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A workshop for building confidence in learning mathematics

Joseph David Rich

NORTHERN ILLINOIS UNIVERSITY

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A Thesis Submitted to the
University Honors Program
in Partial Fulfillment of the
Requirements of the Baccalaureate Degree
With University Honors

Department of Mathematics

by

Joseph David Rich
DeKalb, Illinois

May 1980

Approved: Carole B Lacampagne

Department of: Mathematical Sciences

Date: 12/16/88

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Abstract

This study was undertaken in an attempt to decrease the mathematics anxiety and thereby improve the performance of a group of twenty-four freshman college students in a special admissions program at Northern Illinois University. The study was conducted in an intermediate algebra class and used a behavior modification approach for reducing anxiety. A book entitled Building Confidence in Mathematics was written by the experimenter and provided for the students' use. The workshop met twice a week for three weeks and was run by the experimenter and a counselor. The students were given a pre-test and post-test of the Phobos anxiety scale. Data for the difference between pre-test and post-test levels of anxiety in three areas were analyzed. The areas were numerical anxiety, test anxiety, and abstraction anxiety. A paired t-test was used for the data. Results significant at the .05 level were found for two of the areas: Test anxiety ($p = .0108$) and abstraction anxiety ($p = .0453$). A more thorough investigation is called for, but findings indicate that a behavior modification approach may be useful for reducing mathematics anxiety in this population.

A Workshop for Building Confidence in Learning Mathematics

This study was undertaken in an attempt to decrease the mathematics anxiety and thereby improve the performance of a group of CHANCE students in a MATH 110P intermediate algebra class at Northern Illinois University. The CHANCE (Complete Help and Assistance Necessary for a College Education) program is a special admissions program to provide educationally disadvantaged students college opportunities. MATH 110P is an outgrowth of the regular MATH 110 College Algebra course. The special 110P Intermediate Algebra course is designed with additional review and is slower paced than MATH 110 so the students complete the regular college algebra course work in two semesters instead of one.

Much research has been done on the causes and possible treatments of mathematics anxiety. Laurie Reyes (1980) has the following to say about mathematics anxiety:

> Mathematics anxiety can be described as involving feeling of tension and anxiety that interfere with

> the manipulation of numbers and the solving of mathematical problems in a wide variety of ordinary life and/or learning situations. (p. 169)

She also mentions several types of interventions which are used in the treatment of mathematics anxiety. The first assumes that mathematics anxiety is caused by a lack of understanding of mathematics, so knowledge of mathematical concepts is increased in the hopes of decreasing anxiety. The second type of treatment is one which focuses on teaching students to deal with the anxiety itself through relaxation and sublimation techniques. The third type of treatment mention is a combination of the above two.

Most of the mathematics anxiety books published seem to deal with the first type. They also seem to use a technique which was not mentioned by Ms. Reyes: have the subjects discuss their feeling about mathematics. Succeed With Math (Tobias, 1987) is one such book. In this book, which is targeted toward college students, Ms. Tobias begins by first putting math "into perspective," then talks about how to understand feelings about math. The rest of the book

is devoted to math instruction. She says,

> There are two myths about mathematics that need to be put to rest. One is that college level mathematics is too difficult for otherwise intelligent students to master. Another is that without mathematics you can live a productive, intellectual and professional life. (p. 3).

In Overcoming Math Anxiety (Tobias, 1978), Ms. Tobias uses the same treatment, but focuses on women who are returning to school or going into a new job where they suddenly need math. Her discussion of feelings about mathematics is more extensive here than in Succeed With Math.

Another book which concentrates on women with mathematics anxiety is Math Without Fear (Crawford, 1980). An interesting part of Ms. Crawford's book is that she concentrates on getting the subjects to know each other during her workshops. She has them write a mathematics autobiography, and points out how many common mathematical symptoms they share.

In Mind Over Math (Kogelman and Warren, 1978), Drs. Kogelman and Warren say, "Most problems with math

anxiety come from the feeling that one is going to be tested." (p. 60). They say that their Mind over Math workshops help to free the subjects from their past negative experiences.

The above readings led the author to define mathematics anxiety as follows: "Mathematics anxiety is being out of control." Thus, in order to reduce mathematics anxiety, people must feel themselves in control of the mathematics situations they face.

The books cited above tend to address a middle class, white adult population. The author did not feel that the strategies for reducing mathematics anxiety mentioned in these readings were entirely suitable for the CHANCE students. Thus it was hypothesized that a behavior modification approach which dealt with study habits and test taking skills would help the students achieve the necessary feelings of self control in mathematics. In addition, a personal math journal would be added as a way for the students to express their feeling about mathematics in a personal and non-threatening manner.

The current study was to be accomplished in a workshop setting. The author was to lead the workshop with the assistance of a CHANCE counselor. The inclusion of a counselor was a procedure advocated by Ms. Tobias and seemed most appropriate for this population. It was felt that having a successful student of mathematics as well as a successful professional who had struggled with mathematics as workshop leaders would be beneficial for the students.

The Study

Subjects

The students in the 110P class which was selected were assigned to an M section according to their scores on a placement test taken at the beginning of the year. 'M' indicates the lowest level of previous mathematical knowledge. The students were placed in their particular classroom by standard scheduling procedures. The class contained 24 freshman CHANCE students, 14 of whom were females and 10 males. Of the 24 students, 21 were black, 2 were white, and 1 was hispanic.

Materials

A book titled Building Confidence in Mathematics was written by the experimenter (see Appendix 1). The book contains a directed personal math journal in which the students answer specific questions relating to how they feel about mathematics. The journal also serves as a guide for exercises which will lead the students to the type of study environment which is best for them. Also included are various study skills sections including how to read a textbook, how to take notes in a math class, and how to study for and and take a math test. Mini math lessons which cover important but probably forgotten mathematics skills are also included. Finally, the book contains a section on time management. The book was completed in summer 1988 and printed and distributed by company which published the course's textbook (Sullivan, 1987).

The test used was the Phobos Anxiety Scale (Ferguson, 1986), a 30 question mathematics anxiety rating scale based on the 98 question MARS Inventory (Richardson and Suinn, 1972). The Phobos was formed by taking ten items from the MARS which were identified as

loading heavily on mathematics test anxiety, ten for numerical anxiety, and as Mr. Ferguson says, "...10 items referring to mathematical topics that might be labeled as more abstract than those included in the MARS." (p. 146). The subjects used were students in a large community college who were enrolled in mathematics courses, including remedial courses. Mr. Ferguson states, "In general, both factor analysis methods provided strong support to the hypothesis that abstraction anxiety is an important factor of mathematics anxiety." (p. 149). The article also supported the reliability of the Phobos:

The test-retest reliability of Phobos as estimated by the Spearman-Brown prediction formula is at least that of the MARS reduced to 30 items." (p. 149). The range of scores on each of the sub sections of the Phobos is from 10 to 50 with a score of 10 indicating the lowest level of anxiety and 50 indicating the highest.

Procedure

The workshop began during the second week of classes, and was conducted on Thursdays and Mondays for

three weeks. It was run by the author and a CHANCE counselor, Theresa Ploger. For a breakdown of the topics covered in each session, refer to Table 1.

Insert Table 1 about here

The Phobos pre-test was given during the first session.

Included in the fourth session was a questionnaire which asked students to describe how they studied for a quiz they had taken a week before (see Appendix 2). The purpose of this questionnaire was to see if there was a correlation between study habits and grades received.

Two weeks after the last session, the post-test of the PHOBOS anxiety scale was given.

Results

Data collected from both the pre-test and post-test of the Phobos inventory appear in Table 2.

Insert Table 2 about here

The difference in scores for each student on each section were used for a paired t-test. A null hypothesis of no difference between pre-test and post-test means was used.

The null hypothesis was rejected at the .05 level for two of the three sections (Numerical anxiety: p = .1357, test anxiety: p = .0108, abstraction anxiety: p = .0453).

The quiz study data was anecdotal in nature and showed how the majority of students studied for the quiz. No correlations between grade received and study habits was apparent. Data collected from the questionnaire are summarized in Table 3.

Insert Table 3 about here

Discussion

The statistical analysis indicates that overall, this behavior modification approach was an effective treatment. The workshop focused very heavily on relieving test anxiety, and that was the factor which was reduced most significantly. Abstraction anxiety

and numerical anxiety were stressed less, and the scores reflect that.

The questionnaire on study habits did not show an association between study habits and quiz performance. Perhaps the problem was that the quiz scores were unusually high, and many students did not fill out the sheet as instructed. (An example of this is that 60% of the people who received A's said that they studied all at once while 50% claimed they studied in two or more sessions or in short periods.) The data did show how the majority of the students studied for the quiz. Most students studied by themselves at a desk in their room. They also studied for their quiz all at once. The most popular time for studying was directly after dinner. The data also showed that most students preferred working in a quiet area, but they had to contend with talking. Looking for a correlation between study habits and test scores seems relevant. Perhaps a different instrument needs to be developed for this purpose.

The students liked the workshops, and during informal questioning, the author was told that they

felt it worked. A more thorough interview will be done with a cross-section of the class at a later date.

The book Building Confidence in Mathematics will be revised. Some revisions which are to be included are a rearrangement of the sections of the book, and an expansion of some of the study skills sections. Since this book is to be used in a mathematics course, the mini math sections in the book are superfluous and will be left out.

The author realizes the limitations of this study. Having the experimenter serve as workshop director may have influenced the objectivity of the study. In addition, the author was not able to conduct the study over as long a period as he would have liked due to time and scheduling problems. He would also have liked to have used a control group for comparison. Again, due to time and other restraints, this was not possible.

The author hopes to use a revised version of the book during a semester long workshop for his master's thesis.

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Author's Notes

I would like to express my appreciation to the CHANCE program for allowing me to work with these students.

I also wish to thank Theresa Ploger for helping me with the workshop. Her help was invaluable in completing this project. Nothing we did would have gone as well without her expert and enthusiastic support.

Finally, I would like to thank Darlene Whitkanack for allowing me into her classroom and for all of her invaluable help in editing the book. Dr. Carole Lacampagne's help, support, and patience were greatly appreciated.

Table 1

Topics Covered in Each Session

Session	Topics
1	-Gave brief overview of workshop. -Students paired off, did "Introductions" sheet (Building Confidence in Mathematics (BCM) p. 40) then introduced each other. -Gave PHOBOS pre-test. -Assigned "Where does my time go?" (BCM p.42) for next session. -Required students to look up classes required for their major which involve math.
2	-Discussed "Where does my time go?". -Talked about amount of math required for various majors. Main focus of discussion was that almost all majors require some sort of math and not all courses which contain math have a MATH or STAT prefix. -Asked the question, "What do you do when you find yourself in a 'bad' math class?" Focus was on who or what was to blame, and strategies for dealing with the situation. -Discussed the topic of math as a critical filter for getting a job. -Talked about study environment (BCM p. 41-42). -Discussed time management (BCM p. 62-72). -Explained personal math journal, and asked students to begin using those pages.
3	-Reviewed material from sessions 1 and 2. -Discussed "math encounters" students had written in their journals.

(continued on next page)

-Completed time management.
-Worked on "Motivating yourself to get the work done (BCM p. 48-50).
-Discussed "Reading a math book" (BCM p. 53).
-Talked about notetaking in a math course (BCM p. 54).

4 -Asked for questions or comments regarding the workshop to this point.
-Discussed "Studying with flash cards" (BCM p. 57).
-Talked about studying for and taking a math test (BCM p. 58-59).
-Asked students to fill out a questionnaire on their study habits regarding a quiz they had taken the week before (see appendix 2).
-Required the students to write a set of at least ten flash cards and bring them to class the next day.

5 -Looked at the data collected on study habits and grades received on the quiz.
-Class was split into three groups of eight students each. The groups were asked to define the five or six major ideas in the chapter, the types of questions they thought would be on the test, and finally, specific questions they felt would be on the test. The focus during these groups was the verbalization of ideas and communicating them to other people.

6 -Discussed results of the first exam.
-Talked about how the students felt the test went, what they felt they did right and wrong in preparing for the test, and what they would do differently next time.

Table 2

Summary of Data Collected From Phobos Anxiety Scale

Student		Numerical Anxiety	Test Anxiety	Abstraction Anxiety
1	Pre	34	50	36
	Post	26	48	32
	Difference	8	2	4
2	Pre	16	43	35
	Post	17	34	27
	Difference*	-1	9	8
3	Pre	23	46	37
	Post	21	39	39
	Difference*	2	7	-2
4	Pre	16	42	24
	Post	13	25	20
	Difference	3	17	4
5	Pre	26	37	46
	Post	27	31	34
	Difference*	-1	6	12
6	Pre	10	29	24
	Post	11	24	28
	Difference*	-1	5	-4
7	Pre	36	42	33
	Post	10	28	25
	Difference	26	14	8
8	Pre	15	31	40
	Post	14	27	33
	Difference	1	4	7

(continued on next page)

9	Pre	35	36	37
	Post	22	24	32
	Difference	13	12	5
10	Pre	21	44	42
	Post	15	41	42
	Difference	6	3	0
11	Pre	35	40	44
	Post	35	36	36
	Difference	0	4	8
12	Pre	13	25	41
	Post	16	22	31
	Difference*	-3	3	10
13	Pre	20	25	23
	Post	28	26	23
	Difference*	-8	-1	0
14	Pre	42	42	32
	Post	34	42	30
	Difference	8	0	2
15	Pre	24	24	28
	Post	21	24	23
	Difference	3	0	5
16	Pre	13	21	13
	Post	14	20	17
	Difference*	-1	1	-4
17	Pre	26	34	32
	Post	21	34	35
	Difference	5	0	-3
18	Pre	21	30	33
	Post	20	34	38
	Difference*	1	-4	-5

(continued on next page)

19	Pre	22	35	38
	Post	21	23	25
	Difference	1	12	13
20	Pre	28	38	37
	Post	25	44	32
	Difference*	3	-6	5
21	Pre	18	28	34
	Post	30	44	50
	Difference*	-12	-16	-16
22	Pre	16	46	34
	Post	19	32	35
	Difference*	-3	14	-1
23	Pre	28	30	23
	Post	32	26	22
	Difference*	-4	4	1
24	Pre	17	34	33
	Post	22	36	34
	Difference*	-5	-2	-1
Mean	Pre	23.1	35.5	33.3
	Post	21.4	31.8	31.0
	Difference	1.7	3.7**	2.3**

* A negative number for a difference statistic indicates an increase in anxiety level.

** $p < .05$

Table 3

Results From Quiz Questionnaire

	Grade				
	A	B+	B	C	Total
Where:					
Desk	10	3	7	2	22
Table	2	0	2	1	5
Easy Chair	0	0	1	1	2
Bed (Lying)	2	0	1	1	4
Bed (Sitting)	2	2	3	0	7
Floor	1	0	1	0	2
Place:					
Dorm Room	9	2	7	2	20
Library	2	2	1	1	6
Study Lounge	3	1	1	0	5
Revis Math Lab	0	0	0	0	0
Pow Wow	0	0	0	0	0
Other Restaurant	0	0	0	0	0
Studying:					
Did Homework	9	3	6	1	19
Reviewed Homework	7	3	6	2	18
Reviewed Quizzes	6	1	3	2	12
Read Text	7	4	5	1	17
Read Examples	5	3	4	2	14
Reviewed Notes	6	4	4	2	16
Study Group:					
Alone	9	3	6	2	20
With One Person	1	1	3	1	6
With Two or More	2	0	0	0	2

(continued on next page)

Preparation:					
All at Once	6	2	2	0	10
Two Sessions	4	0	3	1	8
Short Periods	1	2	4	1	8
Internal:					
Hungry	4	0	2	1	7
Daydreaming	2	2	4	1	9
Time:					
After This Class	2	0	0	0	2
After All Classes	2	0	4	0	6
After Dinner	4	4	4	2	14
After 9 p.m.	3	1	3	0	7
After 11 p.m.	2	0	0	2	4
Early Friday a.m.	0	0	0	0	0
Just Before Class	1	2	2	2	7
Distractions					
Quiet	4	1	4	1	10
TV	4	0	1	1	6
Loud Music/Words	1	0	1	0	2
Soft Music/Words	3	1	2	1	7
Loud Music/Instr.	0	0	0	0	0
Soft Music/Instr.	2	4	6	1	13

Appendix 1

Building Confidence in Mathematics

(Please see attached).

BUILDING CONFIDENCE IN MATHEMATICS

By Joseph David Rich

TABLE OF CONTENTS

Acknowledgments

I would like to thank Dr. Carole LaCampagne and Mrs. Darlene Whitkanack of Northern Illinois University for all of their help. This book could never have been written without their expert advise and tremendous support.

I would also like to thank my family and my friends for their support and encouragement while this book was being written.

JDR
July, 1988

Forward

You've made it! You are a student at Northern Illinois University. Most people know what an accomplishment that is. For each student who is accepted to this university, hundreds are turned down. You are one who has the chance to earn the degree of your choice.

Unfortunately, many students don't make it through their first two years. College is very different from high school. Not only are the classes harder, but more is expected of the student. Furthermore, the expectations are different in college. For example, sometimes homework isn't collected. Attendance isn't taken. But, the instructors still expect you to be there and have your work done. They expect you as a college student to have the maturity and the self control to take responsibility for your own learning. This means you are expected to study at least two hours for each hour you spend in class--and you will be in class fifteen hours a week! Living on your own for the first time with all of the new sights and sounds of campus can add to the problems of developing good study habits.

Now, to all of that, add the fact that students are required to take <u>math</u>. A few students actually <u>like</u> math, most tolerate it, but some actually <u>hate</u> it. Whether you like it, tolerate it, or hate it, most students worry about math. This worry, or anxiety, can cause a lot of trouble and make it even harder to succeed.

That's where this book comes in. It contains a program to help you build confidence in your ability to do math. This program will help you modify your study behavior and build skills that are necessary for your success. You may already use some of the study techniques mentioned, or you may have others which work well for you. That's fine. What is important is that you learn how to study well.

This book has three parts. The first is a personal math journal in which you will write your thoughts and feelings about mathematics. It also contains some exercises which are based upon the study skills sections in part two. These exercises will help you explore which study environment is best for you, which study skills work best for you, and which method of studying for a test is most effective for you. Part two contains information on various study skills and mini-math lessons which will help you in your college career. The third part deals with time management. The schedules and techniques in this part should be used right away.

No matter how much information is presented, or how many study techniques are examined, this book cannot work without one key ingredient, <u>you</u>. You must be the one who opens the cover and reads the math book. You are the one who makes the goals, works toward them, and <u>reaches</u> them. You are the one who will put forth the hard work it takes to succeed. And <u>you</u> are the one who will succeed. We wish you well.

When you proceed
Step
By
Step
You gain
More and more control.
You build
On small successes
Until you reach
Your GOAL.

Building

Confidence In Mathematics

PART I:

Personal Math Journal

PART I: PERSONAL MATH JOURNAL

The personal math journal is the first section because you'll be using it every day for a three week period. The first week we will explore your study environment. The second, we will work on improving study skills. And the third will we will look at techniques for studying for a math test. Please make sure you read the relevant sections from PART II before you work on the journal. Every day you will be asked to write about a math encounter that you have had. Each math encounter should be different. While it may be true that you checked your change every day, it's hardly worth while to write the same thing down each time.

MATH JOURNAL:
Week One

This week we are going to focus on a study environment which works best for you. We will ask you to change one particular thing in in your study environment each day and then ask you questions about the changes you made.

Today's Date: _____

HOMEWORK ASSIGNMENT for tomorrow: _____

Did your math class meet today? [ ] YES [ ] NO

If so, did you go to class? [ ] YES [ ] NO

Did you do the homework due today? [ ] YES [ ] NO

How much? [ ] ALL [ ] PART # Done _____ Out of _____

Is there a TEST or QUIZ coming up? [ ] YES [ ] NO

Over what? _____ When? _____

What math topic was covered on the homework? _____

_____

Where were you when you did today's homework? [ ] YOUR ROOM

[ ] LIBRARY [ ] OTHER _____

What time was it? _____ How long did it take you? _____

Was there anyone with you? [ ] YES Who? _____ [ ] NO

Were they studying too? [ ] YES [ ] NO

Did you help them? [ ] YES [ ] NO

Did this help you? [ ] YES [ ] NO

What kind of STUDY ENVIRONMENT did you have? [ ] QUIET [ ] T.V.

[ ] MUSIC PLAYING [ ] TALKING [ ] OTHER _____

Did you READ THE TEXTBOOK ASSIGNMENT before doing the exercises?

[ ] YES [ ] NO

How often did you refer to your notes? [ ] EVERY PROBLEM

[ ] ONLY WHEN I WAS STUCK [ ] NEVER [ ] OTHER _____

How did you feel about math:

Before doing your homework? _____

While doing your homework? _____

After doing your homework? _____

Possible choices are confident, anxious, well-prepared, totally lost, angry, frightened, relieved, happy...

List the specific questions you want to ask tomorrow in class. __

MATH FOCUS FOR THE DAY

WEEK 1 -- MONDAY

Study with music playing in the background. Try it for a while with music that has singing, and then with music that is just instrumental. Try both loud and soft volumes.

What type of music worked best for you, singing or instrumental? Why?

What volume worked best? Why?

MATH ENCOUNTER

Write about a math encounter you had today (besides math class). How did it make you feel?

Today's Date: _____

HOMEWORK ASSIGNMENT for tomorrow: _____

Did your math class meet today? [ ] YES [ ] NO

If so, did you go to class? [ ] YES [ ] NO

Did you do the homework due today? [ ] YES [ ] NO

How much? [ ] ALL [ ] PART # Done _____ Out of _____

Is there a TEST or QUIZ coming up? [ ] YES [ ] NO

Over what? _____ When? _____

What math topic was covered on the homework? _____

_____

Where were you when you did today's homework? [ ] YOUR ROOM

[ ] LIBRARY [ ] OTHER _____

What time was it? _____ How long did it take you? _____

Was there anyone with you? [ ] YES Who? _____ [ ] NO

Were they studying too? [ ] YES [ ] NO

Did you help them? [ ] YES [ ] NO

Did this help you? [ ] YES [ ] NO

What kind of STUDY ENVIRONMENT did you have? [ ] QUIET [ ] T.V.

[ ] MUSIC PLAYING [ ] TALKING [ ] OTHER _____

Did you READ THE TEXTBOOK ASSIGNMENT before doing the exercises?

[ ] YES [ ] NO

How often did you refer to your notes? [ ] EVERY PROBLEM

[ ] ONLY WHEN I WAS STUCK [ ] NEVER [ ] OTHER _____

How did you feel about math:

Before doing your homework? _____

While doing your homework? _____

After doing your homework? _____

Possible choices are confident, anxious, well-prepared, totally lost, angry, frightened, relieved, happy...

List the specific questions you want to ask tomorrow in class. __

MATH FOCUS FOR THE DAY

WEEK 1 -- TUESDAY

Try your best to study in silence (no music, T.V. or talking).

Was it hard to study in silence? What kind of distractions did you have? _____

What environment works best for you, music or quiet?_____

MATH ENCOUNTER

What is the best thing that happened in class today? The worst? How did you feel? _____

Today's Date: _____

HOMEWORK ASSIGNMENT for tomorrow: _____

Did your math class meet today? [ ] YES [ ] NO

If so, did you go to class? [ ] YES [ ] NO

Did you do the homework due today? [ ] YES [ ] NO

How much? [ ] ALL [ ] PART # Done _____ Out of _____

Is there a TEST or QUIZ coming up? [ ] YES [ ] NO

Over what? _____ When? _____

What math topic was covered on the homework? _____

_____

Where were you when you did today's homework? [ ] YOUR ROOM

[ ] LIBRARY [ ] OTHER _____

What time was it? _____ How long did it take you? _____

Was there anyone with you? [ ] YES Who? _____ [ ] NO

Were they studying too? [ ] YES [ ] NO

Did you help them? [ ] YES [ ] NO

Did this help you? [ ] YES [ ] NO

What kind of STUDY ENVIRONMENT did you have? [ ] QUIET [ ] T.V.

[ ] MUSIC PLAYING [ ] TALKING [ ] OTHER _____

Did you READ THE TEXTBOOK ASSIGNMENT before doing the exercises?

[ ] YES [ ] NO

How often did you refer to your notes? [ ] EVERY PROBLEM

[ ] ONLY WHEN I WAS STUCK [ ] NEVER [ ] OTHER _____

How did you feel about math:

Before doing your homework? _____

While doing your homework? _____

After doing your homework? _____

Possible choices are confident, anxious, well-prepared, totally lost, angry, frightened, relieved, happy...

List the specific questions you want to ask tomorrow in class. __

MATH FOCUS FOR THE DAY

WEEK 1 -- WEDNESDAY

Study in your room at your desk. If your roommate is in the room with you, see if you can get him/her to study quietly at the same time you do.

Did having your roommate study at the same time as you did help? Why or why not? _____

What are some advantages and disadvantages to studying in your room (as opposed to someplace else)? _____

MATH ENCOUNTER

Write about a math encounter you had today (besides math class). How did it make you feel? _____

Today's Date: _____

HOMEWORK ASSIGNMENT for tomorrow: _____

Did your math class meet today? [ ] YES [ ] NO

If so, did you go to class? [ ] YES [ ] NO

Did you do the homework due today? [ ] YES [ ] NO

How much? [ ] ALL [ ] PART # Done _____ Out of _____

Is there a TEST or QUIZ coming up? [ ] YES [ ] NO

Over what? _____ When? _____

What math topic was covered on the homework? _____

_____

Where were you when you did today's homework? [ ] YOUR ROOM

[ ] LIBRARY [ ] OTHER _____

What time was it? _____ How long did it take you? _____

Was there anyone with you? [ ] YES Who? _____ [ ] NO

Were they studying too? [ ] YES [ ] NO

Did you help them? [ ] YES [ ] NO

Did this help you? [ ] YES [ ] NO

What kind of STUDY ENVIRONMENT did you have? [ ] QUIET [ ] T.V.

[ ] MUSIC PLAYING [ ] TALKING [ ] OTHER _____

Did you READ THE TEXTBOOK ASSIGNMENT before doing the exercises?

[ ] YES [ ] NO

How often did you refer to your notes? [ ] EVERY PROBLEM

[ ] ONLY WHEN I WAS STUCK [ ] NEVER [ ] OTHER _____

How did you feel about math:

Before doing your homework? _____

While doing your homework? _____

After doing your homework? _____

Possible choices are confident, anxious, well-prepared, totally lost, angry, frightened, relieved, happy...

List the specific questions you want to ask tomorrow in class. __

MATH FOCUS FOR THE DAY

WEEK 1 -- THURSDAY

If you can, study in the library tonight. Otherwise, try to find someplace else quiet (besides your room) where you can study.

Describe some advantages of studying in the library. What are some disadvantages? _____

What location worked better for you, your room or the library? Why? _____

MATH ENCOUNTER

What kind of class participation did you have today (answer questions, ask a good question)? _____

Today's Date: _____

HOMEWORK ASSIGNMENT for tomorrow: _____

Did your math class meet today? [ ] YES [ ] NO

If so, did you go to class? [ ] YES [ ] NO

Did you do the homework due today? [ ] YES [ ] NO

How much? [ ] ALL [ ] PART # Done _____ Out of _____

Is there a TEST or QUIZ coming up? [ ] YES [ ] NO

Over what? _____ When? _____

What math topic was covered on the homework? _____

_____

Where were you when you did today's homework? [ ] YOUR ROOM

[ ] LIBRARY [ ] OTHER _____

What time was it? _____ How long did it take you? _____

Was there anyone with you? [ ] YES Who? _____ [ ] NO

Were they studying too? [ ] YES [ ] NO

Did you help them? [ ] YES [ ] NO

Did this help you? [ ] YES [ ] NO

What kind of STUDY ENVIRONMENT did you have? [ ] QUIET [ ] T.V.

[ ] MUSIC PLAYING [ ] TALKING [ ] OTHER _____

Did you READ THE TEXTBOOK ASSIGNMENT before doing the exercises?

[ ] YES [ ] NO

How often did you refer to your notes? [ ] EVERY PROBLEM

[ ] ONLY WHEN I WAS STUCK [ ] NEVER [ ] OTHER _____

How did you feel about math:

Before doing your homework? _____

While doing your homework? _____

After doing your homework? _____

Possible choices are confident, anxious, well-prepared, totally lost, angry, frightened, relieved, happy...

List the specific questions you want to ask tomorrow in class. __

MATH FOCUS FOR THE DAY

WEEK 1 -- FRIDAY

If you normally study alone, find someone to study math with this afternoon or tonight. If you normally study with someone else, try studying alone. [Even though it's Friday, do your homework today instead of letting it wait. It makes your weekends nicer and saves you all of that frantic scribbling on Sunday!]

Which do you think will work best for you, studying alone or with a friend? Why? _____

Did you find that you learned more or less when you studied with a friend. _____

MATH ENCOUNTER

Write about a math encounter you had today (besides math class). How did it make you feel? _____

Please go on to the next page.

Study Environment Wrap Up

Now that you've experimented with the different areas in your study environment, take a moment to write down the ones which worked best for you.

Where?

[ ] ROOM [ ] LIBRARY [ ] OTHER _____

Background:

[ ] SILENCE [ ] MUSIC What kind? _____

With whom?

[ ] ALONE [ ] ROOMMATE [ ] OTHER _____

When? _____

MATH JOURNAL:
Week Two

This week we're going to work on improving study skills. Try to make the things that you try this week into habits. Remember, these techniques won't work if you don't use them.

Today's Date: _____

HOMEWORK ASSIGNMENT for tomorrow: _____

Did your math class meet today? [ ] YES [ ] NO

If so, did you go to class? [ ] YES [ ] NO

Did you do the homework due today? [ ] YES [ ] NO

How much? [ ] ALL [ ] PART # Done _____ Out of _____

Is there a TEST or QUIZ coming up? [ ] YES [ ] NO

Over what? _____ When? _____

What math topic was covered on the homework? _____

_____

Where were you when you did today's homework? [ ] YOUR ROOM

[ ] LIBRARY [ ] OTHER _____

What time was it? _____ How long did it take you? _____

Was there anyone with you? [ ] YES Who? _____ [ ] NO

Were they studying too? [ ] YES [ ] NO

Did you help them? [ ] YES [ ] NO

Did this help you? [ ] YES [ ] NO

What kind of STUDY ENVIRONMENT did you have? [ ] QUIET [ ] T.V.

[ ] MUSIC PLAYING [ ] TALKING [ ] OTHER _____

Did you READ THE TEXTBOOK ASSIGNMENT before doing the exercises?

[ ] YES [ ] NO

How often did you refer to your notes? [ ] EVERY PROBLEM

[ ] ONLY WHEN I WAS STUCK [ ] NEVER [ ] OTHER _____

How did you feel about math:

Before doing your homework? _____

While doing your homework? _____

After doing your homework? _____

Possible choices are confident, anxious, well-prepared, totally lost, angry, frightened, relieved, happy...

List the specific questions you want to ask tomorrow in class. __

MATH FOCUS FOR THE DAY

WEEK 2 -- MONDAY

Before you do tonight's assignment, read the section. Use a highlighter or a pen to mark the <u>one thing</u> in the section that you feel is the most important.

Was the homework assignment any clearer after you read the text? Why?

Look at what the others in your class underlined. Do you think what you underlined is more important? Less important? The same? Why?

Do you think everyone should have underlined the same thing in the text? Why or why not?

MATH ENCOUNTER

Write about a math encounter you had today (besides math class). How did it make you feel?

Today's Date: _____

HOMEWORK ASSIGNMENT for tomorrow: _____

Did your math class meet today? [ ] YES [ ] NO

If so, did you go to class? [ ] YES [ ] NO

Did you do the homework due today? [ ] YES [ ] NO

How much? [ ] ALL [ ] PART # Done _____ Out of _____

Is there a TEST or QUIZ coming up? [ ] YES [ ] NO

Over what? _____ When? _____

What math topic was covered on the homework? _____

_____

Where were you when you did today's homework? [ ] YOUR ROOM

[ ] LIBRARY [ ] OTHER _____

What time was it? _____ How long did it take you? _____

Was there anyone with you? [ ] YES Who? _____ [ ] NO

Were they studying too? [ ] YES [ ] NO

Did you help them? [ ] YES [ ] NO

Did this help you? [ ] YES [ ] NO

What kind of STUDY ENVIRONMENT did you have? [ ] QUIET [ ] T.V.

[ ] MUSIC PLAYING [ ] TALKING [ ] OTHER _____

Did you READ THE TEXTBOOK ASSIGNMENT before doing the exercises?

[ ] YES [ ] NO

How often did you refer to your notes? [ ] EVERY PROBLEM

[ ] ONLY WHEN I WAS STUCK [ ] NEVER [ ] OTHER _____

How did you feel about math:

Before doing your homework? _____

While doing your homework? _____

After doing your homework? _____

Possible choices are confident, anxious, well-prepared, totally lost, angry, frightened, relieved, happy...

List the specific questions you want to ask tomorrow in class. __

MATH FOCUS FOR THE DAY

WEEK 2 -- TUESDAY

Look over the notes you made today in class, and answer the following questions:

Are your notes neat and easy to read? _____

Can you understand what the examples in the notes are for and how they are done? Will you be able to understand them in a month? _____

What's the biggest problem with your notes right now? _____

How would you fix that problem? _____

MATH ENCOUNTER

What is the best thing that happened in class today? The worst? How did you feel? _____

Today's Date: _____

HOMEWORK ASSIGNMENT for tomorrow: _____

Did your math class meet today? [ ] YES [ ] NO

If so, did you go to class? [ ] YES [ ] NO

Did you do the homework due today? [ ] YES [ ] NO

How much? [ ] ALL [ ] PART # Done _____ Out of _____

Is there a TEST or QUIZ coming up? [ ] YES [ ] NO

Over what? _____ When? _____

What math topic was covered on the homework? _____

_____

Where were you when you did today's homework? [ ] YOUR ROOM

[ ] LIBRARY [ ] OTHER _____

What time was it? _____ How long did it take you? _____

Was there anyone with you? [ ] YES Who? _____ [ ] NO

Were they studying too? [ ] YES [ ] NO

Did you help them? [ ] YES [ ] NO

Did this help you? [ ] YES [ ] NO

What kind of STUDY ENVIRONMENT did you have? [ ] QUIET [ ] T.V.

[ ] MUSIC PLAYING [ ] TALKING [ ] OTHER _____

Did you READ THE TEXTBOOK ASSIGNMENT before doing the exercises?

[ ] YES [ ] NO

How often did you refer to your notes? [ ] EVERY PROBLEM

[ ] ONLY WHEN I WAS STUCK [ ] NEVER [ ] OTHER _____

How did you feel about math:

Before doing your homework? _____

While doing your homework? _____

After doing your homework? _____

Possible choices are confident, anxious, well-prepared, totally lost, angry, frightened, relieved, happy...

List the specific questions you want to ask tomorrow in class. __

MATH FOCUS FOR THE DAY

WEEK 2 -- WEDNESDAY

Think up a reason that will motivate you to do your homework tonight. Some examples are "I want a good grade in this class," or "If I finish my homework early, I can watch T.V. tonight." Use the reason tonight to make sure you get your homework done. See if you can come up with others.

Did your motivating reason work? _____

Have you been keeping up with your goal setting, praising and recoveries? How do you feel they are working? Are you having any problems? _____

MATH ENCOUNTER

Write about a math encounter you had today (besides math class). How did it make you feel? _____

Today's Date: _____

HOMEWORK ASSIGNMENT for tomorrow: _____

Did your math class meet today? [ ] YES [ ] NO

If so, did you go to class? [ ] YES [ ] NO

Did you do the homework due today? [ ] YES [ ] NO

How much? [ ] ALL [ ] PART # Done _____ Out of _____

Is there a TEST or QUIZ coming up? [ ] YES [ ] NO

Over what? _____ When? _____

What math topic was covered on the homework? _____

_____

Where were you when you did today's homework? [ ] YOUR ROOM

[ ] LIBRARY [ ] OTHER _____

What time was it? _____ How long did it take you? _____

Was there anyone with you? [ ] YES Who? _____ [ ] NO

Were they studying too? [ ] YES [ ] NO

Did you help them? [ ] YES [ ] NO

Did this help you? [ ] YES [ ] NO

What kind of STUDY ENVIRONMENT did you have? [ ] QUIET [ ] T.V.

[ ] MUSIC PLAYING [ ] TALKING [ ] OTHER _____

Did you READ THE TEXTBOOK ASSIGNMENT before doing the exercises?

[ ] YES [ ] NO

How often did you refer to your notes? [ ] EVERY PROBLEM

[ ] ONLY WHEN I WAS STUCK [ ] NEVER [ ] OTHER _____

How did you feel about math:

Before doing your homework? _____

While doing your homework? _____

After doing your homework? _____

Possible choices are confident, anxious, well-prepared, totally lost, angry, frightened, relieved, happy...

List the specific questions you want to ask tomorrow in class. __

_____

_____

_____

MATH FOCUS FOR THE DAY

WEEK 2 -- THURSDAY

Look over the notes you made today in class, and answer the following questions:

Are the notes you made today any better than the ones you made on Tuesday? If not, why not? If so, what made them better?

_____

_____

_____

_____

What other changes could you make in your notetaking that would make your notes even easier to study from? _____

_____

_____

_____

Read the textbook assignment for the next section <u>before</u> your instructor lectures on it -- see if it makes it any easier to understand what's going on in class.

MATH ENCOUNTER

What kind of class participation did you have today (answer questions, ask a good question)? _____

_____

_____

_____

_____

_____

_____

_____

Today's Date: _____

HOMEWORK ASSIGNMENT for tomorrow: _____

Did your math class meet today? [ ] YES [ ] NO

If so, did you go to class? [ ] YES [ ] NO

Did you do the homework due today? [ ] YES [ ] NO

How much? [ ] ALL [ ] PART # Done _____ Out of _____

Is there a TEST or QUIZ coming up? [ ] YES [ ] NO

Over what? _____ When? _____

What math topic was covered on the homework? _____

_____

Where were you when you did today's homework? [ ] YOUR ROOM

[ ] LIBRARY [ ] OTHER _____

What time was it? _____ How long did it take you? _____

Was there anyone with you? [ ] YES Who? _____ [ ] NO

Were they studying too? [ ] YES [ ] NO

Did you help them? [ ] YES [ ] NO

Did this help you? [ ] YES [ ] NO

What kind of STUDY ENVIRONMENT did you have? [ ] QUIET [ ] T.V.

[ ] MUSIC PLAYING [ ] TALKING [ ] OTHER _____

Did you READ THE TEXTBOOK ASSIGNMENT before doing the exercises?

[ ] YES [ ] NO

How often did you refer to your notes? [ ] EVERY PROBLEM

[ ] ONLY WHEN I WAS STUCK [ ] NEVER [ ] OTHER _____

How did you feel about math:

Before doing your homework? _____

While doing your homework? _____

After doing your homework? _____

Possible choices are confident, anxious, well-prepared, totally lost, angry, frightened, relieved, happy...

List the specific questions you want to ask tomorrow in class. __

_____

_____

_____

MATH FOCUS FOR THE DAY

WEEK 2 -- FRIDAY

Make a set of about ten (or more if you want to) flashcards with formulas and definitions you think might be useful for a test.

Was it hard to find information to put on your flashcards? Why or why not? _____

_____

_____

_____

_____

How did you decide what information was to go on the flashcards? Did your teacher give you any clues about what he or she thought was important during the lectures?_____

_____

_____

_____

_____

MATH ENCOUNTER

Write about a math encounter you had today (besides math class). How did it make you feel? _____

_____

_____

_____

_____

_____

_____

MATH JOURNAL:
Week Three

In this final week, we'll work on techniques for studying for a math test. These methods will help keep you from having to cram for that big math test that's coming up.

Today's Date: _____

HOMEWORK ASSIGNMENT for tomorrow: _____

Did your math class meet today? [ ] YES [ ] NO

If so, did you go to class? [ ] YES [ ] NO

Did you do the homework due today? [ ] YES [ ] NO

How much? [ ] ALL [ ] PART # Done _____ Out of _____

Is there a TEST or QUIZ coming up? [ ] YES [ ] NO

Over what? _____ When? _____

What math topic was covered on the homework? _____

_____

Where were you when you did today's homework? [ ] YOUR ROOM

[ ] LIBRARY [ ] OTHER _____

What time was it? _____ How long did it take you? _____

Was there anyone with you? [ ] YES Who? _____ [ ] NO

Were they studying too? [ ] YES [ ] NO

Did you help them? [ ] YES [ ] NO

Did this help you? [ ] YES [ ] NO

What kind of STUDY ENVIRONMENT did you have? [ ] QUIET [ ] T.V.

[ ] MUSIC PLAYING [ ] TALKING [ ] OTHER _____

Did you READ THE TEXTBOOK ASSIGNMENT before doing the exercises?

[ ] YES [ ] NO

How often did you refer to your notes? [ ] EVERY PROBLEM

[ ] ONLY WHEN I WAS STUCK [ ] NEVER [ ] OTHER _____

How did you feel about math:

Before doing your homework? _____

While doing your homework? _____

After doing your homework? _____

Possible choices are confident, anxious, well-prepared, totally lost, angry, frightened, relieved, happy...

List the specific questions you want to ask tomorrow in class. __

MATH FOCUS FOR THE DAY

WEEK 3 -- MONDAY

Re-do some of the homework problems from the first chapter. Make sure you do at least one of each type of problem.

Were you able to do the problems without looking at your notes? If not, did it just take a quick peek for you to remember or did you have to really review a lot? Why do you think that happened? _____

How do you think you can keep from forgetting the material in the future so you won't have to re-learn it for a test? _____

MATH ENCOUNTER

Write about a math encounter you had today (besides math class). How did it make you feel? _____

Today's Date: _____

HOMEWORK ASSIGNMENT for tomorrow: _____

Did your math class meet today? [ ] YES [ ] NO

If so, did you go to class? [ ] YES [ ] NO

Did you do the homework due today? [ ] YES [ ] NO

How much? [ ] ALL [ ] PART # Done _____ Out of _____

Is there a TEST or QUIZ coming up? [ ] YES [ ] NO

Over what? _____ When? _____

What math topic was covered on the homework? _____

_____

Where were you when you did today's homework? [ ] YOUR ROOM

[ ] LIBRARY [ ] OTHER _____

What time was it? _____ How long did it take you? _____

Was there anyone with you? [ ] YES Who? _____ [ ] NO

Were they studying too? [ ] YES [ ] NO

Did you help them? [ ] YES [ ] NO

Did this help you? [ ] YES [ ] NO

What kind of STUDY ENVIRONMENT did you have? [ ] QUIET [ ] T.V.

[ ] MUSIC PLAYING [ ] TALKING [ ] OTHER _____

Did you READ THE TEXTBOOK ASSIGNMENT before doing the exercises?

[ ] YES [ ] NO

How often did you refer to your notes? [ ] EVERY PROBLEM

[ ] ONLY WHEN I WAS STUCK [ ] NEVER [ ] OTHER _____

How did you feel about math:

Before doing your homework? _____

While doing your homework? _____

After doing your homework? _____

Possible choices are confident, anxious, well-prepared, totally lost, angry, frightened, relieved, happy...

List the specific questions you want to ask tomorrow in class. __

MATH FOCUS FOR THE DAY

WEEK 3 -- TUESDAY

Go over all the work you've done in class up until now. On a separate piece of paper, write at least one question about something you don't understand from each section. Be specific, don't just say "How do you do section 2.4?"

Was it hard to find a question from each section? Were some sections harder than others? _____

You now have a pretty good list of what you need to study for the test. Can you think of two or more ways you can get the answers to your questions? _____

MATH ENCOUNTER

What is the best thing that happened in class today? The worst? How did you feel? _____

Today's Date: _____

HOMEWORK ASSIGNMENT for tomorrow: _____

Did your math class meet today? [ ] YES [ ] NO

If so, did you go to class? [ ] YES [ ] NO

Did you do the homework due today? [ ] YES [ ] NO

How much? [ ] ALL [ ] PART # Done _____ Out of _____

Is there a TEST or QUIZ coming up? [ ] YES [ ] NO

Over what? _____ When? _____

What math topic was covered on the homework? _____

_____

Where were you when you did today's homework? [ ] YOUR ROOM

[ ] LIBRARY [ ] OTHER _____

What time was it? _____ How long did it take you? _____

Was there anyone with you? [ ] YES Who? _____ [ ] NO

Were they studying too? [ ] YES [ ] NO

Did you help them? [ ] YES [ ] NO

Did this help you? [ ] YES [ ] NO

What kind of STUDY ENVIRONMENT did you have? [ ] QUIET [ ] T.V.

[ ] MUSIC PLAYING [ ] TALKING [ ] OTHER _____

Did you READ THE TEXTBOOK ASSIGNMENT before doing the exercises?

[ ] YES [ ] NO

How often did you refer to your notes? [ ] EVERY PROBLEM

[ ] ONLY WHEN I WAS STUCK [ ] NEVER [ ] OTHER _____

How did you feel about math:

Before doing your homework? _____

While doing your homework? _____

After doing your homework? _____

Possible choices are confident, anxious, well-prepared, totally lost, angry, frightened, relieved, happy...

List the specific questions you want to ask tomorrow in class. __

_____

_____

_____

MATH FOCUS FOR THE DAY

WEEK 3 -- WEDNESDAY

Pretend you're the instructor of your algebra class. Write three questions you feel would be on the test which is coming up. Exchange questions with your friends and see if you can get their questions right.

Was it hard to figure out possible test questions? How did you decide what would be a good question?_____

_____

_____

_____

_____

Were you able to do your friend's questions? Were they able to do yours? What do you think of this as a way to study for a test? _____

_____

_____

_____

_____

MATH ENCOUNTER

Write about a math encounter you had today (besides math class). How did it make you feel? _____

_____

_____

_____

_____

_____

_____

Today's Date: _____

HOMEWORK ASSIGNMENT for tomorrow: _____

Did your math class meet today? [ ] YES [ ] NO

If so, did you go to class? [ ] YES [ ] NO

Did you do the homework due today? [ ] YES [ ] NO

How much? [ ] ALL [ ] PART # Done _____ Out of _____

Is there a TEST or QUIZ coming up? [ ] YES [ ] NO

Over what? _____ When? _____

What math topic was covered on the homework? _____

_____

Where were you when you did today's homework? [ ] YOUR ROOM

[ ] LIBRARY [ ] OTHER _____

What time was it? _____ How long did it take you? _____

Was there anyone with you? [ ] YES Who? _____ [ ] NO

Were they studying too? [ ] YES [ ] NO

Did you help them? [ ] YES [ ] NO

Did this help you? [ ] YES [ ] NO

What kind of STUDY ENVIRONMENT did you have? [ ] QUIET [ ] T.V.

[ ] MUSIC PLAYING [ ] TALKING [ ] OTHER _____

Did you READ THE TEXTBOOK ASSIGNMENT before doing the exercises?

[ ] YES [ ] NO

How often did you refer to your notes? [ ] EVERY PROBLEM

[ ] ONLY WHEN I WAS STUCK [ ] NEVER [ ] OTHER _____

How did you feel about math:

Before doing your homework? _____

While doing your homework? _____

After doing your homework? _____

Possible choices are confident, anxious, well-prepared, totally lost, angry, frightened, relieved, happy...

List the specific questions you want to ask tomorrow in class. __

_____

_____

_____

MATH FOCUS FOR THE DAY

WEEK 3 -- THURSDAY

Make some flashcards of problems you're having trouble with. Put a problem on one side and the solution showing steps and comments about what to do next on the other. When you go back through the flash cards, don't peek! Only use the soution to check your answer.

Was it hard to find problems to turn into flashcards? What were some problems you had? _____

_____

_____

_____

_____

Do you think this would be a good way to study for a test? Can you think of any ways this could be made better for studying?

_____

_____

_____

_____

_____

MATH ENCOUNTER

What kind of class participation did you have today (answer questions, ask a good question)? _____

_____

_____

_____

_____

_____

Today's Date: _____

HOMEWORK ASSIGNMENT for tomorrow: _____

Did your math class meet today? [ ] YES [ ] NO

If so, did you go to class? [ ] YES [ ] NO

Did you do the homework due today? [ ] YES [ ] NO

How much? [ ] ALL [ ] PART # Done _____ Out of _____

Is there a TEST or QUIZ coming up? [ ] YES [ ] NO

Over what? _____ When? _____

What math topic was covered on the homework? _____

_____

Where were you when you did today's homework? [ ] YOUR ROOM

[ ] LIBRARY [ ] OTHER _____

What time was it? _____ How long did it take you? _____

Was there anyone with you? [ ] YES Who? _____ [ ] NO

Were they studying too? [ ] YES [ ] NO

Did you help them? [ ] YES [ ] NO

Did this help you? [ ] YES [ ] NO

What kind of STUDY ENVIRONMENT did you have? [ ] QUIET [ ] T.V.

[ ] MUSIC PLAYING [ ] TALKING [ ] OTHER _____

Did you READ THE TEXTBOOK ASSIGNMENT before doing the exercises?

[ ] YES [ ] NO

How often did you refer to your notes? [ ] EVERY PROBLEM

[ ] ONLY WHEN I WAS STUCK [ ] NEVER [ ] OTHER _____

How did you feel about math:

Before doing your homework? _____

While doing your homework? _____

After doing your homework? _____

Possible choices are confident, anxious, well-prepared, totally lost, angry, frightened, relieved, happy...

List the specific questions you want to ask tomorrow in class. __

MATH FOCUS FOR THE DAY

WEEK 3 -- FRIDAY

Describe the way you usually study for a test. _____

Does this method work well for you? Why or why not? _____

What are some ways that you can change the way you study so that it will be more effective? _____

MATH ENCOUNTER

Write about a math encounter you had today (besides math class). How did it make you feel? _____

Building

Confidence In Mathematics

PART II :

Study Skills

INTRODUCTIONS

Pair off with another person, and use the questionnaire below to interview each other. You might be surprised at how alike your answers are.

Person interviewed: _____

Where is he/she from? _____

What High School did he/she go to? _____

Intended major: _____

What kind of job does he/she want to have after getting out of school? _____

Last math class taken? When? _____

_____

How much math do you plan to take in college? _____

_____

Overall, how do you like math? _____

_____

Name or describe the teacher and/or class where you first started having problems with math: _____

_____

Your Study Environment

One of the big questions which students ask is "How can I study better?" One of the answers to this question is: Find your best study environment, and increase your concentration.

Your study environment is the place where you study, the conditions in that place, and the objects in that place. By changing around these items which make up your study environment, you can find which combination works best for you.

First of all, we have the place where you study. This can be your room, the dining room table, the library, or wherever. No matter where you study, you should make that place one where only studying is done. It's not a good idea to study while lying down on your bed. Even though you may be comfortable, you sleep there, so your mind won't be in a "studying mood" it'll be in a "sleeping mood". Usually, studying at a desk in your room works best, but make sure you don't use your desk for eating or whatever. Your studying place is for studying only.

Next, we have the conditions in your studying place. "Conditions" includes lighting, noise, music, people, and so on. Lighting should be bright enough to see by, but make sure there's no glare. Glaring lights are a great way to get a headache.

Noise is another big factor. If there are a lot of people talking, bouncing off walls, or having squirt gun fights while you're trying to study, there's no way you'll be able to get anything done.

Next, we have music. Some people can concentrate with music playing, others can't. Soft music, without words seems to work best for blocking out other background noises. Sorry, T.V. is a no-no. There's no way you can watch T.V. and concentrate on homework at the same time. Even if it's on "Just for noise," it's too big a temptation to watch for a few minutes, and those few minutes add up.

Finally, we have people. Besides the noise factor we talked about before, just having someone in the room doing something else can really hurt your studying. Roommates are the big culprits here. It's really easy to get side tracked if your roommate's watching T.V. or talking on the phone while you're trying to study. The solution? Have your roommate study when you do, and make a rule that there are no phone calls, no visits from friends etc. during that study time. This isn't to say that studying with others in the room is bad, some people study even better when they study in a group. Whether you're that type of person or not is something you'll need to find out for yourself.

Besides where you study, and the conditions in that place, we also have to talk about what objects are in your study area. Objects which should be in your area are pens and pencils, an eraser, a dictionary, thesaurus, spelling dictionary, and a book which contains grammar and punctuation rules (this is for all studying, not just math). The chair you sit in shouln't be

uncomfortable, but it shouldn't be too comfortable either. A good rule is that your feet should always touch the floor. Of course, you should have all of the class materials you'll need too.

Some things you shouldn't have in your study area are clocks, pictures you'll be tempted to look at, a T.V., and toys that you might play with instead of studying. As you can see, what we're trying to do is give you a place where you're used to studying, and doesn't tempt you to do anything but study while you're there. The first week's journal assignments deal with finding the best study environment for you.

Concentration

We've talked about all things in your study environment except the most important one, you. The best study environment in the world won't help if you aren't able to concentrate on studying.

The first way you can concentrate better while studying is to have an active approach. A passive studier just sits there and reads the book without thinking, so the information gets lost pretty easily. An active studier makes notes while he or she is reading, asks questions and finds the answers. He or she reacts to the material and tries to find connections between the new material and what has been read and studied before. Studying this way gives your brain something to do besides reading material and forgetting it when you're not concentrating on it any more. The more connections that are made, and the more something is repeated, the better you will remember it.

The second way to concentrate better is to get rid of distractions. There are two general types of distractions, external and internal. We've talked about ways to reduce external distractions already. Try to be in a place where there's not a lot of movement, where it's quiet, no distracting toys or pictures. Above all, make sure you're prepared to study. Have all of your materials on hand, with your pencils sharpened, so there's nothing you'll have to get up for in a few minutes

Internal distractions are a bit harder to deal with. The most common internal distraction is daydreaming, the next is hunger. In order to fix daydreaming, take a few minutes and figure out what it is that you're thinking about, and get it all straightened out. That way, you won't be distracted by it any more. It's best to make sure you eat before you study. Eating while you study will cause the blood to run to your stomach and away from your brain making it hard to concentrate. Also, beware of snacks that have a lot of sugar in them. Your body will process the sugar quickly, and you'll end up feeling tired. If all else fails, take a break. Short breaks while studying are fine, in fact, they may help you study better. Rest your eyes, and maybe try to get some exercise--a short walk can work wonders.

Where does my time go?

This worksheet is designed to help you find out what you spend your time on each day. Fill in the spaces below with what you actually did during each time period. When you figure out what your big time wasters are, you can avoid them in the future.

Before 7:00

7:30

8:00

8:30

9:00

9:30

10:00

10:30

11:00

11:30

12:00

12:30

1:00

1:30

2:00

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9:00

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10:00

10:30

11:00

After 11:00

MINI-MATH: Estimation

Estimation is a very important skill. It can be used to figure out how much of a tip to give at a restaurant, whether the bill was added up right, or what the tax will be when you buy something at the store. More importantly, estimation should be used to determine if an answer to a math problem makes sense. An important thing to remember is that **there is no one right answer when using estimation.** Instead, we only want a general idea as to what the exact answer might be.

There are five different strategies for estimation: front-end, clustering, rounding, compatible numbers, and special numbers. We will go over each strategy and give an example of the best time to use it.

Front-End Strategy:

The front-end strategy is based on the fact that the front (left-most) digit of a number is the "most important" because it counts for the most. For example, in the number 236, the 2 is the most important because it stands for the number 200 which is "worth more" than the 36. This strategy is good for adding up grocery receipts and restaurant bills.

There are two steps to this strategy:

1) Add up the front-end numbers.
2) Adjust the total by approximating what the next numbers add to.

This sounds confusing, but here's an example that will clear things up:

First, we start with a list of numbers.

```
   2.34
   1.29
    .53
    .19
   4.23
Tax .60
```

To estimate the total, we first add up the left-most numbers since the dollars are more important to the total than the cents. The dollars add up to 7. Next, we approximate our total in the cents column by making pairs which add up to a dollar.

```
                --.34
.60 + about .30   .29--    .53 is about .50, .29 is almost .30,
+ about .20 is    .53--|   and .19 is almost .20, so here we
another dollar.   .19--    a dollar.
                --.23
                --.60
```

All together, we have about 2.00 in change, so our total bill is about 7.00 + 2.00 = 9.00. This isn't an exact answer, but it's close enough to tell us the general amount of the bill.

Clustering Strategy:

This strategy is used when all of the numbers that you are adding cluster around a common value. For example, let's say that we've just asked a group of ten executives from big companies what their salaries are. Here are their answers:

Executive 1:	$52,450
Executive 2:	$51,920
Executive 3:	$48,960
Executive 4:	$54,235
Executive 5:	$53,000
Executive 6:	$53,675
Executive 7:	$52,111
Executive 8:	$47,888
Executive 9:	$49,000
Executive 10:	$50,876

If we wanted to know how much the ten executives made all together, it would be a real problem to add them all up by hand, especially if we didn't have a calculator. Instead, we use the fact that all of the salaries cluster around $50,000. That way, it's easy to figure out that their total combined salary is $50,000 x 10 = around $500,000. Try adding all the numbers on a calculator, and see how close we came. Are we close enough?

Rounding Strategy:

Rounding is probably the most familiar strategy to all of us. It involves rounding the numbers and doing the computations with the rounded numbers. The main purpose of the rounding strategy is to get problems that can be done easily in your head. This strategy works best to estimate the answers to multiplication problems.

Here's an example using the rounding strategy:

$$\begin{array}{r} 86 \\ \times\ 73 \end{array}$$

Let's call the 86 a 90, and the 73 a 70. This way, we have

$$\begin{array}{r} 90 \\ \times\ 70 \end{array}$$

this problem can be done in our heads as 9 x 7 plus two zeros or 6300. Again, this isn't an exact answer, but it gives us an idea of where the answer falls.

Compatible Numbers Strategy:

The compatible numbers strategy takes rounding a little bit farther. Here, we round so the numbers we're working with become compatible pairs that can easily be computed. This strategy works well with division problems.

Here's an example to clear things up:

$$47 \overline{)\ 4665}$$

This isn't an easy division problem, but if we change the 4665 to 4700, the problem becomes one we can do in our heads easily.

$$\begin{array}{r} \quad 100 \\ 47 \overline{)\ 4700} \end{array}$$

Or, let's try one that isn't quite so easy:

$$18 \overline{)\ 7653}$$

We aren't limited to changing just one of the numbers, we can change both if it works better. So, since 18 is almost 20, and 7653 is about 7600, we have another compatible pair of easy even numbers.

$$20 \overline{)\ 7600}$$

Which can change to $\begin{array}{r} \quad 380 \\ 2 \overline{)\ 760} \end{array}$.

Special Numbers Strategy:

This final strategy uses some of the other strategies we've already talked about. Here, we look for powers of ten or common fractions and decimals. It requires that you know what fractions and decimals are close to 1/2, to 1 and which are close to 0. We will do a few examples to help you get the idea.

(1) 5/6 + 3/8

5/6 is near 1, and 3/8 is near 1/2 so the answer is near 1 1/2.

(2) 5/12 of 880

5/12 is near 1/2 (6/12 = 1/2) so 1/2 of 880 is 440.

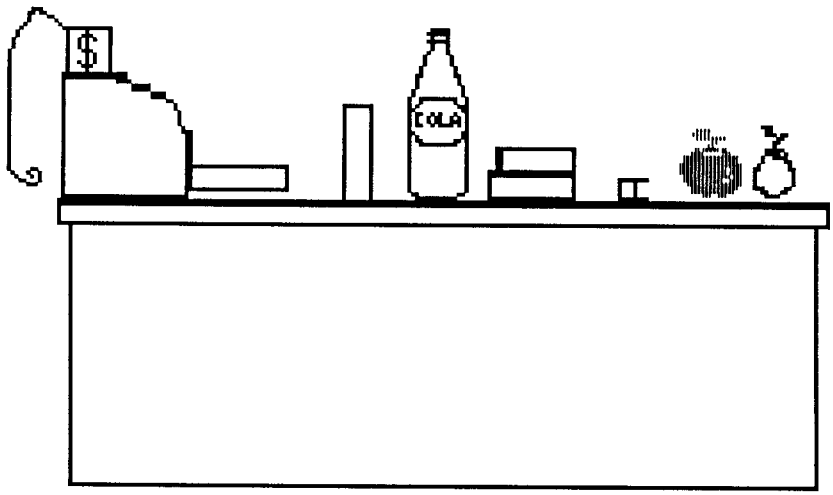
(3) 486 x .46

.46 is almost .50. We know that .50 is the same as 1/2, so 1/2 of 486 = 243.

(4) 9.76% of 1276

9.76 is almost 10. To take 10% of 1276, we move the decimal to the left one place and get 127.6 as our answer.

Try to use each of these strategies. Practice them when you're in the grocery store, or in a restaurant. Try making lists of prices and estimate the answer, then see how close you came. Estimation is a very powerful tool, but like any tool, you need to use it in order to be good with it.



What is motivation

Motivating Yourself to Get the Work Done

While working on math (or anything for that matter) the problem of motivation comes up. Too often, we just don't want to do anything, especially homework. The following motivation techniques are really helpful. We will talk about self motivation first, and then discuss how the techniques can be applied to working in groups. These techniques will not work if you're not serious about using them. It takes a lot of self discipline to work out these goals and keep at them, but that discipline can have a big reward.

GOAL SETTING:

The first strategy we will talk about is Goal Setting. Your long term goals should be broken down into short term goals that are more easily obtained. For example, the goal of graduating from college can be broken down to passing the semester, which can be further broken down into passing your classes. An individual class you want to pass, like math, can be broken down to doing well on tests, a particular test, and a certain weekly quiz. This last goal is more immediate. You will have the results from the quiz very soon, as opposed to having to wait until the end of the semester for the goal of passing all of your classes. Getting immediate feedback is very important. Having to wait too long for the completion of a goal makes it seem less important. You don't work on things that seem unimportant.

We will show you a completed goal statement and then list the guidelines for making goals.

"I am getting at least an 8 out of 10 on this Friday's quiz. I feel wonderful. I am very proud, I worked and studied hard, and it has paid off."

1. Think quietly about what you want to teach yourself or accomplish, and from this, decide what your goals are.

2. Write your goals in first person, present tense. In other words, tell what you are doing (use the word 'I'), as if the goal is already being achieved.

3. Make goals brief so you can write them on a 3x5 notecard and read them in about a minute. This way, they can be read often.

4. Be specific when writing goals. Don't just say "I'm doing better," but rather, "I'm getting 8 out of 10 on my quiz this Friday." There should also be a specific date by which the goal is to be accomplished.

5. Use "good-feeling" words when writing the goals. Concentrate on how good you'll feel when the goal is accomplished.

6. Read your goals often. When reading goals, look at how you are behaving and see if that matches what is necessary to reach your goals.

PRAISING:

The next strategy, Praising, is best described by the phrase "Catch yourself doing something right."* We are so used to telling ourselves what we're doing wrong or bad, that we feel down on ourselves most of the time. The praisings are for when you do something right that moves you toward your goal and you need a pat on the back. It isn't possible to be perfect, so use the praisings when you move even a little bit toward your goal. Don't wait until you've reached it. We'll show you a praising, and then the five guidelines for doing them.

"I studied really well tonight. I wrote down my specific questions for class tomorrow. I started early enough that I have time to watch my favorite show on T.V. without feeling guilty. I am confident of reaching my goal on Friday. I can do well in this and any other class."

1. Praise yourself immediately.

2. Tell yourself specifically what it is you did right or approximately right.

3. Tell yourself how you feel about how you did. Let yourself really feel your success. Don't take any success for granted, it's important.

4. Remind yourself that you are a person who can succeed.

5. Encourage yourself to keep up the good work. Continue the same behavior because you want to feel good again soon. Yes, you're the one praising your deeds, but praise is praise, and we all need it to continue, especially when we know we deserve it.

RECOVERY:

Finally, the third technique, Recovery, is for when we slip and behave in a way that hurts our chances of reaching our goal. Here is a recovery followed by its guidelines. The five guidelines for recoveries are split into two parts:

"I watched T.V. tonight instead of doing my homework. This was a bad choice. I didn't fully understand what we went over in class today, and I'll be more behind tomorrow. This really hurt my chances of doing well on the quiz. The choice was bad, but I am good. In order to do well on the quiz, I will have to work even harder in the coming days."

---

*This phrase was created by Drs. Spencer and Constance Johnson in their book (see reference section).

Part I

1. Recognize inappropriate behavior as soon as possible.

2. Tell yourself specifically what it was that you did wrong. Let yourself know exactly how this behavior is hurting your chances to reach your goal.

3. Sit quietly for a bit and think about how you feel after behaving inappropriately. You feel bad, and you want to feel better soon.

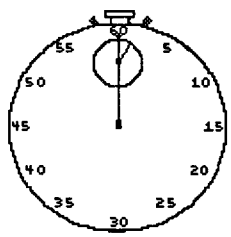
Part II

4. Don't make excuses for why you behaved that way, just accept the fact that you did it. Remind yourself that the behavior is bad, but you are **good.** Everyone makes mistakes, and this was one of yours. Just because you did something wrong does not make you bad, just human.

5. Now that you've identified and accepted the responsibility for the inappropriate behavior, reestablish your goal, decide what needs to be done to attain that goal, and recover.

Notice that the recovery doesn't make excuses like, "I shouldn't have watched T.V., but I really like that movie." Or, "I don't really have to work that hard, I'm tired, I deserve a break." It simply accepts the fact that a bad choice was made, and the consequences have to be lived with. Once this is done, recovery can take place, you're back on the right track, and less likely to make the same mistake again.

These same techniques can be used with a group of two or more people. What's really nice about working in a group is that it gives you someone to talk to. Taking a few minutes to talk over goals or how things are going can really help. Having another person around also helps you keep to your plans.



MINI-MATH: Order of Operations Rules

The order of operations rules tell us what part of an equation to evaluate first. There can be some serious problems if the rules aren't followed. For example, let's take a problem:

$$3 + 4 \times 2 - 1 \times 3$$

If we were simply to do the problem from left to right, we would have

$$\begin{array}{r} 3 \\ +\ 4 \\ \hline 7 \\ \times\ 2 \\ \hline 14 \\ -\ 1 \\ \hline 13 \\ \times\ 3 \\ \hline 39 \end{array}$$

Unfortunately, this is wrong. The correct answer is 8. Let's review the order of operations rules and see how the answer is supposed to be found. We will list the operations in the order they are supposed to be done.

1. PARENTHESES
   From inside to outside.
2. EXPONENTS
3. MULTIPLICATION and DIVISION
   From left to right.
4. ADDITION and SUBTRACTION
   From left to right.

Let's look again at our original problem:

$$3 + 4 \times 2 - 1 \times 3$$

There are no parentheses, and no exponents. Next, we look at multiplication which is done from left to right. The multiplication problem, $4 \times 2 = 8$, is farthest to the left and is done first. Continuing to the right, we have $-1 \times 3 = -3$, so our problem becomes:

$$3 + 8 - 3 = 8.$$

Let's try another one that uses all of the operation types.

$$2 \times [\ (3 \times 4)^2 - 4\ ] + 2 \times 6$$

First, we do the inside set of parentheses, and the problem looks like this:

$$2 \times [\ (12)^2 - 4\ ] + 2 \times 6$$

Next, we do the second set of parentheses. Remember, the order of operations rules hold inside the paretheses, so we do the exponent before we subtract.

$(12)^2 = 144$, and $144 - 2 = 142$. Our equation now looks like this:

$$2 \times 142 + 2 \times 6$$

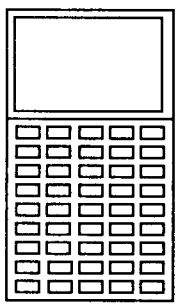
From here on, it's easy. First multiplication from left to right:

$2 \times 142 = 284$, and $2 \times 6 = 12$

and then addition:

$142 + 12 = 154$.

Practice working with the order of operations rules. Try looking in your math book for problems, or make up your own. You can check your answers on your calculator.



Reading a Math Book

When studying math, one of the things that can help a lot is reading the math book. College instructors expect different things from students than high school teachers do. They expect the student to read the textbook on his or her own. They won't make any assignments, they will simply assume the student is serious enough about school, and mature enough to take the time to read the book in addition to doing the assigned homework. Often, the books will cover little things that the instructor didn't have time to go over in class. And these little things have a habit of becoming important on tests.

The trouble is, reading a math book is hard. Math books aren't written like regular textbooks. Instead of repeating ideas in different forms in order to make them easier to understand, math books are written with as few words as possible. The author(s) of a math book won't repeat themselves to make things clear. They will write only enough to give a short, clear explanation, and then add diagrams, charts, and examples to help the reader understand the idea. Following are some guidelines to use when reading a math book:

1) Slow down! You can't understand a math book if you try to read it quickly. Trying to read quickly will only get you confused and frustrated. Important things are usually put in bold print or boxes, so pay special attention to anything set off from the regular text.

2) Don't skip the graphs and diagrams. They are there for a reason, and that's to help you understand what's going on. If you don't take the time to study them, they can't do their job.

3) Do the examples. Don't simply skim over them, or even just do them in your head. Write down the examples on a piece of paper and do them with the book. Write down the steps in words next to the problem as you work it out.

4) Have notebook paper and a pencil (or pen) with you as you read the book. Again, simply reading a math book isn't enough. Use the paper to write down the main ideas, the steps of the problems, the examples, definitions, and any questions you have. By writing down your questions while you do the homework, you avoid forgetting it when you get to class the next day.

The notes you've taken from the book contain the information you'll need to study for a test. Keep the sheets (well labeled) in a three-ring binder. They are a great source for flash cards, and the binder will help you study for the final.

Notetaking

Notetaking is one of the most important skills you can have in college. Good notes can mean the difference in a grade. Like reading a text, taking notes is an active, not a passive process. Too often, we get into the habit of pencil listening--writing down what we hear and not really paying attention to it. Here are some guidelines for good note taking:

1. Sit near the front of the room. When you're in the back, it's hard to read the board and hear the instructor speak. Math teachers use the board a lot, don't let a chance to get a better grade pass you by because you think it's "not cool" to sit near the front.

2. Lean forward in your seat, don't slouch back. If you're sitting forward, you'll be able to pay attention better. (Also, teachers tend to give students whom they feel are paying attention the benefit of the doubt more often when assigning grades.)

3. Take a few seconds to date each page of notes. This way, you won't get lost when looking for particular class notes.

4. Write only on the right hand pages of your notebook, one side of the paper. This will allow you to have somewhere to write questions and explanations about the material.

5. Write as quickly and neatly as you can, use abbreviations wherever possible. Make sure that you'll understand your abbreviations later.

6. Listen for words like, "This is important," and, "This will be on the test." Most teachers aren't out to get you, they really want you to do well, and they will give you hints in their lectures. It's up to you, however, to listen closely and find them.

7. Simply copying down examples isn't enough. Make sure you understand the steps that were taken. Often, a teacher will tell you the exact steps to a problem, or better yet, write them on the board. Get those steps written down. A neatly written example won't help if you don't understand how to do it.

8. Review your notes thoroughly later (not too much later). Make sure you can understand what they mean, and write in any necessary clarifications.

9. When you take notes, keep in mind the fact that you aren't simply taking them so you'll understand the homework. These notes are a study tool. This is what you'll be using to study for the final. Keep them neat and organized, so when the time comes to study for the big test they'll tell you what you need to know.

MINI-MATH: Another Way to Look at Negative Numbers

We're all familiar with the number line explanation of how to add positive and negative numbers. In that explanation, positive numbers represent "jumps" to the right while negative numbers are "jumps" to the left. The idea of inverses can also be used to demonstrate the same idea as the number line.

We know that 2 - 2 = 0. This can also be written as:

$$2 + (-2) = 0.$$

If we were to use the symbol (+) for each positive unit and the symbol (-) for each negative unit, the problem would look like this:

(+) (+)
(-) (-)

So, we can see that each (+) cancels a (-).

To do addition, we line up the (+) and (-) counters and cancel as many as possible. Count what you have left, and that's your answer. Let's do some examples.

A. 6 + 3

(+) (+) (+) (+) (+) (+) First, we have six pluses,
(+) (+) (+) then three more.

Nothing cancels, so our answer is +9 or simply 9.

B. 5 - 3

Rewrite as 5 + (-3), then put down the counters.

(+) (+) (+) (+) (+)
(-) (-) (-)

Three sets cancel, and we have two (+) counters left. Our answer is 2.

C. 3 - 7

Rewrite as 3 + (-7).

(+) (+) (+)
(-) (-) (-) (-) (-) (-) (-)

Three sets cancel, and we have four (-) counters left. Our answer is -4.

D. -4 - 5

Rewrite as -4 + (-5).

(-) (-) (-) (-)
(-) (-) (-) (-) (-)

Nothing cancels, so we have nine (-) counters. The answer is -9.

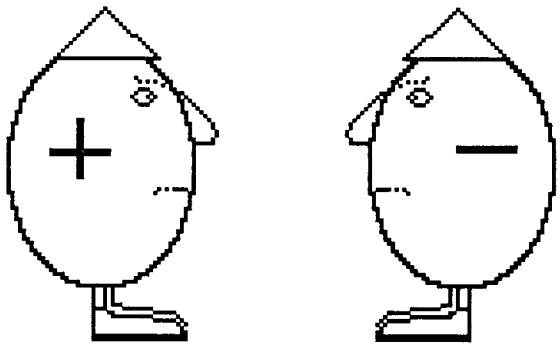
E. -3 - (-2)

This one takes a bit of thought. Try to remember that "Minus a negative is the same as plus a positive." So we rewrite this problem as -3 + 2.

(-) (-) (-)
(+) (+)

Two sets cancel, with one (-) marker left. Our answer is -1.

We don't expect you to write down little pluses and minuses on every addition problem. This method should be used until you're used to how positive and negative numbers work with each other. Whenever you get stuck on a strange looking addition problem, break it downs into pluses and minuses, and it'll be a lot easier to see what the final answer should be.



Studying With Flash Cards

One of the best ways to remember information is to review it often. Also, research indicates that if we are given a list of things, we will remember the first and last things on the list best. So, if we make up cards with information on them (3x5 index cards work best), we have a whole bunch of lists with one thing on them, and we'll remember the information better. Flash cards are great for definitions, formulas, equations, and sample problems. Here are some suggestions for using flash cards:

1. Put the word or problem to be learned on one side of the card, and the definition or explanation on the other. This way, you can test yourself every time you review your cards.

2. Carry the cards with you and review them whenever you have a free minute. **Don't wait until just before the test to start reviewing your cards!** Getting familiar with the information early is the point of making the cards.

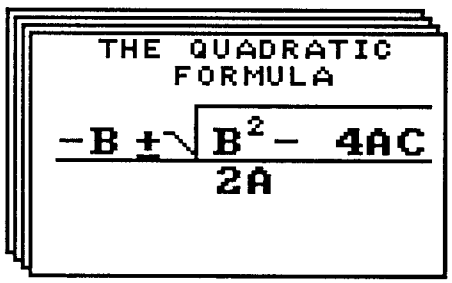
3. Start making your cards immediately. Make them as soon as something new comes up. Don't wait until you have three chapters to do.

4. Make sure you keep studying the cards you don't know yet. Going over the ones you know may make you feel good, but the point is to know <u>all</u> of them.

5. Break the cards down into smaller groups for easier studying. If you have 20 cards to study, learn them 5 at a time. Go over all the cards together at least once a week.

6. Don't get used to doing the cards in only one order. Shuffle them around so you can recall the information when it's needed.

REMEMBER, It's how often you review the cards that's important; that's what will help you remember.



Studying For a Math Test

There are a number of things we can do when studying for a math test that will make taking the test less of a panic situation.

1. First of all, **START EARLY.** You should start studying for the test at least a week early. Give the information time to sink in. As we said before, the more often you review information, the better you remember it.

2. Organize your material. Go through the material in a methodical way. Don't jump haphazardly through it, that will only confuse you.

3. Constantly review your flash cards. If you begin to learn the definitions and equations right away, you have less to push into your mind right before the test.

4. Redo a few problems from each section on your homework. Don't look at your previous work, do them from scratch. Start doing this early so you're not rushing towards the end.

5. Make connections between the sections you have done. There is a reason they were grouped together. Determine how what was learned in each section is related to what was learned in the others.

6. Review the old quizzes which have been given. Chances are the problems will be similar.

7. Try to predict what kind of problems will be on the test. Make up a few problems and try to do them. Ask some friends from the class to do the same thing and trade.

8. Get together a study group. This can work if you don't use it as an excuse to talk and goof around. Make sure everyone in the group understands how to do the problems before you go on. Warning: Studying in groups can take a lot of time. Make sure you plan accordingly.

9. Take breaks every now and then. Get up and walk around. Your brain works best when it's rested.

How to Take a Math Test

Here are a few things which will help reduce the stress involved in taking a math test.

Before the test:

1. **Be prepared!** This is obvious, but it's the most important thing you can do for yourself. Taking a test is much easier when you know you've prepared well.

2. Get enough sleep the night before. Coming into a test after pulling an all nighter is just about guaranteed to give you a lower grade.

3. Wear comfortable clothing to the test.

4. Get there about ten minutes before the test is scheduled to begin so you can "settle in".

During the test:

5. Don't rush into the test, take a deep breath, slowly let it out, and then proceed.

6. Read the entire test through first. **Read all instructions carefully.** Ask your teacher to clarify anything you don't understand or can't read. Don't ask your friends, you might get accused of cheating.

7. Do the problems you are sure of first. Too often people waste time on questions they can't do and run out of time before they get to the easy one on the next page.

8. Check your answers <u>carefully</u>. Points can be lost because of silly sign errors or a decimal in the wrong place. Try plugging your answer back into the <u>original</u> problem, if it doesn't work, something went wrong. Also, see if your answer is reasonable. If your answer says that the circumference of a tire is forty miles, go back and see what you did wrong. Just because you followed the right proceedure doesn't mean you have the right answer.

9. Don't get flustered if other people finish before you do. Some people work faster than others.

10. Keep an eye on the time. If a problem is taking much too long, go on and come back to it later.

11. Relax.

Building

Confidence In Mathematics

PART III :

Time Management

PART III: TIME MANAGEMENT

This section of the book deals with managing your time more effectively. Being in college is a full-time job. Most students take about fifteen hours of classes. That means that you are in classes fifteen hours a week. Add to that the fact that you are supposed to study two hours for every hour you are in class, and it's no wonder students don't seem to have any time left over. It's here that good time management techniques can come in handy. They won't do the job by themselves, it's up to you to to take the responsibility to make shedules and to keep them.

These methods for time management go from specific to general. First of all, we have a daily "Things to do" sheet, then a weekly schedule, and finally, a monthly schedule. All of the sheets in this section may be photocopied so they can be used more than once.

THINGS I HAVE TO DO TODAY:

This sheet is a daily planner. It takes a while to get used to writing down everything which has to be done in a day, but once you do, things which have to get done don't get lost in the shuffle. It works best if you take ten minutes in the morning or the night before to set up your list. Of course, things can be added or changed throughout the day.

There are six columns to the sheet itself. Column one is the initial priority you assigned to the particular job -- for example, finishing the math assignment is number 1, getting your financial aid straightened out is number 2, writing up the composition assignment that's due in two days is number 3, while getting groceries is down around number 5. Next, we have the revised priority. This is just in case you decide that getting your financial aid straightened out is more important than doing your math homework after all, or time is running short and you have to decide which of your homework assignments is the most important. Column three has a couple of lines for writing down the job you need to do. Next, we have planned time, and actual time. Planned time is how long you think the job will take, while actual time is how long it really took. This is really helpful for seeing how well you estimated your time, and for planning the same job in the future. Finally, we have a place to check off when the job is done -- there's nothing like checking off a completed job.

This sheet is obviously one which will need to be photocopied so it can be used more than one day. Another idea is to make just one copy and get it laminated so you can use it over and over like a memo board.

WEEKLY SCHEDULE:

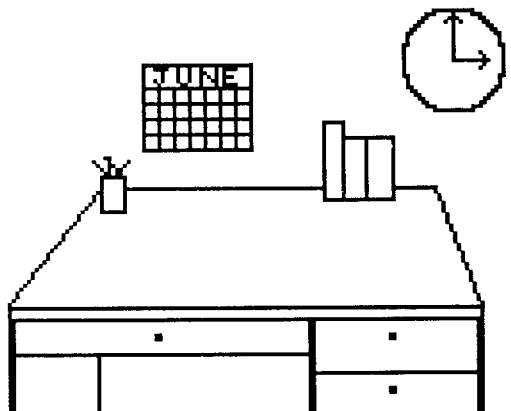
This schedule is for blocking off things that happen at the same time each week, like classes. The line above each hour is where that hour starts. For example, the line above 8:00 is where 8:00 begins. The line below that is 8:30, next comes 9:00 etc.

If we wanted to block out a class which met at 9:00 to 9:50 on Monday, we'd simply shade in the area between 9:00 and 9:50 with either colored pencils or an outliner marker (whether or not you shade in the area between 9:50 and 10:00 is totally up to you). Writing in the name of the class and the room helps too.

Other things that can be blocked off are meals, T.V. watching times, counseling sessions, tutoring sessions, and club meetings. We've included two schedules since plans tend to change after the first few weeks of classes. You might want to make a copy of this one too, so you can post it on a wall in your room.

MONTHLY SCHEDULE:

Finally, we have a monthly schedule for making long term plans. The dates have been left off so the schedule can be reused in other years. This schedule will be really useful to mark when tests are coming up and when papers are due. It can also be used to mark holidays, vacations, and football games. Using this will allow you to start reviewing for tests early, and will warn you that there's only two weeks left until the big term paper is due.



Date ________________

THINGS I HAVE TO DO TODAY

Initial Priority	Revised Priority	JOB	Planned Time	Actual Time	Done

DAY / TIME	Mon.	Tues.	Wed.	Thurs.	Fri.
8:00					
9:00					
10:00					
11:00					
12:00					
1:00					
2:00					
3:00					
4:00					
5:00					
6:00					
7:00					
8:00					

DAY / TIME	Mon.	Tues.	Wed.	Thurs.	Fri.
8:00					
9:00					
10:00					
11:00					
12:00					
1:00					
2:00					
3:00					
4:00					
5:00					
6:00					
7:00					
8:00					

AUGUST

SUN	MON	TUES	WED	THURS	FRI	SAT

SEPTEMBER

SUN	MON	TUES	WED	THURS	FRI	SAT

OCTOBER

SUN	MON	TUES	WED	THURS	FRI	SAT

NOVEMBER

SUN	MON	TUES	WED	THURS	FRI	SAT

DECEMBER

SUN	MON	TUES	WED	THURS	FRI	SAT

JANUARY

SUN	MON	TUES	WED	THURS	FRI	SAT

FEBRUARY

SUN	MON	TUES	WED	THURS	FRI	SAT

MARCH

SUN	MON	TUES	WED	THURS	FRI	SAT

APRIL

SUN	MON	TUES	WED	THURS	FRI	SAT

MAY

SUN	MON	TUES	WED	THURS	FRI	SAT

JUNE

SUN	MON	TUES	WED	THURS	FRI	SAT

JULY

SUN	MON	TUES	WED	THURS	FRI	SAT

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Appendix 2

Questionnaire for Quiz Study Data

(Please see attached)

MATH 110P Quiz Study Data Name _____
M3 For Quiz 3 9/19/88

Put an X by any items which describe how you studied for quiz number 3.

Do you think you did better than on the other two quizzes? _____

My answers reflected: Strictly my own work _____ Some help from teacher _____ help from other students during quiz _____ before quiz _____

WHERE

_____ Desk
_____ Table
_____ Easy Chair
_____ Bed (Lying)
_____ Bed (Sitting)
_____ Floor

PLACE

_____ Dorm Room
_____ Library
_____ Study Lounge
_____ Revis Math Lab
_____ Pow Wow
_____ Other Restaurant

STUDYING

_____ Did Homework
_____ Rev. Homework
_____ Rev. Quizzes
_____ Read Text
_____ Read Examples
_____ Rev. Notes

STUDY GROUP

_____ Alone
_____ With 1 Person
_____ 2 or More

PREPARATION

_____ All at Once
_____ 2 Sessions
_____ Short Periods

INTERNAL

_____ Hungry
_____ Daydreaming

TIME

_____ Right after this class
_____ Right after all classes
_____ Right after dinner
_____ After 9 p.m.
_____ After 11 p.m.
_____ Early Friday morning
_____ Just before class

DISTRACTIONS

_____ None (Quiet)
_____ TV
_____ Loud music w/words
_____ Soft music w/words
_____ Loud instr. music
_____ Soft instr. music
_____ Talking