior to the next lab, when that time ***should*** be spent getting ***ready*** for that upcoming lab.)

8.4 ANALYZING

This is an important task in many courses at the beginning level. It becomes a more frequent task in higher level courses. The dictionary says that "analysis" means "to examine in detail". The other side of the coin is to take details and assemble them into a coherent whole. If you see the task as having these two parts, life gets a lot easier.



The first chore is, indeed, to break something down into detail.

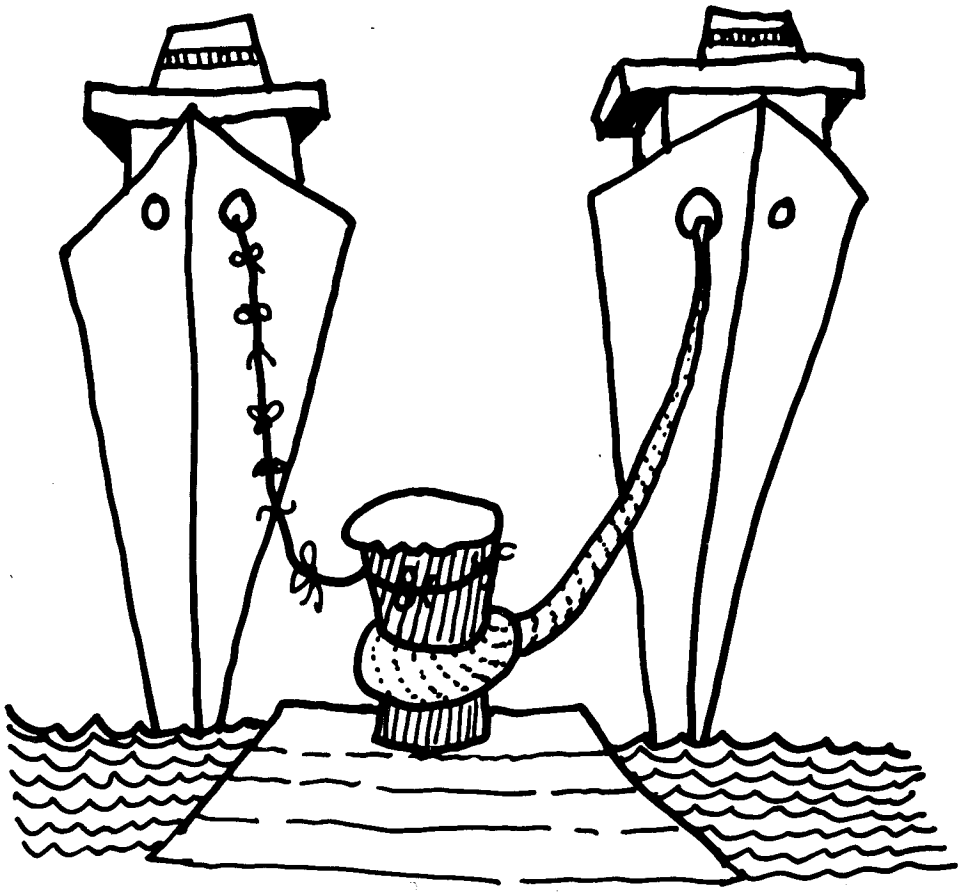
What are the parts?
What does each part mean?

What assumptions are present in each part?
(We always make assumptions, but seldom state them.)
What parts exist that bear on the problem, but were not specifically stated?
(e.g., Humans normally strive to stay alive!)

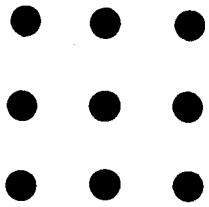
Most students fail to do this first step well ***because*** they limit themselves to their ***own*** point of view. As people mature (something we should ***continue*** to do throughout our entire lifetimes), they learn how to recognize the viewpoints of others. This does NOT mean we have to ***accept*** a different set of ideas. It ***does*** mean that we genuinely ***consider*** other points of view. If you came from the big city, how do "hicks" view the same issue? If you came from the farm, how do "city-slickers" see it? How does the opposite sex view the question? How do "old fogies" (like the authors) view it? Is the issue of equal importance to the different races? to different religions? to people in different economic levels? to those with different political persuasions? to people in different countries? The greatest sign of immaturity is to regard all these different views as a simple case of "I'm right and they're wrong". You have done the job properly when you can present the ***opposing*** views in a defensible and convincing manner.

To get all the pieces available, draw upon as many ***divergent*** sources as possible. Now you are ready for the second step: Put the pieces back together in a reasonable way. Here you can follow the basic procedures of WRITING discussed in Section 8.5, page 95.

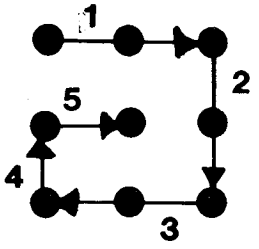
Remember, a lot of threads wound into cords and the cords wound together into a rope give you a much stronger product than each thread tied end to end.



We will always encounter problems which seem to defy analysis at first glance. But after a while, we can USUALLY develop a solution. If we focus on the ANSWER, that is an error in thinking. What we need to do is FOCUS ON WHAT BLOCKED OUR THINKING in the first place! When we learn to identify these MENTAL BLOCKS, we will be able to eliminate them in subsequent problems. As an example, try the little problem of connecting the nine dots in this pattern using straight lines connected end to end. The problem is to use as FEW straight lines as possible.

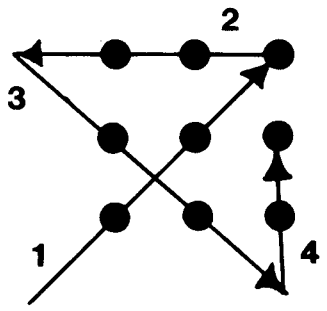


One solution uses five lines—but it CAN be done in fewer.



TRY this problem again BEFORE you turn the page for a "BETTER" solution.

The "BETTER" solution, using only four lines, clearly shows a MENTAL BLOCK to our original thinking. In the five-line "solution", we ***assumed*** that we had to stay inside the little square. That assumption BLOCKED our thinking. Now, focus on that MENTAL BLOCK and ***not*** on the "4-line-answer". Then read the problem again and try for a "less-than-4-line" solution. (One is shown on the bottom of page 97).



Once again, the MENTAL BLOCK becomes obvious when we look at a "3-line-solution". The rules didn't limit us to lines going through the ***center*** of each dot.

Finally, look on the bottom of page 99 for a "1-line-solution". The MENTAL BLOCK in this case was assuming that you couldn't fold the paper.

[If you enjoy this, ask yourself if there IS a "ZERO-line-solution". If you can't figure it out, try working on it with a "group-of-three" (page 44).]

Now, apply this LOOKING FOR MENTAL BLOCKS ***each*** time you struggle with a problem, and then find a solution.

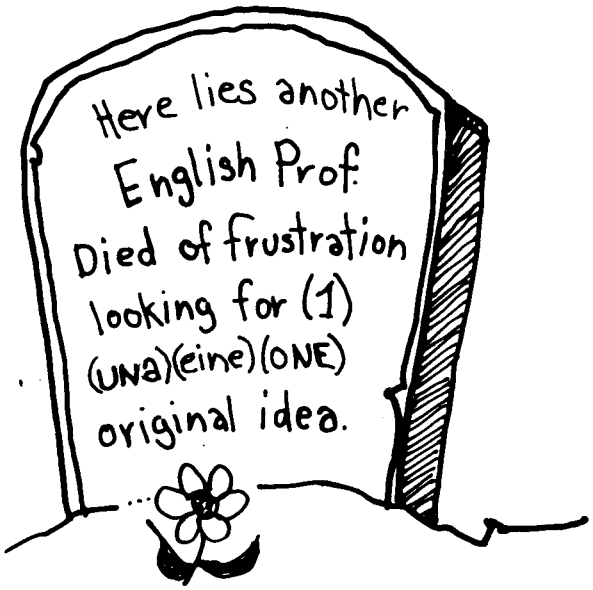
Some good references are:

J. L. Adams *Conceptual Blockbusting*, New York, W. H. Freeman Co., 1974 (for ways to overcome blocks to thinking)

M. Gardiner *Aha, Insight*, New York, W. H. Freeman Co., 1978 (for taking fresh, and simpler, looks at mathematical problems)

E. R. Emmet *Learning to Think*, Buchanan, N.Y., Emerson Books, 1980 (for formalizing logical reasoning)

8.5 WRITING



When you have a writing assignment, don't pity yourself . . . pity your poor teacher!

Just imagine how horrible it is to have to read and grade some 100 renditions of "The most interesting person I ever met" (48 mothers, 42 fathers, 8 ministers and 2 girlfriends). That's followed, one week later, by 100 near-carbon-copies of "How Mankind Changes the Environment". Disgust becomes nearly permanent the third week when only two stacks emerge for the topic "The Difference Between Men and Women".

Give your poor teacher a break! If you treat your teacher to an original idea, to a different feeling, to a fresh viewpoint, you will probably have a lot of other sins forgiven. Bad spelling, incorrect punctuation, and wrong tenses will be marked. BUT, they probably won't cut your grade half as badly as they would in a "typical" paper.

With this in mind, any writing assignment needs to be thought of as THREE jobs:

1. Organization and Development.
2. Revision and Editing.
3. Proofreading.

8.5a Organization and Development

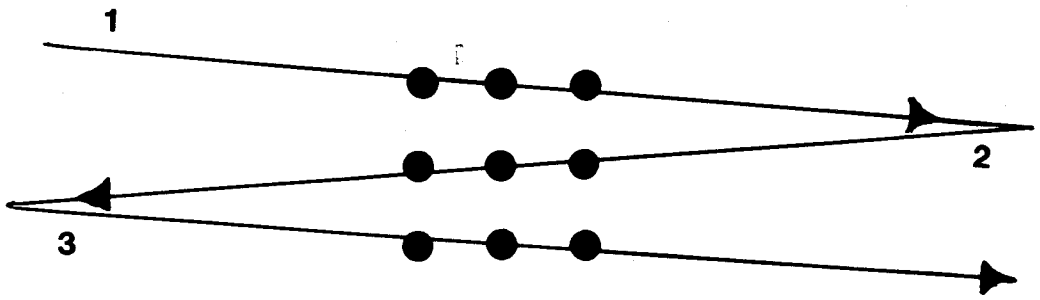
This involves a collecting of your knowledge, opinions and experience, plus data from your references. While it's true that you need to have your TOPIC ***in mind***, you have not thoroughly defined even the major idea that your paper intends to prove, yet. Students who start ***writing*** at this point simply wind up "practicing jump shots" at their waste basket. After you have made notes on your knowledge, ask yourself whether this knowledge is sufficient. "Do I need additional references?" "Are there things that are ***not*** known by anyone?" "What premises did the authors of my references have in mind?" NOW you can start to put some shape to these notes (an excellent exercise while you're simply walking, showering, or brushing your teeth). As the pieces start to fit together, you are developing the ***major idea that this paper is to prove*** (your TENTATIVE THESIS STATEMENT). Your "Idea Cards" (page 43) will come in handy at times.

Next you need to organize your notes into a TENTATIVE OUTLINE (but include sufficient detail so that you don't forget the logic which gave you that order). Then, try to write a rough draft. This will ***test the order*** of your tentative outline. If the ***order*** is working, ask yourself whether the THESIS STATEMENT is really worthy of support. If everything is still reasonable, defensible, AND HAS AN ORIGINAL IDEA IN IT, you are ready to write the body of the paper. The introduction CANNOT be written first, so continue in rough draft. Keep your purpose in mind, the audience you are addressing, the scope of your coverage and any attitudes that you wish to develop. What knowledge and/or opinions does your ***reader*** have?

With the body of your paper in rough draft you can now write your introduction and present your THESIS STATEMENT.

8.5b Editing and Revision

These are now done on the ***rough draft.*** You are looking for concise statements, for coherence, for an easy-to-read style. The sentence patterns will greatly influence what the READER perceives



as he/she goes through the paper ***for the first time***. Try it out on a friend to see if he/she reacts to it ***the way*** you want your ***reader*** to.

8.5c Proofreading

Only as a ***final*** step, PROOFREAD the paper for spelling, punctuation and grammar. When you have checked it thoroughly, get another person to repeat the process.

8.5d References

Excellent references for EACH of the 3 steps above include:

For ORGANIZATION and DEVELOPMENT

Campbell, W. G. and Ballou, S. V., *Form and Style, Theses, Reports, Term Papers,* 5th Ed., New York: Houghton Mifflin Co., 1978 (This includes very helpful sections on the use of the library and preparation of bibliographies.)

Houp, K. W. and Pearsall, T. E., *Reporting Technical Information*, 4th Ed. Encino, Calif.: Glenco Publisher, 1980. (This has many good examples and useful hints on resources and library use.)

For EDITING and REVISION

Casty, A., *Building Writing Skills*. New York: Harcourt Brace and Jovanovich, 1971. (Chapters 8 through 12 of this programmed text are excellent and easy to use. This book also contains some organization and development ideas.)

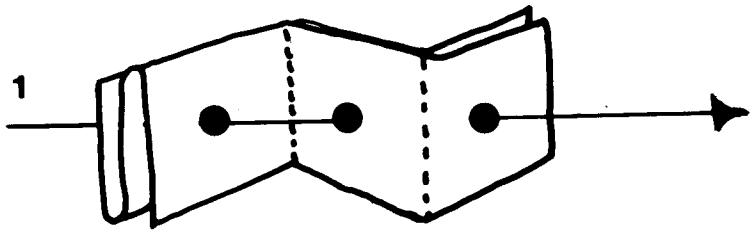
For PROOFREADING

Hook, J. N., *Competence in English*, 2nd Ed. New York: Harcourt Brace and Jovanovich, 1977. (This has easy to identify sections in a programmed text format. It is an excellent book to keep on your desk.)

8.6 THE LIBRARY

Your college's library contains a world of information, NOT just books. Try the following pop-quiz: "How would you locate the following items?"

a. The book reviews from last Sunday's *New York Times*?
b. The author of the quote "When I was one-and-twenty, I heard a wise man say, give pounds and crowns and shillings, but not your heart away."?
c. The periodicals in which W. L. Katz is currently publishing?
d. The producers of, and current prices for, 6 inch stainless steel pipe?
e. Reproductions of the Dutch masters (***not*** the cigars)?

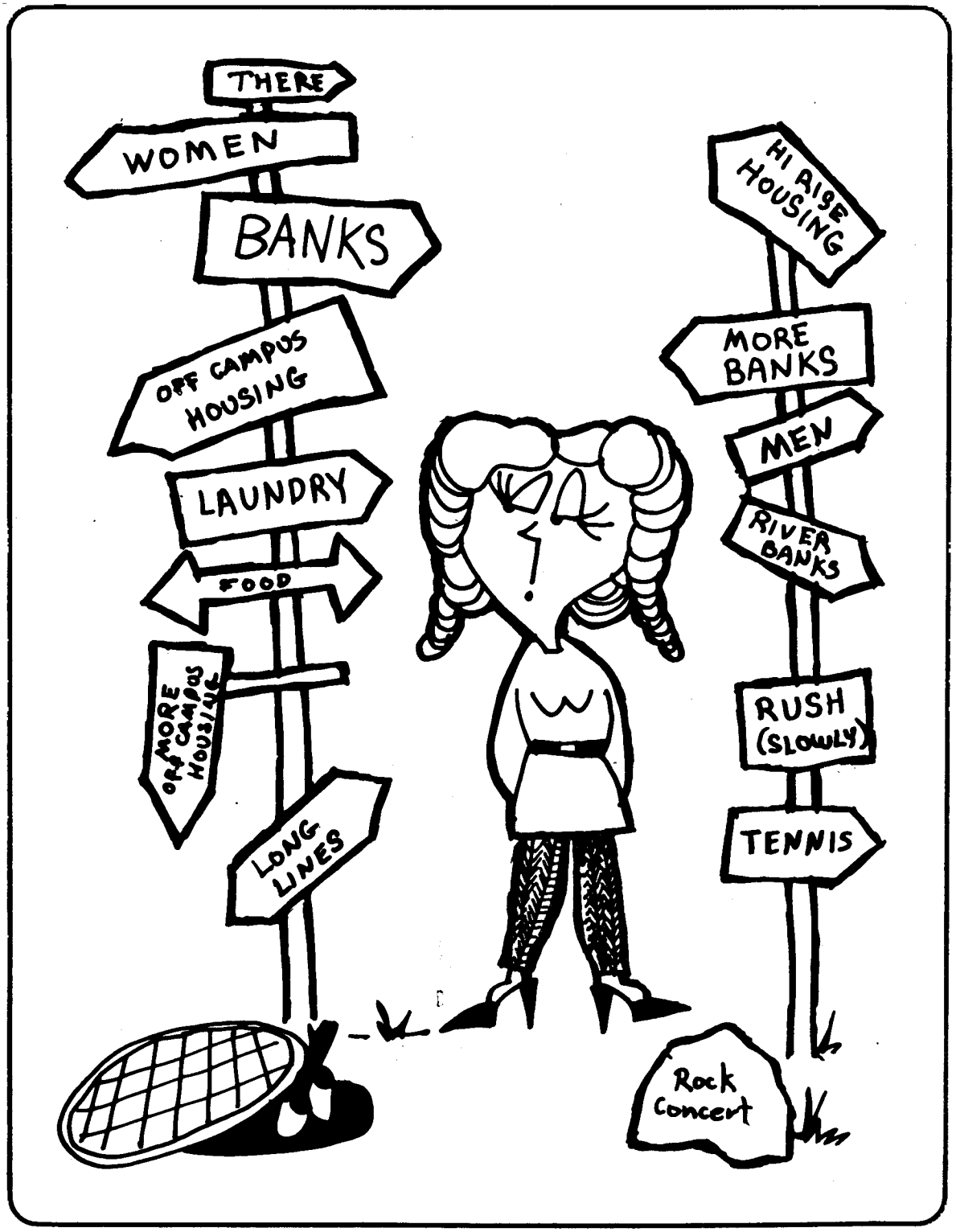


f. A topographic map of Madagascar?
g. The Tokyo telephone directory?
h. The current members of the U.S. Senate ***Ways and Means Committee***?
i. All the books dealing with limnology?

That list could go on until you couldn't lift the paper it was printed on, but it would still never ask a question your librarians couldn't answer! For students who have not FULLY utilized the library yet (you WILL), the greatest single resource is the ***mind*** of the librarian. Any college librarian will gladly supply you with lists of services that are available, location guides, special facilities, and how YOU can benefit from all these resources. For any course, the textbook is ONE resource; your prof is a SECOND resource; and your library has THOUSANDS of additional resources. Even materials that are not in your library's collection are available ***through*** your library (e.g., "interlibrary loans").

The first two references in the previous section (Campbell and Ballou, and Houp and Pearsall) are excellent guides for finding information in the library, and for the form to use for footnotes and references. When these fail, or come up short, YOUR LIBRARIANS remain your ***best*** resources. You'll be happy you got to know them.

chapter 9 NONACADEMIC MANAGEMENT: It's a Weird World Out There!



chapter 9
NONACADEMIC MANAGEMENT:
It's a Weird World Out There!

A large portion of your time and energy, even as one of the most serious of students, will go toward nonacademic pursuits.

For most students many new chores will arise, things that were simply taken for granted at home. This chapter has a few "horsesense" type pointers which may make some of the tasks of daily living easier to handle. It also has some bits of philosophy that you may wish to think about.

9.1 FRIENDS AND ROOMMATES

Everyone wants friends! All students worry somewhat about whether they'll be able to make friends.

Every student DOES make friends. For some it is great fun and leads to lasting and meaningful relationships. For others it can be a disaster. The problem is, how do you go about actively meeting new people without getting into detrimental or compromising situations?

Since your friends WILL strongly influence you, it's an ***extremely*** good idea to take the necessary time to choose ***good*** ones. The fact that you're reading THIS book already indicates your excellent taste in authors. Now apply that same remarkable insight in selecting your associates. While we can't guarantee that you will avoid getting involved with losers, there are a few simple rules that will help.

9.1a "Good Friends" Rules

1. Keep a clear distinction between FRIENDS and ACQUAINTANCES. Acquaintances CAN become friends, but that should happen only after you have had sufficient time to get to know them ***very*** well. This should include getting to know how their viewpoints ***change*** over a period of time.

2. Make acquaintances with people from DIFFERENT groups. If you meet John and then John introduces you to Jane, and then they introduce you to Bob, etc., you are only using

John's criteria for friends. That is extremely limiting and can rapidly tie up your available time with a very narrow group.

3. Meet new people in situations where they are DOING things that you consider valuable. Thinkers are more readily found in libraries than dropping 3-cushion shots in poolhalls. Serious students will be studying after class, rather than competing to see who can chug-a-lug a pitcher of beer the fastest. Athletes are found at the practice field instead of in front of the junk food vending machines.

4. Take the initiative both in meeting people and in ***selecting*** those with whom you will spend additional time. The person in class or at a gathering who does not walk up and introduce himself/herself to you is probably just as shy as you are. But be equally prepared to say "excuse me–good-by" as to say "howdy–pleased to meet you".

5. PERIODICALLY (AND PRIVATELY) REVIEW JUST HOW YOUR FRIENDS AND ACQUAINTANCES MEASURE UP TO YOUR STANDARDS.

If they are contributing very positively in helping you reach ***your*** goals, that's great. If they cost you too much time, or use your money, or cause you to wonder (even slightly) about what you're getting into, it's time to move away from these ACQUAINTANCES and to develop new ones. THIS IS NOT AN EASY ANALYSIS TO MAKE, BUT IT IS AN ***EXTREMELY*** IMPORTANT ONE. Try very hard to stand back and view objectively where each relationship is leading you.

True friends CONTRIBUTE to your life rather than make demands on you. They also appreciate your worth as a person WITHOUT TRYING TO CHANGE YOUR VALUES. (But, true friends WILL warn you to "stop and think".) These criteria make quite reliable checks for helping to distinguish between a friend and an acquaintance. The real key toward developing WORTHWHILE relationships is to realize that you CAN expand your circle of friends and acquaintances ***continuously*** to include more and better people.

6. DON'T LIMIT YOURSELF. Just as your college experience will broaden your horizons, your friends and acquaintances should do the same. As you grow, and mature, your circle of friends should also change, expand and improve.

9.1b Roommates

It's the best of all possible worlds if you are able to find a ROOMMATE who also fits into the FRIEND category. Whether you live in a dorm or off-campus, this may well be your first experience in living with someone other than a family member. This person (or persons) can affect your lifestyle more than anyone else. A give-and-take adjustment is inevitable. ALL parties should be willing,

to an equal degree, to make ***minor*** concessions. If MAJOR concessions are demanded, you probably have the wrong roommate(s) and you should be prepared to CHANGE. Under MAJOR concessions would come:

lack of respect for your study schedule
not allowing you to sleep when desired
bringing in overnight guests
taking or loaning your possessions without permission
not paying parts of joint bills on time
etc.

But such things as:

not picking up clothes
drinking the last soft-drink
not making beds on time
favorite foods differences
time spent on the telephone
etc.

are only MINOR items that should be conceded on an equal basis. When minor irritations and annoyances arise, CLEAR THEM UP IMMEDIATELY. A series of little, silly, minor issues can too easily become a major conflict. Above all, however, discuss any problems PRIVATELY with your roommate(s) ONLY.

If ROOMMATE CHANGES are needed, go to the campus-housing (or off-campus-housing) office. Be prepared to consult the student legal service if an off-campus lease is involved.

ROOMMATES with the ***same*** (or a closely related) major are frequently more successful both academically AND personally.

9.1c Mentors (Faculty Friends)

Being in college will give you a unique opportunity to make some really good friends who are outside your normal "peer" group. Many faculty work long hours at lower pay than they could make in other jobs because they truly love students. These rather special people consider it a ***privilege*** to work with students. Some colleges have special volunteer organizations of such faculty as "mentors"* who provide time to visit with students. They can help you broaden your intellectual horizons, consider alternative career goals, improve your study skills, or "just be there when you need someone".

For many students, college (at least at first) can be a lonely, frustrating experience. Having someone you respect and admire to talk with when you're lonely or scared, when you feel the need of friendly advice, or when you just want the thrill of having an intellectual discussion, can be a fine thing.

Check with your student services office for information on campus "mentors". If there is no formal program, make an appointment to visit with a faculty member ***you*** would like for a friend.

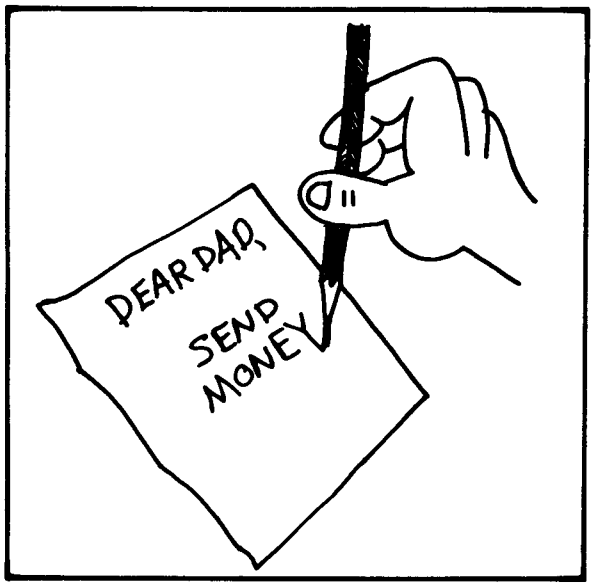
*MENTOR: "A wise and faithful counselor" (Webster) [See also Homer's *Odyssey*.]

9.2 FINANCIAL MANAGEMENT

There are only two very popular financial plans used by students:

1. follow a written budget, or
2. spend money if you have any and try to borrow when you run out.

The first plan removes worries from the students who use it. The second plan removes ***students*** from the "worries" of being in academic life.



In making your budget, first separate the large once-a-term expenses such as tuition, fees, textbooks, room/utility/phone/pet deposits, dorm and/or food-plan (if you live on campus). Then set up a monthly budget for all your ***recurring*** expenses. This monthly budget should include at least all items shown in Table 9.1.

Table 9.1. Budget

FOOD	Even for those on a meal-plan there are times you'll want more (or something different). We also know that proper brain functioning depends on a good DAILY diet.
RENT	Unless you have paid for a dorm room.
UTILITIES	Electricity, water, gas, and even sewage are required payments for anyone living off campus.
TRANSPORTATION	Even if it's only bicycle or shoe repairs, or wax for your skis.
SUPPLIES	Extra books, notebooks, pencils, blue-books, copier cash, etc.
PHONE	At least the coins to get the operator if you need to call home to request (or offer to send) additional cash.
LAUNDRY and/or DRY CLEANING	Mom won't be doing these chores anymore.
PERSONAL SUPPLIES	Toothpaste, soap, deodorant, razors, shampoo, etc. are now drug-store items. They won't just "appear" in the bathroom.
REPAIR/REPLACEMENT	Calculators die; alarm clocks, lamps and glasses get broken; umbrellas get lost; and shoes and clothing *do* wear out.
RECREATION/ENTERTAINMENT	These costs can vary enormously, depending upon your resources, but you should have SOMETHING set aside to REWARD yourself when you've done your work well!
"OOPS" FUND	The first time, and the second time, etc., that you make up a budget, you WILL forget something, such as haircuts, parking tickets, postage stamps, dentist bills, light bulbs, etc. You will also guess incorrectly on some of the other items. Remember that laundry costs more now because sheets, towels, etc. also have to be washed—not just your underwear. The "OOPS" fund gives you a little cushion while you are learning to budget wisely. DON'T use it for a party on the first day of the month!

Your CHECKING ACCOUNT may not be your first one, but it is DIFFERENT when you open one in a strange town. The banker in your home town may have allowed late deposits or payments, or slight overdrawals of your account, because he knew your family. That WON'T happen in a college town! You will ***have*** to keep an ***accurate*** and ***up-to-the-minute*** record of your balance. REMEMBER TO DEDUCT the monthly service charge and/or "cost per check" charge! The bank will deduct these charges BEFORE it will honor your checks. DON'T EVER write a check in hopes of rushing to the bank with a deposit before it clears. If you do BOUNCE A CHECK (or deposit a bad check) the BANK will charge you a penalty, IN ADDITION TO the $5 to $20 that the business establishment charges you. In addition, writing "hot checks" (even "innocently") is against the law. In many states, it is a felony. The authors know of a man who is serving a life sentence under the habitual criminal act, whose only ***crimes*** were writing 3 "hot checks" when intoxicated.

9.3 HOUSEKEEPING

Even small scale (one dorm room) housekeeping, but especially larger scale (apartment) housekeeping, is closely related to the operation of your budget. There must be a CLEAR DISTINCTION, understood and agreed upon by ***everyone involved***, between what are JOINT expenses and what are INDIVIDUAL expenses. Just as important is the schedule for making payments, including those for equalizing the joint expenses. These equalizing payments should probably be made weekly (instead of monthly) so that neither party runs out of cash before the month is over. All receipts for joint expenses should be initialed by the purchaser and stored in a safe common place until it's time for an equalization payment. Be sure that each receipt indicates the item(s) and/or service(s) purchased.

Just as money must be carefully accounted for, so must everyone's duties. Again, there can be JOINT duties such as washing dishes, housecleaning, shopping and cooking. AND there will be INDIVIDUAL duties such as making beds, ironing, and sewing (yep, that too!). JOINT duties should usually rotate from week to week. This avoids the problem of having one roommate feel that he/she got stuck with the most miserable chores. When it is the other person's turn to do ANY chore, make a concerted effort to LET THEM DO IT THEIR OWN WAY without complaints and without your redoing the same chore. (This makes for harmony.)

For students who will do their own cooking, both the shopping and cooking jobs should belong to the same person on a given week. Otherwise it could cost you one trip to the store for a dozen eggs; a second trip for the butter to fry them in; and a third trip for salt. (You finally eat the darn things rather than make a fourth trip for pepper.) Even then, maybe you just have two fried eggs for breakfast without toast ("We're out of bread.") or sausage (also missing from the refrigerator)–and you drink plain water to wash them down. All shopping, except for extreme perishables, should be done on a once-a-week basis to save both time and money. (Bread lasts longer than a week in the freezer of your refrigerator.) To avoid forgetting necessary items, you should keep a shopping list next to the telephone. When you use the

next-to-the-last light bulb or empty the last of the salt into the salt-shaker, you should ***immediately*** add these items to the shopping list.

For pet hates ("I ***REFUSE*** to eat Brussel sprouts!") each member of the household should have an equal size rejection list. Be careful, however, not to arrive at such a long list that you exclude some important food group from your diet. Proper DAILY nutrition is essential for optimum brain function–and that's why you're in college in the first place.

Housekeeping is more important than it might seem at first glance. ***Sharing*** chores and responsibilities, ***"talking out"*** problems before they become crises, and ***being thoughtful*** of others are all ***invaluable*** learning experiences–for a future marriage and, indeed, for the kinds of group interactions you will experience for the rest of your life. You can look on chores with a snarl or with a smile. (If you glance in a mirror, you'll discover that you look better smiling.) If you want to "whistle while you work", turn every chore into an "efficiency game". Play the game by thinking as you work of how you could do that job a little better or a little faster. Before you know it, doing the dishes, mopping the floor, or making the bed becomes more like fun–***and*** the practice of thinking about improvements and efficiency becomes a habit useful in your studies and in your ultimate career.

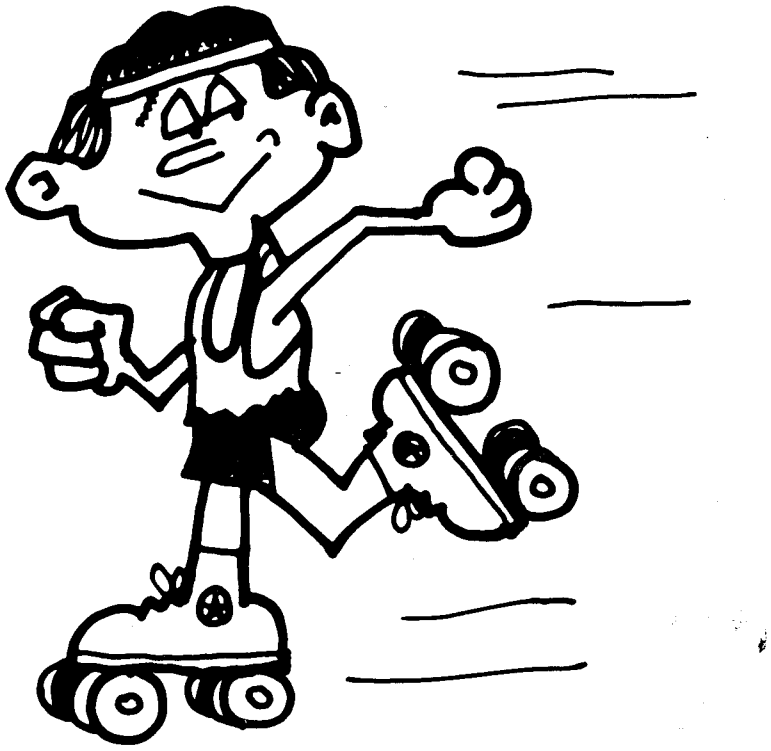
9.4 ERRANDS

How can you do all your studying AND:

run to the post office?
pay all your bills?
deposit a check at the bank?
pick up your dry cleaning?
get tickets for the big game?
get a haircut?
go to the drugstore?
report that your phone is out of order?
go to the health center for your sore throat?
check on getting a grade changed?
etc., etc., etc.?

In fact, you COULD spend almost all day just running errands. The ***trick*** is to condense as many NECESSARY errands as possible into ***one single trip***. Avoid the peak crowd times of noon and 5:00 pm. Whenever possible, split the errands with your roommate. (One of you can pick up the mail for both while the other picks up both persons' dry cleaning.) Unfortunately, haircuts and health center care can't be done by another. But in these cases, where long waits are almost inevitable, many of your study chores can also be accomplished. Make it a rule to always carry a book, or flashcards, or a set of notes, so that any wait-time (including bus or subway travel) becomes STUDY time instead of WASTED time.

9.5 TRANSPORTATION



A car? The bus? A bicycle? Roller skates? Snowshoes? Shoe-leather? However you do it, getting back and forth consumes too much of most students' days. A car sounds very tempting to most students, UNTIL they find that student parking is located about two miles beyond the furthest outpost of recognizable civilization on most campuses. A student parking permit is usually a written permission to STAY AWAY from all areas where you want to go. Any tiny time savings for the "I'll park here for just a minute." student drivers is ***more*** than consumed in recovering their towed-away cars or waiting in line to pay for a fist-full of parking tickets before they can reregister or graduate.

Public transportation (where available), a bicycle, or simply walking are frequently more desirable in the long run. But however you come and go, try to schedule just ONE ROUND TRIP PER DAY. Carry ***everything*** you'll need for your day's work. That way those valuable (and efficient) pre-class and post-class hours will not be sacrificed to transportation.

Incidentally, to maximize organization and minimize loss of property, have a backpack or briefcase that will contain ***all*** of your necessary items. Be sure that you pack it ***systematically*** and ***efficiently*** so that you can ***find*** what you need.

9.6 LOST AND FOUND

It appears that the absent-mindedness for which profs are so famous may be severely contagious! Students get distracted and forget literally TONS of things every year. Fortunately, MOST lost items do get turned in to the lost-and-found counters. ***Unfortunately***, the owners of MOST items can never be identified! 100 black folding umbrellas look very much alike—as do the texts, not to mention calculators, back-packs, notebooks, pens, and even jackets. This time your mother WAS RIGHT! You ***do*** need to put your name (and preferably your phone number) onto EVERYHING THAT YOU EVER PUT DOWN on a desk, table, or the classroom floor. This is ***particularly*** important for your personal (and irreplaceable) class notes.

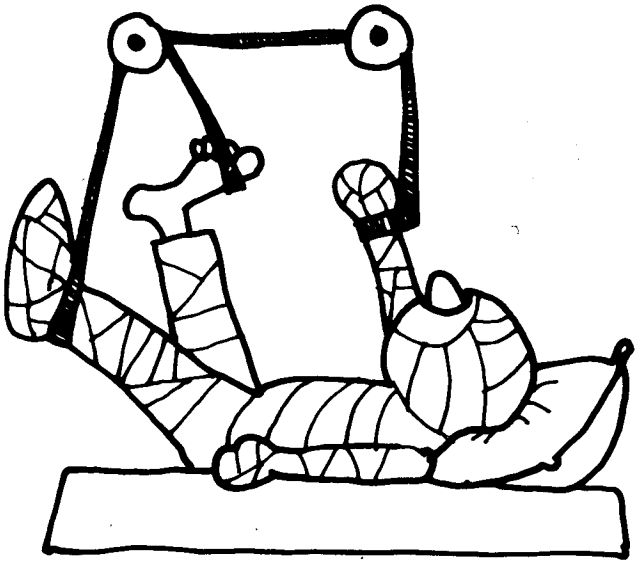
While you're at it, why not label everything, right down to your underwear? Probably, you won't be leaving that in the classroom, but yours could suddenly become indistinguishable from your roommate's. Labels also help recover clothing accidentally left at the laundromat.

Incidentally, don't forget to be thoughtful about taking a few extra minutes to deliver someone else's possessions that you ***found*** to the proper campus "lost and found" location.

9.7 EXTRACURRICULAR ACTIVITIES AND ORGANIZATIONS

How would you like to scuba-dive? Learn to fly? Go skiing? Participate in intramural sports? Be in student government? Work on the student newspaper? Become a spelunker? It all sounds pretty fascinating and attractive to most students entering college. Also, when you were in high-school, you probably were involved in a long list of the available activities without having your "study time" seriously affected.

COLLEGE IS DIFFERENT! The activities are there but it is very easy to become OVER COMMITTED. It's an ***extremely*** wise idea to limit yourself to ONE (or a maximum of two) extra-curricular activities UNTIL your academic progress is WELL UNDER CONTROL. ***When*** your class-work is rolling smoothly and your schedule is working, you will know how much TRULY FREE TIME is available to you. The clubs, organizations and other activities will still be there at that time. You will also get more out of these activities and have more fun in them when that little voice is not there saying, "You're doing this at the expense of your professional preparation".



9.8 DEALING WITH ILLNESS

Sometime during your college years you will probably wind up sick in bed. The missed classes and "getting behind" can weigh very heavily on your already miserable-feeling body. What's to be done? ABOVE ALL, DO WHAT THE DOCTOR ***TELLS*** YOU TO DO! GET WELL AS QUICKLY AS POSSIBLE!

For cases of MINOR ILLNESS (one-to-three days missed), there is no serious problem ***IF*** you are truly up-to-date at the time the "bug" strikes. If the illness still permits you to study, go over your text first (like standard pre-class preparation). Have one of your friends from that class make a copy of his/her notes for you. These notes won't be as good as yours, but they are much better than no notes at all. Go over these notes, with your friend if that's reasonable, and then carefully REREAD the text. Now make a set of ***your own*** notes using a ***combination*** of your friend's notes, PLUS the high points gleaned from the text. As health permits, do any homework assignments.

More commonly, you feel so lousy for a day or so that all you want is quiet, sleep and lots of liquids. Nonetheless, have a friend get you a copy of the notes, but do the other steps listed above AFTER YOU START FEELING BETTER. That's one of the reasons you scheduled "catch-up" time (page 10).

Upon recovery, but not until you have made a set of notes for yourself and tried the homework, GO SEE YOUR PROF to clear up any items that are in doubt. If you go to see the prof ***without*** having done the preparation, you will almost invariably be told to get notes from a classmate!

If your illness happens to fall on an exam day, GET WELL FIRST! ***WHEN*** you have recovered, go to your prof and explain that you were sick during the exam (and be prepared to verify it). Most profs have a "missed exam" policy or some arrangement for a make-up test (sometimes a bit tougher than the regular test was). Don't attempt a make-up test unless you are FULLY recovered from your illness (***and*** following the rules from Chapter 4 in this book).

If your ***assignment*** is late because of minor illness, don't expect too much sympathy. If you are doing your work properly (WHEN WORK WAS ASSIGNED and NOT ***just before*** it was due), this problem won't arise. Very few profs will listen seriously to such an excuse, ***because*** they are opposed to ***last-minute work.***

For the rare cases of MAJOR ILLNESS, it's a different ballgame. You now have a ***lot*** of work to do in EACH of your courses AND you're trying to do it without the benefit of having heard the lectures. This case requires the type of analysis that is illustrated in Chapter 6 (page 74). Make this type of ***realistic*** appraisal to determine whether you should hang in there on all of your courses or drop something to reduce the load. The results of this analysis should be discussed with your advisor, AS WELL AS with the profs in your courses. Even when the drop-date has passed, virtually all schools have an emergency drop procedure for serious illness cases. Just remember that CATCHING UP requires more time than STAYING ON SCHEDULE.

If major illness occurs at the end of the term, it is usually possible to get an "incomplete" as a grade in the course. If you ever receive such a grade, consider the time requirements for completing the course(s) when you register for the following term. You may need to take a lighter-than-normal class load to allow time for making up incomplete work.

If your illness is both SERIOUS AND PROLONGED, your advisor may suggest withdrawing from school for the term. In such cases, you will simply start all over again in a later term. If your college distinguishes between "withdrawal ***passing***" and "withdrawal ***failing***", be sure to discuss your situation with each prof to reduce the chances of a "withdrawal failing" being awarded.

9.9 MORAL, ETHICAL AND FAMILY CONSIDERATIONS

College WILL introduce you to many things that were not a part of your previous life. That is one of the major advantages of going to college—to gain a broader perspective of the world. On the other hand, these new viewpoints and experiences can also bring what seem like ***tremendous*** pressures to change ***even your most basic*** values. Some new things HAVE been added to your frame of reference. At first glance, the new viewpoints can easily seem so plausible that you wonder how you could have been so naive up to this point! These new viewpoints can seem to be the ONLY acceptable ones for mature thinking adults. But when you stop to think about it, you KNOW that the "mature thinking adults" of this world DO NOT AGREE with each other! How could this be the case when things seem so black-and-white? The real world has far more grey areas than it has black-and-white ones. If abrupt change seems to be forcing itself on you, just hold off long enough to see whether you have given your OLD IDEAS (surely held by many responsible, mature, and thinking adults whom you respect) an ***equal*** consideration. Abrupt changes are really NOT necessary. A new viewpoint will still be available, should you ultimately decide on it. Any fundamental moral or ethical question DESERVES A THOROUGH EVALUATION. To make your evaluation as thorough as possible, be sure that ALL sides receive an equal hearing. This is something like a debate. A good debate does not really RESOLVE an issue, but it DOES EXAMINE BOTH SIDES. One of the true signs of mature behavior is looking for the HELP which will ***defend*** the old views

as carefully as the new views are being presented. Many profs, a minister, and (especially) your parents can be extremely helpful WHEN you approach them on this adult level.

Both relatives and your high school buddies will seem drastically different the first time you go home from college for a visit. But it wasn't the home town that changed so much—you did!

Of course, YOUR CHANGES will be equally apparent to your home town friends and family! If you can resist the temptation to try to change others, then they will find it easier to relate to the new you.

Your changing relationship with your PARENTS is especially important. There may be times when you disagree with them strongly. There may be times when you feel that they are trying to control your life. Regardless of what happens, you can ALWAYS DEPEND ON THE FACT THAT THEY ARE *TRYING* TO ACT IN *YOUR* BEST INTEREST. One simple rule has allowed ***many*** students to retain (or regain) a good working relationship with their parents: WAIT FOR 5 SECONDS before you ***ever*** respond in disagreement. It allows you time to see their point and shows that you are listening.

As every college counselor knows, family relations change when one of the members leaves for college. Even divorce between parents is not an uncommon occurrence. You must ACCEPT the changes that occur within your family WITHOUT FEELING that ***you*** are responsible for them. ***You*** are changing without your family being responsible for these changes. The argument applies both ways.

9.10 DISTINGUISHING CATASTROPHES FROM PROBLEMS

When crises occur (and they ***will*** during your college years, as they do in all of life), be ***prepared*** to handle them. Successful people are skilled in "crisis management". Although ***you*** are the only one who can ***ultimately*** manage your own crises, there ***is*** help available. Be willing to talk about BIG crises with your parents, with a pastor or rabbi, with a faculty "mentor" (page 103), or with another truly close friend.

All crises fall into one of two categories: CATASTROPHES (the things you can do ***nothing*** about) and PROBLEMS (which, by definition, have SOLUTIONS). It is wise to think ahead about how you can handle crises. The information in Table 9.2 can give you a framework for this advanced planning, and a reference to look back on when a crisis really occurs.

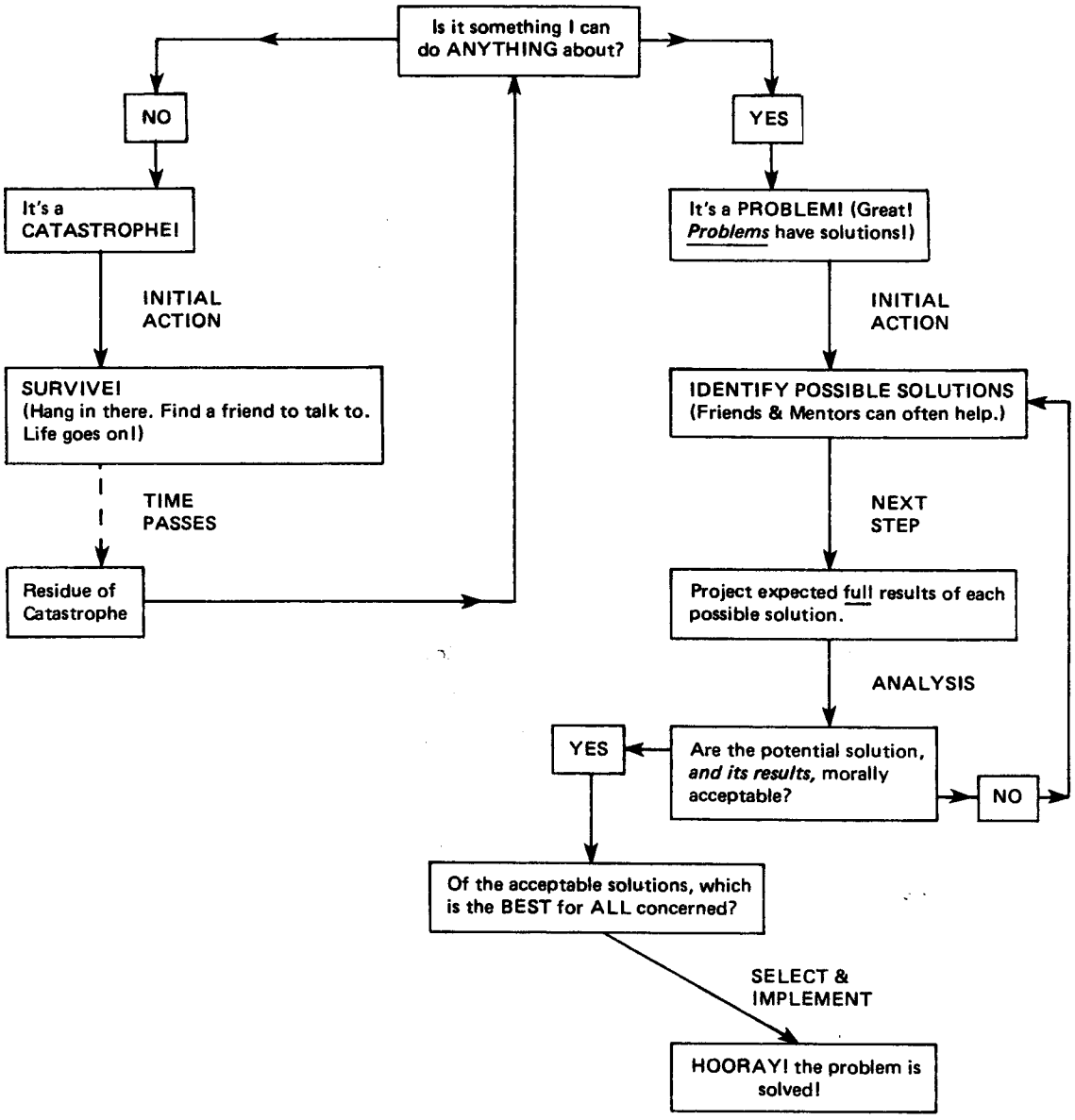
9.11 "BRAINS" AND "HEARTS"

There are areas in our lives that cannot be handled ***entirely*** by logic, reasoning, and the scientific "rules of evidence". "Love" and "faith" are such areas. Although it is dangerous to be "ruled by your emotions", it is at ***least*** as dangerous to attempt to make ***all*** of life's decisions by "pure logic".

Your college career can help you learn to tackle many of life's problems on the basis of improved knowledge and reasoning skills. But, do ***not*** neglect the nurture of ***love*** and of ***faith*** during your college career. What "your heart tells you to do" will always be important in deciding what's ***right*** and what's ***wrong***. ***Then*** your continuously improving reasoning skills can help you find the ***best*** ways of doing the ***right*** thing.

Faith can grow stronger by continuous testing. Love is the only treasure we have that grows larger as we give it away. As your time in college helps to expand your mind, find ways for it ***also*** to help expand your heart. Then you will truly leave college as a better person than you were when you came.

Table 9.2. Crisis Analysis



Backward—Foreword

This book was designed to get you as quickly as possible into ***techniques*** for surviving college, making the best possible grades, and learning as much as ***you can***. The basic idea has been to improve ***efficiency*** to provide maximum FREE time for other than required academic activities. These "nonacademic activities" are still a valuable part of your total learning experience in college. If you have ***used*** our suggested techniques (modified as necessary to fit your particular needs) and found them valuable, then the ***basic*** purpose of this book has been served. If you have only ***read*** up to this point without trying the techniques yet, let's reserve judgement until you do.

For whatever reason you reached this point, we want to drop a little "philosophy" on you that might normally be found in the Foreword of a book (but which, in this book, might have scared you away before you could get at the "techniques"). If you feel up to it, read on. (If not, what the heck! Most philosophers are never really appreciated during their lifetimes anyway!)

This philosophy of ours is directed to ***beyond*** surviving college and asks you to think seriously ***now*** about the kind of person you would really like to be ***for the rest of your life***. One of the true keys to "the rest of your life" is your FUTURE ABILITY to grow and to develop as a human being. ***Sometime*** in your life you will want to be able to use your mind and your energies in new directions. You will want your life to be fuller and more meaningful. If that "sometime" really begins during your undergraduate days, you are one of the fortunate students. Our lives are spent (very roughly) about 1/3 earning our living, 1/3 sleeping and 1/3 in other pursuits. Your career can be a great "1/3" if you love the field and bounce out of bed eager to enjoy it again each working day. The sleeping "1/3" is marvelous if you can do it with tranquility. It's the remaining and unprescribed "1/3" in which our maximum latitude lies. If we can see with the eyes of an artist, hear with the ears of a musician, touch with the sensitivity of a lover, think with the mind of a philosopher, and feel the expanse of universe about us—then we may truly be called ***educated*** men and women. Then we can both partake, with appreciation, and contribute, with meaning, to the culture that we are a part of.

The QUALITY OF ACADEMIC SUCCESS: Do ***you*** want to be a ***unique*** professional or an "assembly-line product"?

MOST DEGREE PLANS IN COLLEGE CATALOGS ARE DESIGNED FOR THE MASS PRODUCTION OF NEARLY IDENTICAL PRODUCTS.
But, YOU can MAKE YOURSELF *UNIQUE*!

You probably know, or will learn fairly soon, the academic areas in which you do best. EXPLOIT YOUR STRENGTHS! Try to select your major in an area where your strengths lie. As much as possible, take ***more*** courses in this area than the regular curriculum requires.

If you are like most of us, you can identify some academic areas in which you are weak. WORK TO OVERCOME YOUR WEAKNESSES! Consider starting with courses in these areas at a ***lower*** level than your regular curriculum requires. Although this might add a few extra credit hours to

your total college program, it can pay BIG dividends in OVERCOMING a weakness that might otherwise cause ***major*** problems.

You probably have some significant interests in an area quite different from your academic major. DESIGN A ***UNIQUE*** PROGRAM INCORPORATING YOUR SPECIAL INTERESTS. Take as many courses as you can in this "secondary interest" area. Some academic degrees require a "minor field", which you may be able to use for your special interests. Otherwise, use "unrestricted electives" in this area. It may even be worthwhile to consider one or more summer sessions, or even an extra semester, to gain the advantages of "uniqueness". Some "unique" (and rather unusual) combinations that students have used successfully will illustrate what can be gained from planning a college program different from the "production-line model". Think about how you might do the same kind of thing with your ***own*** special interests.

1. Chemistry Major: Used electives to gain 20 credits of a mixture of accounting, economics, marketing, and business administration. (Leading to a career in management in a chemical industry.)

2. Biology Major: Used art as a "minor". (Leading to a career in medical illustration.)

3. Journalism Major: Used combined physical and biological sciences as a "minor". (Leading to a career in technical writing, with an advocation in science fiction.)

4. History Major: Used romance languages as a "minor". (Leading to a highly successful career in diplomacy.)

THE QUALITY OF NONACADEMIC SUCCESS: Do ***you*** want to be the kind of person that ***you*** respect and admire?

MANY STUDENTS LEAVE COLLEGE WITH
LOWER MORAL AND ETHICAL VALUES
THAN THEY HAD WHEN THEY ENTERED
COLLEGE.
BUT, YOU CAN MAKE YOURSELF A ***BETTER*** PERSON!

What you learn in the academic aspects of college is ***not*** the only ***important*** thing to learn. Part of the total learning experience of a good college program lies in gaining a better understanding of, and a higher respect for, ***yourself*** and ***others***. The new insights that college can provide for ***thinking*** through problems, for developing new and improved HABITS (of study, for example), and for working in a ***systematic*** and ***efficient*** way to achieve goals CAN ***ALL*** BE APPLIED TO HUMAN RELATIONSHIPS.

One of the most important keys to effective and rewarding human relationships is THOUGHTFULNESS. Unless you ***consciously*** and ***systematically*** take the time and make the effort to THINK about what you like or dislike about yourself, you will not learn to improve your self-image. Unless you ***consciously*** and ***systematically*** take the time and make the effort to THINK about how you can deal with others more effectively and MORE CARINGLY, you can spend hours with a group

and learn nothing about improving human relationships. It is for these purposes that we suggested that you schedule a regular "thoughtfulness time" each week (page 12).

You may have entered college with philosophical, moral, and religious ideas that simply reflected those of your parents or community. These ideas may have been based on "faith", without any deep intellectual thought. EXPECT to have your whole world turned upside down (at least temporarily) by exposure to persons with completely different ideas and convictions. These new ideas are often presented in a most persuasive way. If you develop doubts about "how you were raised", there's NOTHING wrong with you. This is a normal and healthy part of learning. You may decide, after adequate thought, to change some of your ideas, but you NEED NOT ***destroy*** what you had. Rather, you should use sound thinking to salvage all that is BEST for ***you***. It is particularly important that you build a religious, moral, and ethical structure that is founded on both faith ***and*** thought–that will give you a "world that ***cannot*** be turned upside down". It will help you greatly to identify persons (your parents, a pastor, some professors, some obviously "successful" students) whom you truly admire and respect. Then when tough questions arise, when doubts become problems, and when you must choose what to do (with regard to sex, drugs, religious controversy, ethical decisions, etc.), ask yourself:

"What would those I most deeply respect and those I most dearly love really hope I will do?"

If you answer that question ***truthfully*** and have the courage to act on YOUR considered decision, in spite of the pressures of "peers", then, my friend, you will most truly have learned something worthwhile–for all your life.

A thought for filing away–

"There is no greater pleasure than to be learning something."

–Aristotle

You should begin to understand these famous words at about the start of your senior year. If you're lucky, they can hit you a little earlier.

We hope that this little book has helped you–to learn ***how to learn***, how to organize work more efficiently, and even a little, perhaps, of how to ***choose*** what to learn. If it has done these things, in even a small way, then we're glad that we wrote it.

Rod O'Connor
Tom Taylor
Paul Glenn

College Station, TX
January 1982

LEARNING SCHEDULE for _____ prepared _____ to use until _____

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
12 m.							
6 a.m.							
7 a.m.							
8 a.m.							
9 a.m.							
10 a.m.							
11 a.m.							
12 n.							
1 p.m.							
2 p.m.							
3 p.m.							
4 p.m.							
5 p.m.							
6 p.m.							
7 p.m.							
8 p.m.							
9 p.m.							
10 p.m.							
11 p.m.							

LEARNING SCHEDULE WORKSHEET
for

_____

☐ Initial Trial ☐ First Revision ☐ Later Revision

		A	B	C	D	E	F	G
CLASS OR LAB	ESTIMATED ATTENTION SPAN	CREDITS	ESTIMATED OUT-OF-CLASS HOURS PER CREDIT	TOTAL (A×B)	SCHEDULED PRE-AND POST-CLASS HOURS	HOURS LEFT (C-D)	DAYS TO STUDY (3 TO 7)	ADDITIONAL AVERAGE HOURS PER DAY (E÷F)

"Lowest Efficiency" Times: _____

Best "Wake-Up" Time: _____ am

Work (Job) Times: _____

Organization & Activities Times: _____

Minimum Regular Sleep Time for "Alertness": _____ hours per night

Planned "Thoughtfulness" Time: _____ minutes per week

Really Desired "Free" Times: _____

(FOR DECISION-MAKING NEAR "DROP DEADLINE" and IN PLANNING STUDY FOR FINAL EXAMS)

COURSE	DATA									CALCULATIONS				
	CREDIT HOURS	GRADE						FRACTION** OF GRADE ALREADY DETERMINED*	PRESENT AVG. STUDY TIME [hrs/wk]	GRADE AVG. (%) NEEDED*** ON REMAINING WORK FOR:		NEWt STUDY TIME NECESSARY FOR:		INTUITIVE FACTOR (What do you really think you can do if you honestly try?)
		Desired		Minimum Acceptable		Present				Desired Grade	Minimum Grade	Desired Grade	Minimum Grade	
		LETTER	* %	LETTER	* %	LETTER	* %							

*If in doubt, ask the PROF.

**For example, number of "points" to date divided by total possible "points".

***Calculate "GRADE AVG. NEEDED" by: $\left[\frac{\text{grade ("desired" or "minimum")} - (\text{present grade} \times \text{fraction det'd})}{\text{(fraction remaining)}}\right]$

†NEW STUDY TIME = $\left[(\text{Present avg. study time} + \text{credit hours}) \times \left(\frac{\text{grade avg. needed}}{\text{present grade}}\right) - (\text{credit hours})\right]$

Index

D

E

F

G

H

I

J

R

S

T

U

V

W

X

Y

You (see a mirror)
You can be BETTER 12, 15, 109-111, 113-115

Z

(Zis iz zee end)