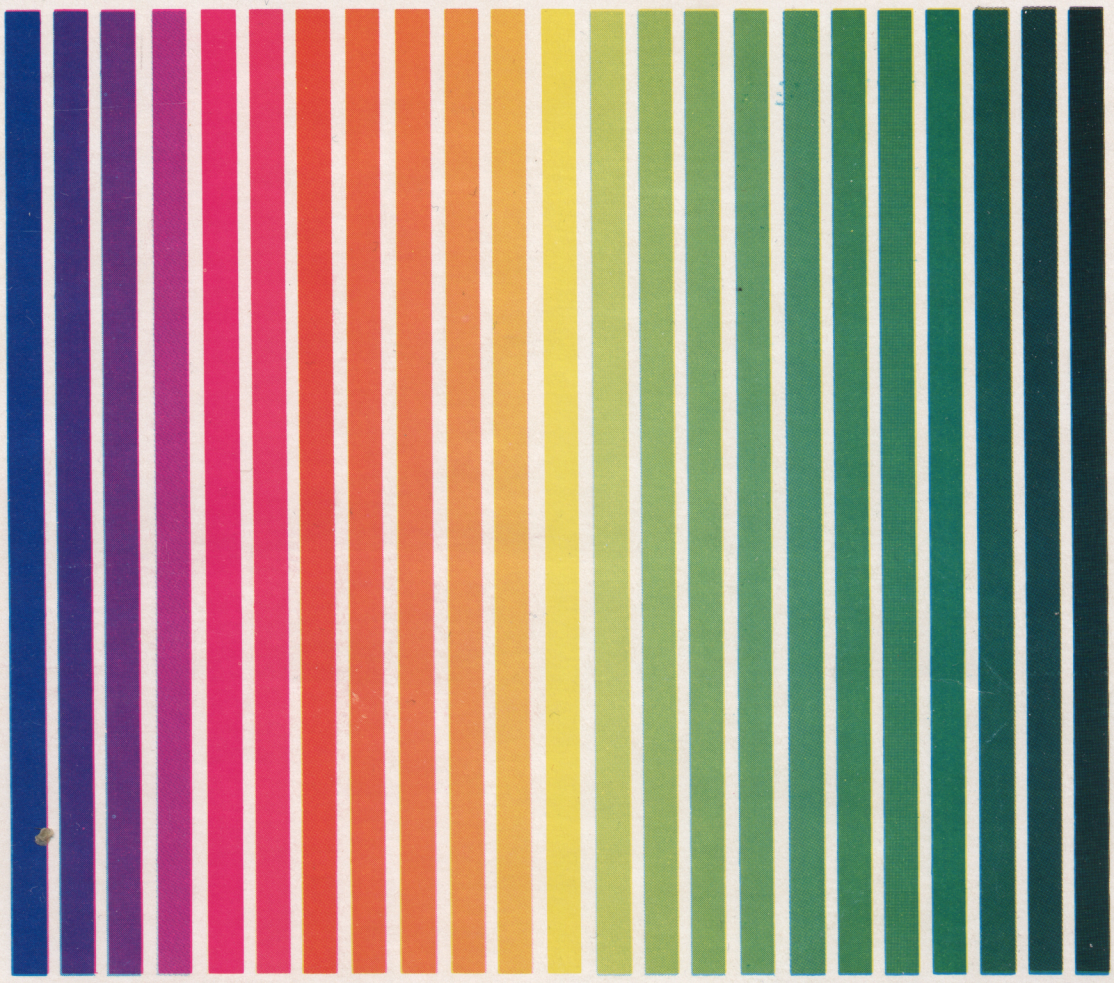
APX ATARI® PROGRAM EXCHANGE



Dan Rohr

THREE R MATH CLASSROOM KIT

THREE R MATH SYSTEM, plus worksheets and gradebook

Diskette: 40K
(APX-20203)
Version 3

Edition C

User-Written Software for ATARI Home Computers

Dan Rohr

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by

Dan Rohr

Distributed By

The ATARI Program Exchange
P.O. Box 3705
Santa Clara, CA 95055

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Introduction

Overview

THREE R MATH CLASSROOM KIT is a three-part program. This manual accompanies the four diskettes in your program package. Before you begin to use the program, take a look at the parts of the package and the way they're connected.

The first part of the package is the THREE R MATH SYSTEM, for which you have a teacher diskette and a separate student diskette. This program has already been tested and acclaimed by educators, and both students and teachers have found it easy to use. The teacher creates a seven-letter password, one letter representing each selectable drill feature, and gives it to the student. The student types in his name and the password, and the drill begins. A summary of the results displays at the end of the session. The results can also be stored on diskette and later printed out so that the student and teacher have a permanent record of the session. The printout contains all the problems worked, together with the correct answers, the student's answers, and the times required to work the problems. Ten extra problems also appear for more practice. Parents as well as teachers can use the printed summaries to help pinpoint the student's weak points and analyze his progress.

The second part of the program is the answer to the teacher's wish that each student could get more individual drill time on the computer. It's a rare school district that can provide enough computers for all its students. The THREE R MATH PRACTICE WORKSHEETS part of the kit lets you generate custom-tailored worksheets to supplement other practice methods. The worksheet program creates practice pages of problems without answers, problems with every other answer given, or keys with all the answers provided. The easy-to-use prompts make working with this program a snap.

The third part of the kit, THREE R MATH GRADEBOOK, offers a means of keeping records for the whole class or for individual students. You simply insert a diskette and forget about the long hours of painstaking record-keeping you used to do with your red pen. The cumulative record lets you and your students check on their progress, and streamlines the preparation of report cards.

The three-part program has 101 difficulty levels covering addition, subtraction, multiplication, and division. Problems range from adding two one-digit numbers through dividing a two-digit number into numbers between 1000 and 9999. The sequentially designed levels let each student work on problems at his or her current ability level. Teachers can use the program in classes from kindergarten through eighth grade, and parents can use it at home to help speed their children's progress in computational skills.

The first three parts of this manual correspond to the three parts of the THREE R MATH CLASSROOM KIT. The fourth part of the manual is a detailed list of the codes for the 101 levels of the program. Go through the first three parts to learn how the program works, and then refer to the codes as you plan and record your students' custom-tailored learning experiences.

Required accessories

ATARI BASIC Language Cartridge
40K RAM
ATARI 810 Disk Drive
Additional DOS-II formatted diskettes for storing data
ATARI 825 80-Column Printer or Epson printer

Contacting the author

Users wishing to contact the author may write to him at:

2823 Alta St.
P.O. Box 391
Los Olivos, CA 93441

or telephone him at:

805/688-8270

PART I:

THREE R MATH SYSTEM

Important notice

Read this before you begin using THREE R MATH SYSTEM, or this part of the program won't work.

The THREE R MATH SYSTEM part of the program contains two diskettes, the student diskette and the teacher diskette. For copyright protection, the teacher diskette can't be duplicated. If this diskette is defective, call APX at 800/538-1862 (within California, 800/672-1850) to inquire about a replacement diskette.

You must duplicate the student diskette before you can run the program!

The diskette is unnotched to protect the software against accidental erasure. However, this protection also prevents a program from storing information on the diskette. THREE R MATH SYSTEM involves storing information. Therefore, before you can use this part of the program, you must duplicate the contents of the student diskette onto a notched diskette that doesn't have a write-protect tab covering the notch.

To duplicate the student diskette, call the Disk Operating System (DOS) menu and select option J, Duplicate Disk. You can use this option with a single disk drive by manually exchanging source (the student diskette) and destination (a notched diskette) until the duplication process is complete. You can also use this option with multiple disk drive systems by inserting source and destination diskettes in two separate drives and letting the duplication process go on automatically. (Note: This option copies sector by sector. Therefore, when the duplication is complete, any files previously stored on the destination diskette will have been destroyed.)

Introduction

Overview

THREE R MATH SYSTEM is a basic math drill and practice program designed for students from kindergarten through eighth grade level. It's so flexible that you can use it in a classroom or in the home. It can even improve efficiency in using hand-held calculators.

The program's unique password system lets you select a specific type and level of problem (such as multiplication of a two-digit number by a one-digit number), the amount of time the problem appears on the screen, the number of problems in each assignment, and the total time allowed to work the problems. Once you select the password, the student has to do only two things to get started: type his name and type the password. THREE R MATH SYSTEM takes over from there.

You can choose from 101 specific difficulty levels of addition, subtraction, multiplication, and division. The levels range from adding two one-digit numbers to multiplying a three-digit number by a four-digit number, or dividing a two-digit number into a number between 1000 and 9999. Since the levels are sequential, the student can work on problems that grow more difficult as his skill increases.

At the end of each set of problems, the student checks a summary of his results. He can save the results and print them later. All the problems he worked appear on the printout with their correct answers, his answers, and the time he spent on each problem. You can easily pinpoint his problem areas. Each printout includes ten practice problems for discussing the student's problems or progress, or for additional practice, or just for fun.

If you're using this program in a school, there's a place for the teacher's name on the printout. You can also print a summary of each student's results for comparison.

Required accessories

ATARI BASIC Language Cartridge
40K RAM
ATARI 810 Disk Drive
Additional DOS-II formatted diskettes for storing data

Optional accessories

ATARI 825 80-Column Printer or Epson printer

Sample session

To see just how easy THREE R MATH SYSTEM is to use, try the following sample session. The instructions in this manual explain the program's numerous functions in detail, but this sample session introduces the main features.

1. Insert the ATARI BASIC Language Cartridge into the cartridge slot of your computer.

2. Have your computer turned OFF.

3. Turn on your disk drive.

4. When the BUSY light goes out, open the disk drive door and insert the teacher diskette of THREE R MATH SYSTEM with the label in the lower right-hand corner nearest to you. Close the door. (Use disk drive one if you have more than one drive.)

4. Turn on your computer and TV set. The program will load automatically into computer memory.

5. A choice displays on the first screen. It looks like this:

```
THREE R MATH
  SYSTEM-A
1. STUDENT PROG.
2. TEACHER PROG.
   NUMBER?

COPYRIGHT (C)1982  BY DAN ROHR
```

Figure 1 First display screen

6. Press 1. You have a short wait while the student program is loading.

7. When the program instructs you to insert the student diskette, remove the teacher diskette from the disk drive and replace it with the student diskette. Close the disk drive door. Press the START key.

8. The next screen tells you that you're ready to begin:

```
        THREE R MATH
          SYSTEM-A
    **********************
    *       PRESS        *
    *      [START]       *
    *    TO    BEGIN     *
    **********************
COPYRIGHT (C)1982   BY DAN ROHR
```

Figure 2 START screen display

Press the START key.

9. Type your name (up to ten letters) and press the RETURN key. Press the DELETE/BACK S key to remove a mistake before typing a correction.

10. Next the program asks, "WHAT IS YOUR PASSWORD?" For this sample session, type the following:

E 4 B P F A A

[This gives you 5 subtraction problems of a two-digit number subtracted from a three-digit number with no regrouping. The problems remain on the screen for a maximum of 15 seconds. You have 5 minutes to complete all of them.]

11. When a problem appears, type your answer, beginning with the digit on the right of the number of your answer. (If your answer is 238, type 8 first, then 3, and finally 2.)

12. If you type the correct answer, press any key to continue. If you wait past 15 seconds, the words "THE TIME IS UP" display on the screen. Press any key to repeat the problem.

You can wait as long as you like before you press a key to try another problem.

If you answer incorrectly, the words "WRONG. TRY AGAIN" appear. Press any key to repeat the problem.

If you miss it a second time, the correct answer displays for you to study. Make sure you miss at least one problem, and let the time run out for one problem, so that you can see what happens.

13. After the last problem, you receive a letter from "Smedley" . Follow the directions on the screen to press any key for your summary.

14. Check your summary, and then answer the question "SAVE PRINTOUT? Y/N?" by typing N and pressing the RETURN key.

15. Last, type E to return to the START display screen (Figure 2).

Password code

You can assign 101 different types of addition, subtraction, multiplication, and division problems for a student to work. You can also control the speed, the number of problems per assignment, and the total time allowed.

The following is an abbreviated description of each part of the password. There are seven parts, each represented in code by a letter or number that tells the program your specific request.

The student doesn't have to learn what each letter or number means. He just types it on the keyboard, and the program takes over for him.

APPENDIX A of this manual gives a complete explanation of what each letter and number in the password stands for. Refer to this appendix whenever you're planning assignments.

Part	Description
1-2	Requires a letter followed by a number. Specifies type and difficulty of problem. Example. F1 means subtraction of a 3-digit number from another 3-digit number with no regrouping. (111-100)
3	Requires a letter. Specifies number of problems the student works, ranging from 5 to 70, or not set at all. Example. K means 50 problems.
4	Requires a letter. Specifies how long the problems display on the screen, from 1 to 90 seconds, or not set at all. Example. D means 3 seconds.
5	Requires a letter. Specifies the maximum number of minutes to work on the program. When this time is up, the summary displays, even if the student isn't finished. Ranges from 1 to 25 minutes or not set at all. Example. M means 12 minutes.
6-7	Requires 2 letters. Specifies use of a printer. If you're not using a printer, the code is AA. The sixth letter sets minimum percentage for a congratulatory message, from 10% to 100% or not set at all. Example. H means 70%. The seventh letter sets the teacher's name. (See Teacher's Name Program section.)

Student password form:

If you prepare a form like the following for each student, he knows what password to type on the computer keyboard. A sample appears in Appendix B for you to photocopy.

THREE R MATH SYSTEM-A: STUDENT PASSWORD FORM

```
**********************************************************************
**********************************************************************
*****      ***      ***      ***      ***      ***      ***      *****
*****      ***      ***      ***      ***      ***      ***      *****
*****      ***      ***      ***      ***      ***      ***      *****
*****      ***      ***      ***      ***      ***      ***      *****
****** 1 ***** 2 ***** 3 ***** 4 ***** 5 ***** 6 ***** 7 ******
**********************************************************************
    PROGRAM PROGRAM PROBLEMS SPEED   TIME    GOAL   TEACHER
```

START: _____ STOP: _____ PROBLEMS: _____SPEED: _____

NAME: _____GRADE: _____

TEACHER: _____ROOM: _____

COMMENTS:

Figure 3 Student password form

Using the student program

Loading the student program into computer memory

1. Insert the ATARI BASIC Language Cartridge in the cartridge slot of your computer.

2. Have your computer turned OFF.

3. Turn on your disk drive.

4. When the BUSY light goes out, open the disk drive door and insert the THREE R MATH SYSTEM teacher diskette with the label in the lower right-hand corner nearest to you. Close the door. (Use disk drive one if you have more than one drive.)

Note. If you insert the student diskette by mistake, the following reminder displays:

THREE R MATH SYSTEM
THIS IS A STUDENT DATA DISK.
USE THE TEACHER DISK
TO LOAD THE MAIN PROGRAM.

5. Turn on your TV set and your computer. The program will load into computer memory and start automatically.

6. The first display screen, Figure 1 in the sample session, appears. Type 1 to choose the student program.

7. It takes about 35 seconds for the student program to load into computer memory. During this waiting period, the following message displays on your TV screen:

LOADING:
STUDENT PROGRAM

ONE MOMENT PLEASE

8. When the student program has loaded into computer memory, follow the instructions on the screen by removing the teacher diskette from the disk drive and inserting the student diskette. Close the disk drive door and press the START key.

9. The START screen display, Figure 2 from the sample session, tells you that you're ready to begin.

Recording your name

Follow the prompt and press the START key. The next task is to record your name. The instructions are in the following screen display:

```
WHAT IS YOUR NAME?
- - - - - - - - - - -

TYPE YOUR NAME. PRESS [RETURN].
```

Figure 4 Name display

You can type a maximum of ten characters, including letters, blank spaces, or a period. If you press any other keys (such as numbers, the program ignores them. As you type the keys, they appear on the screen above the blanks. If you need to make a change, press the DELETE/BACK S key to erase. If you type more than ten letters, the name disappears. The following prompt appears:

```
USE A SHORTER NAME.
PRESS ANY KEY TO START AGAIN.
```

Entering your password

[The teacher or parent chooses the password from the codes in APPENDIX A of this manual. The student has only to type the seven characters to start his personalized assignment, according to the following instructions.]

The following screen displays:

```
(Your name), WHAT IS
   YOUR PASSWORD?
---------------------------
        1 2 3 4 5 6 7
---------------------------

PRESS [DELETE] TO CORRECT A MISTAKE.
```

Figure 5 Entering the password

Now it's time to type in your password.

The program takes five to ten seconds to prepare the assignment for that password. While you're waiting, you see the following message on the screen:

```
GET READY
   SET
HERE YOU GO
```

Solving the problems

The problem display now appears, as follows:

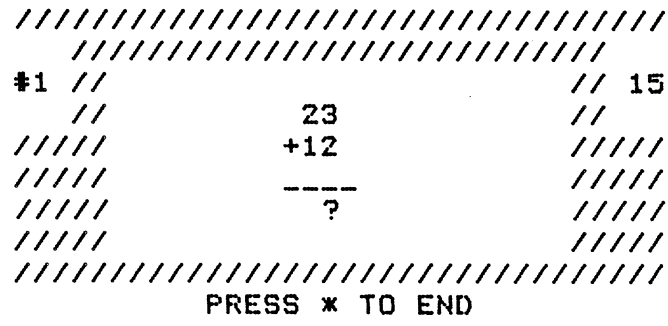


Figure 6 Problem display

The #1 in the upper left of the screen shows that this is the first problem in the assignment. The 15 in the upper right shows the number of seconds remaining to solve the problem. When you figure out the answer, type the number as you're prompted by the question marks. Once you type in your answer, you can't go back to change it.

If you're right, the program congratulates and encourages you, until you press any key for your next problem.

If your first answer is incorrect, a new display appears with the same problem. Your incorrect answer won't appear on the screen, so there's no chance that you'll learn the wrong answer. The countdown of seconds stops, so you can take your time and recalculate the answer. When you're ready, press any key. A problem display like Figure 8 appears on the screen and you may type in your corrected answer. If the corrected answer is right, you have the same response as for a correct first answer. If the corrected answer is wrong, the problem and its correct answer display for you to study. Then press any key for the next problem.

If you run out of time, the following message displays:

```
THE TIME IS UP.
      23
     +12
     ----

    TRY AGAIN.
PRESS ANY KEY TO REPEAT PROBLEM.
```

Figure 7 Time screen display

Take your time and recalculate the answer. If you run out of time again, the problem displays with the correct answer. Press any key to get a new problem.

If you type an asterisk (*) when a problem displays, the problems stop, and you begin the student program summary.

Student program summary

If you've completed all your problems (or if your maximum time for the assignment is up or if you typed the asterisk while you were working), the problems stop, and you receive a letter from Smedley. At the end of Smedley's message, he tells you to press any key for your final summary.

Your final summary tells you the number of problems correct and the number wrong. It also gives you a score (based on the percentage of -problems correct, minus points for the percentage incorrect, multiplied by a time factor).

At the bottom of the display, the program asks the following question:

```
SAVE PRINTOUT? Y/N
```

If you answer by typing Y, the program saves your problem data on the student diskette in the disk drive. This takes a few seconds, and then you see the START screen display (Figure 2).

If you answer by typing N, the summary displays on the screen again. At the bottom, you see the following message:

```
ANSWER - N
PRESS [RETURN]
TYPE Y TO CHANGE
```

This message reminds you that you decided not to save the data. If you confirm that you don't want to, press the RETURN key. But you have a chance to change your mind. If you type Y, the program takes a few seconds to save your data. Next you see the START screen display (Figure 2). If you just press the RETURN key instead of typing Y, you see a prompt to type E to end. When you type E, the START screen redisplays.

Student data files

The number of records of problems and assignments you can save on each student diskette varies with the length of the assignments. But if you get too close to exceeding the capacity of the diskette, the program prompts you to clear the student problem file on the diskette before using that diskette again. You can start a new diskette if you prefer. The data on the diskette is available only in the order in which you entered it.

Whenever you run the printout or other options on the data, clear the student diskette by using the CLEAR THE FILE program on the teacher diskette.

You can't harm the data in the student diskette except by physical abuse to the diskette. You can't access the student data files without the teacher diskette.

Other keys

Once the program loads into computer memory, most of the special keys are disabled. This prevents you from making mistakes accidentally.

The DELETE/BACK S key has been eliminated because it's easier for younger students to start over than to correct answers digit by digit. Also, students can't help learning what they see on the screen--the program prevents associating the problems with the wrong answers.

Pressing the SYSTEM RESET key clears the program. But be careful! All the student data is lost for the current program. The word READY displays in the top left corner of the screen. Type RUN and press the RETURN key to return to the beginning of the student program. The program prompts you to insert the student diskette and press the START key. Then you see the START screen display (Figure 2).

Using the teacher program

Loading the teacher program into computer memory

1. Insert the ATARI BASIC Language Cartridge in the cartridge slot of your computer.

2. Have your computer turned OFF.

3. Turn on your disk drive.

4. When the BUSY light goes out, open the disk drive door and insert the THREE R MATH SYSTEM teacher diskette with the label in the lower right-hand corner nearest to you. Close the door. (Use disk drive one if you have more than one drive.)

5. Turn on your TV set and your computer. The program will load into computer memory and start automatically.

6. The first display screen, Figure 1 in the sample session, appears. Type 2 to choose the teacher program. You see a notice on the screen that the teacher program is loading, and you have a short wait.

Main menu options

The following screen display lists all the options you can choose in the teacher program:

```
            THREE R MATH SYSTEM-A
                PRINTOUT MENU
      BY DAN ROHR      COPYRIGHT (C)1982

1. SCREEN (TV) REVIEW
2. MINI SUMMARY PRINTOUT
3. DETAILED SUMMARY PRINTOUTS
4. INDIVIDUAL PRINTOUTS
------------------------
5. SCREEN (TV) REVIEW AND
     MINI SUMMARY PRINTOUT
6. MINI SUMMARY PRINTOUT AND
     INDIVIDUAL PRINTOUTS
7. DETAILED SUMMARY PRINTOUTS AND
     INDIVIDUAL PRINTOUTS
------------------------
A. SPECIFIED INDIVIDUAL PRINTOUTS
B. TEACHER'S NAME PROGRAM
C. CLEAR THE FILE
D. MAIN STUDENT PROGRAM

      TYPE SELECTION NUMBER OR LETTER.
```

Figure 8 Teacher program menu

In the following options, you occasionally have to remove the teacher diskette from the disk drive and insert a student diskette. If you have the wrong diskette in the disk drive, the program prompts you to insert the correct one. You won't lose any information.

If you're using the printer, be sure to line up the paper before you begin. Make sure your interface module and printer are on, and that your printer is in the ONLINE mode, before you begin.

Whenever you finish one of the options, press the RETURN key, and the program returns to the main menu.

1 SCREEN (TV) REVIEW

This option lets you view all the records on the student diskette quickly on the screen. First type 1, and press the RETURN key. The following instructions display:

1.
REMOVE TEACHER DISK
IF IN DISK DRIVE

2.
INSERT STUDENT DISK
TO BE RUN

3.
TO BEGIN PRESS
[START]

Figure 9 Teacher and student diskette change instructions

When you follow the instructions and press the START key, a summary for each student record scrolls on the screen. To stop to examine a record, simultaneously press the CONTROL (or CTRL) and 1 keys. To start again, press [CTRL] and type 1.

The summary includes each student's name, password, the number of problems right and wrong out of the total worked, the time the student took to work the problems, the teacher's name and the score.

The information is arranged as follows:

RECORD: #4

NAME: FRED	PROGRAM E4BPFAA
RIGHT: 4 (80%)	PROBLEMS: 5
WRONG: 0 (0%)	TIME: 5
TEACH: MR. HEVERLY	SCORE: 4533

Press [CTRL] and 1 to pause/start)

Figure 10 Student record screen display

When you finish viewing the information, press the RETURN key to return to the menu.

2 MINI SUMMARY PRINTOUT

This option gives you a one-line summary of each of the records on file. This is the quickest way to get a record on paper of a short summary.

First, the diskette change instructions (Figure 9) display. As soon as you follow them and press the RETURN key, the summary begins printing.

Don't worry if the number of correct responses plus the number of incorrect responses doesn't add up to the total number of problems. Only problems that were worked appear in this summary.

Following is a sample of this mini summary:

THREE R MATH SYSTEM-A MINI STUDENT FILE SUMMARY

REC.	STUDENT	PROG.	RIGHT(%)	WRONG(%)	PROB.	SCORE	TIME	TEACHER
1	JOHN	D1APDHC	32(100%)	0 (0 %)	32	9270	3	MR. BELL
2	SUE	D1APDHC	19(100%)	0 (0 %)	19	7279	3	MR. BELL
3	KRISTI	A5APDHC	17(94%)	1 (5 %)	18	7367	3	MR. BELL
4	DAVID	P1APDIC	10(76%)	3 (23 %)	13	3597	3	MR. BELL
5	JANET	D2APDID	18(100%)	0 (0 %)	18	7129	3	MRS. JONES
6	STEVE	D1APDID	24(100%)	0 (0 %)	24	8861	3	MRS. JONES

Figure 11 Sample mini student file summary

When you finish printing, the screen prompts you to press the **RETURN** key to return to the menu.

3 DETAILED SUMMARY

This option gives you all the information in the mini summary, plus answers to sample problems on the individual student's record. Since the student's printout has ten extra problems included, this detailed summary gives you the answers to those problems, too.

First, specify the type of printer you're going to use. The following screen display shows you how:

```
WHICH PRINTER CODE?

TYPE

A FOR ATARI OR
  CENTRONICS
E FOR EPSON

Type: A OR E
```

Figure 12 Printer instructions

Then insert the student diskette, following the instructions in Figure 11. Below is a sample of the detailed printout summary this option offers.

```
                    THREE  R  MATH  SYSTEM-A    STUDENT  DATA  FILE :SUMMARY

# 1  KRISTI              SCORE(2000)..PROG.(16EKKGC)..NO.PROB.(20)..SPEED(10)..GOAL(60 %)
(MRS. SMITH)             PROB.TIME(2  MIN 30 SEC)...TOTAL TIME(5  MIN)...SET TIME(10 MIN)
ANSWERS FOR EXTRA PROBLEMS 1) 40   2) 84   3) 4   4) 33   5) 84   6) 24   7) 14   8) 36   9) 45   10) 8
                         ----------------------------------------------------------------
                         CORRECT : 1ST TIME:  2ND TIME:  WRONG    : NOT DONE:  PROB.WORKED
                         12(60 %): 10(50 %):  2 (10 %):  6 (30 %): 2 (10 %):  20
                         ----------------------------------------------------------------
<><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><>

# 2  STEVE               SCORE(6342)..PROG.(F1AKDGC)..NO.PROB.(0 )..SPEED(10)..GOAL(60 %)
(MRS. SMITH)             PROB.TIME(1  MIN 10 SEC)...TOTAL TIME(3  MIN)...SET TIME(3  MIN)
ANSWERS FOR EXTRA PROBLEMS 1) 42   2) 693   3) 222   4) 221   5) 513   6) 54   7) 211   8) 75   9) 51   10) 411
                         ----------------------------------------------------------------
                         CORRECT : 1ST TIME:  2ND TIME:  WRONG    : NOT DONE:  PROB.WORKED
                         20(95 %): 17(80 %):  3 (14 %):  0 (0  %): 1 (4  %):  21
                         ----------------------------------------------------------------
<><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><>

# 3  PAM                 SCORE(8489)..PROG.(P1AKDGC)..NO.PROB.(0 )..SPEED(10)..GOAL(60 %)
(MRS. SMITH)             PROB.TIME(0  MIN 40 SEC)...TOTAL TIME(3  MIN)...SET TIME(3  MIN)
ANSWERS FOR EXTRA PROBLEMS 1) 12   2) 4   3) 9   4) 10   5) 7   6) 5   7) 12   8) 10   9) 5   10) 11
                         ----------------------------------------------------------------
                         CORRECT : 1ST TIME:  2ND TIME:  WRONG    : NOT DONE:  PROB.WORKED
                         36(97 %): 35(94 %):  1 (2  %):  1 (2  %): 0 (0  %):  37
                         ----------------------------------------------------------------
<><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><>
```

Figure 13 Detailed summary

When you finish printing the summary, the following prompt displays:

```
**THIS IS THE END OF THE FILE**
PRESS RETURN FOR MENU
```

4 INDIVIDUAL PRINTOUTS

This option offers a detailed printout of the work each student did. The printout may seem overwhelming at first because there's so much information. No one individual needs all of the information included. Select what you can use and just ignore the rest.

You can use the printouts for many purposes. For example, you can diagnose a student's specific problem areas. Sometimes you can use the printout as positive reinforcement for the student's work. You can send the printout home to communicate with parents. Since the printout gives the student ten extra problems, you can assign more work in his special problem area.

Make sure your printer and interface module are on, and your paper is lined up at the top of a new page. Type 4 and press the RETURN key. The printer instructions (see Figure 12) display. After you've made your choice, the instructions to insert the student diskette (Figure 9) appear. When you've followed them, the information begins printing, and the screen displays a message like the following:

```
KRISTI'S
PRINTOUT IS BEING
PRINTED
```

The following example shows a printout from this option.

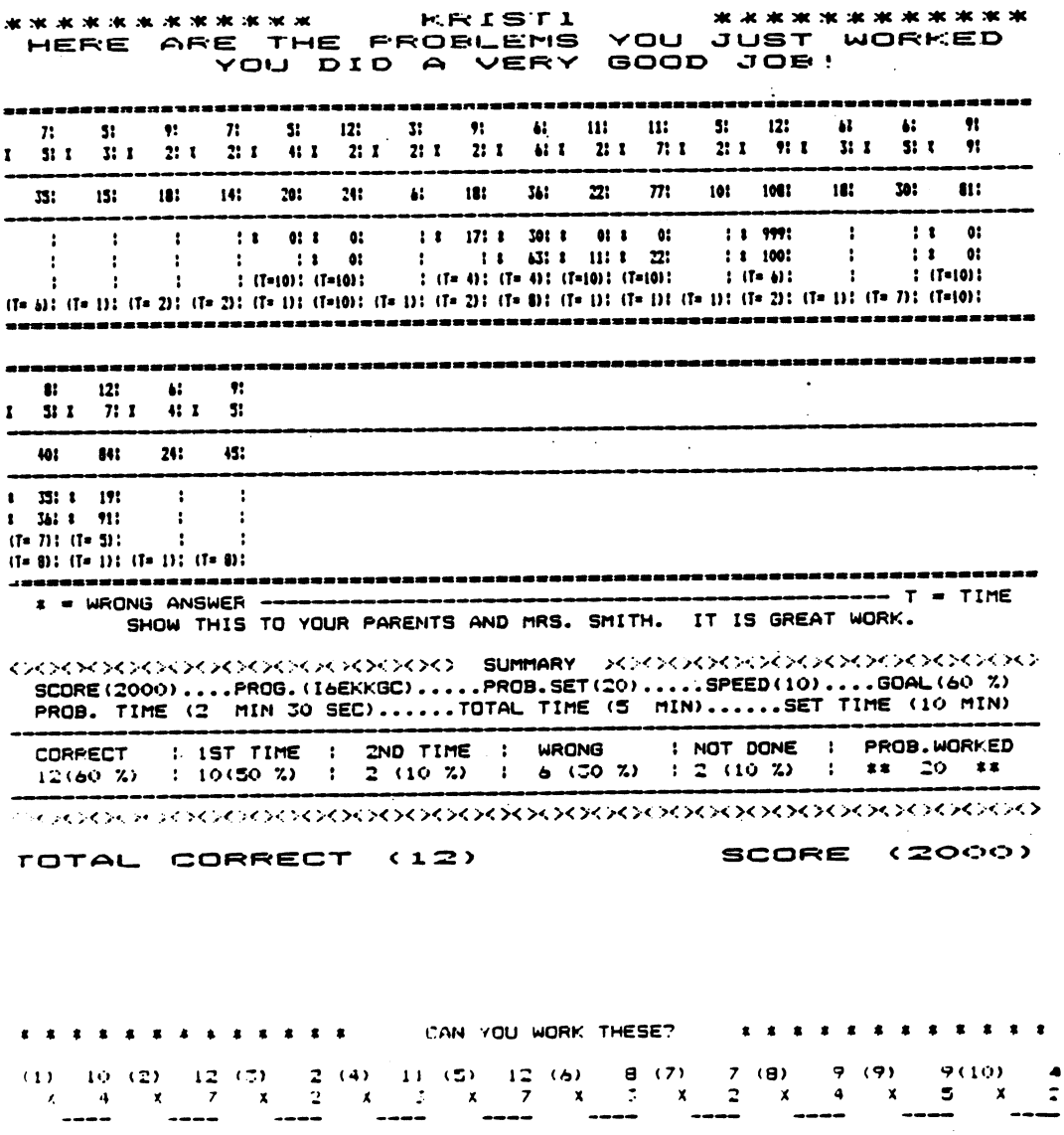


Figure 14 Sample individual printout

The printout in Figure 14 shows Kristi's name and a congratulatory message. Next there are two bands (delineated by double broken lines) of twenty columns of numbers and symbols (sixteen on the first band, and four on the next). Each symbol and number tells something about Kristi's work on twenty multiplication problems.

The first three rows show the problems Kristi worked, with their correct answers. The first problem, in the column on the left, is 7 x 5 = 35.

Below the problems are columns with space for four notations. The columns have one, two, three or four notations. The top row is blank if Kristi answered the problem correctly on her first try. If there's a number in that top row preceded by an asterisk (*), that means Kristi made a mistake. If the number in the top row following the asterisk is a zero, she ran out of time before she could answer. If any other number appears, it shows the incorrect answer Kristi gave.

The second row is only filled in if Kristi gave a second answer and if it too was incorrect (or if she ran out of time for that one too).

The third and fourth rows show the times she took to give her answers. (T stands for time.) If she answered the problem correctly, there's only one time given on the printout.

Find the notation T = 6, in the first column under the problem 7 x 5 = 35 on the left of the page in Figure 14. This means that Kristi took six seconds to answer that problem correctly. The next three columns have the same kind of notation.

The next column, the fifth from the left, shows three notations. The problem was 5 x 4 = 20. The zero directly below the answer to the problem means that Kristi didn't answer the problem in the time allowed. T = 10 shows that ten seconds went by while she tried to answer it. However, she was correct on her second try. T = 1 means she took only one second to answer it correctly the second time.

The sixth column shows that Kristi ran out of time the first and second times she tried to answer the problem 12 x 2.

In the eighth column, under the problem 9 x 2 = 18, you can see that Kristi gave the wrong answer (17) the first time she tried to answer it. It took her four seconds to give that answer (T = 4). But on her second try, she answered it correctly in two seconds (T = 2).

The next column, under the problem 6 x 6 = 36, the four notations show that Kristi answered the problem incorrectly with a 30 on her first try. She took four seconds to give her first answer. She also gave an incorrect answer (63) for her second try, and that took eight seconds.

The next section of the printout is the summary. The score is listed first. In Figure 15, Kristi's score is 2,000. It's calculated by adding points for a percentage of the correct answers, subtracting points for a percentage of the incorrect answers, and then multiplying this by a percentage time factor.

If a student gets a score below 300, then a 300 appears on his printout. The maximum is just under 10,000. If a student wants to compare his score against another

student's score, or match his own with a previous score, the fourth letter of the password (speed per problem) must be the same in the two scores. Otherwise it's like comparing apples and oranges.

If you prefer the conventional scoring system using percentages, the printout gives this too. It's under the word CORRECT in the next band below the one containing the score. Kristi answered 60% of her problems correctly.

After the score, the printout lists her password (I6EKKGC), the number of problems in her assignment (20), the speed at which she worked (she had ten seconds to answer each problem before the time was up), her goal (60%) above which she'd see congratulatory messages, and the time. There are three parts of the time printed. Problem time means the amount of time Kristi was looking at the problem display. This is the sum of all the time listed under the problems. These times don't include the time Kristi spent looking at a problem after she missed it or after the time ran out. Total time means the amount of time she spent on the program from the time she entered the password until she saw her summary on the screen. The set time was given in the fifth letter of the password. If Kristi had gone over this time, the program would have gone right to the summary even though she wasn't finished.

The band below this shows percentages and the number of problems worked (20). First, Kristi answered 60% of the problems correctly. She only answered 50% of them correctly on her first try. She answered 10% correctly on the second try. She answered 30% incorrectly, and she failed to complete 20%.

At the bottom of the page, under the words "CAN YOU WORK THESE?" are ten extra problems similar to the ones Kristi worked on her assignment.

It takes the program from one to three minutes to print out a sheet like Figure 14. The time depends on the number of problems worked in that assignment. The printer automatically starts each student's printout at the top of a new page.

5 SCREEN (TV) REVIEW AND MINI SUMMARY PRINTOUT

This option gives you a combination of options 1 and 2 above. You can obtain information from the screen and the printed copy.

Follow the instructions to insert the student diskette (Figure 9). When you press the START key, the program begins printing. When the printout is finished, press the RETURN key for the menu.

6 MINI SUMMARY PRINTOUT AND INDIVIDUAL PRINTOUTS

This is one of the most popular options, giving both a mini summary printout for the teacher, as in option 2, and individual printouts for the teacher and students, as in option 4.

Type 6 and press the RETURN key. First, specify which printer you're going to use (Figure 12). Then follow the instructions to insert the student diskette (Figure 9). When the printouts are finished, press the RETURN key and the menu displays.

7 DETAILED SUMMARY PRINTOUTS AND INDIVIDUAL PRINTOUTS

This is a combination of options 3 and 4. Type 7 and press the RETURN key. Specify

which printer you're using (Figure 12), and then follow the instructions to insert the student diskette (Figure 9).

A SPECIFIED INDIVIDUAL PRINTOUTS

This option allows you to print only the records you want. First find the record number of the individuals whose printouts you want. You can find this number from a SCREEN (TV) REVIEW (option 1), a MINI SUMMARY (option 2), or a DETAILED SUMMARY (option 3).

Begin with the teacher diskette in the disk drive. Type A and press the RETURN key. Follow the instructions to insert the student diskette (Figure 9) and then give the program instructions on which printer you're going to use (Figure 12).
The following instructions display:

```
SELECTED PRINTOUTS      THREE R MATH SYSTEM
(C)1982                 BY DAN ROHR

 STEP 1:  RUN THE SCREEN (TV) REVIEW OR
          THE MINI SUMMARY PRINTOUT.
 STEP 2:  OBTAIN RECORD NUMBERS OF
          RECORDS DESIRED
 STEP 3:  YOU MAY ENTER UP TO 50 RECORD
          REQUESTS
 STEP 4:  IF YOU MAKE AN ERROR ENTERING
          A NUMBER, TYPE ANY LETTER TO
          DELETE IT.

   PRESS ANY KEY TO CONTINUE.
PRESS [OPTION] TO RETURN TO MAIN MENU
```

Figure 15 Specified printout instructions

Type any key, and you see the following instructions:

```
TYPE RECORD NUMBER AND THEN [RETURN]
     TO END TYPE 0 AND [RETURN]

#1 PRINTOUT.............RECORD NUMBER?__
```

Figure 16 Entering record numbers

If you don't know the number of the record you want:

Type 0 and press the RETURN key. The same request for a record number displays again; type 0 again and press the RETURN key. You see the instructions for the printer (Figure 12).

The next screen displays the following instructions:

```
                FOR YOUR PRINTOUTS

          1. REMOVE
             TEACHER DISK
          2. INSERT
             STUDENT DISK
          3. PRESS [START] TO
             BEGIN PRINTOUTS

     Press [ESC] to return to menu
```

Figure 17 Starting printout

Since you didn't change diskettes, just press the SELECT key. The program returns to the first display screen (Figure 1). Then you can use one of the other options to find out the number of the record you want to print, and return to option 8.

If you do know the number of the record you want:

Respond to the instructions in Figure 17 by typing each number in turn. After you've typed the numbers of all the records you want, type 0 and press the RETURN key.

Specify which printer you're using by following the instructions in Figure 13. Figure 18 displays. When you've inserted the student diskette, press the START key.

Because of the way information is stored and retrieved, it may take some extra time to complete this option. The screen displays the message "SELECTED PRINTOUTS ARE COMPLETED". Then remove the student diskette, insert the teacher diskette, and press the START key. The program returns to the first display screen (Figure 1).

B TEACHER'S NAME PROGRAM

Use this option to list the names of all the teachers whose students are using THREE R MATH SYSTEM. First assign a letter to each teacher's name. If you don't use this option, the words "YOUR TEACHER" appear in place of the teacher's name.

Type B and press the RETURN key. The following screen displays:

```
TEACHER'S NAME PROGRAM
----------------------
   THIS CHANGES THE
   FILE OF TEACHER'S
   NAMES USED IN THE
  THREE R MATH SYSTEM
   COMPUTER PROGRAM.

PRESS ANY KEY TO CONTINUE
```

Figure 18 Teacher's name program title screen

After you press a key, you see the following instructions:

```
INSERT STUDENT DISK
   PRESS [START]
```

Press the START key to see all the choices you have in this option:

```
OLD NAME:
         ----------------
A - YOUR TEACHER
-----------------
      TYPE:
C - TO CHANGE
N - NEXT (NO CHANGE)
E - END/SAVE FILE
S - RETURN TO 'A'
R - RETURN TO MENU
```

Figure 19 Teacher's name program menu

At the top of the screen, the letter "A" stands for the seventh letter of the student password. If you don't enter a name, using this option, the program will print "YOUR TEACHER."

To replace "YOUR TEACHER" with a specific name, type C. The following screen tells you how:

```
PASSWORD LETTER: A
   TYPE NEW NAME
----------------------
   15 SPACES MAXIMUM
 PRESS [RET] TO ENTER NAME INTO FILE
TO CORRECT ERROR, PRESS [RET] AND C.
```

Figure 20 Entering a teacher's name

Type the teacher's name. The 15 spaces can include capital letters, punctuation marks, and spaces. For example, you can record "MR. FINLEY".

and spaces. For example, you can record "MR. FINLEY".

When you finish typing the name correctly, press the RETURN key. This doesn't save the name on the file; to do that, choose E.

Choose N to record some other names. A screen like Figure 21 displays, except that letter A has been replaced by a B. Enter another teacher's name in the file. Later, students can indicate this teacher by typing B as the seventh letter of their passwords.

When you've entered all the teachers you want, type E. The first prompt reminds you to make sure the student diskette is in the disk drive. Press the START key when you're ready to continue. The program gives you a notice that it's saving your teachers' names. When it's finished, the following message displays:

```
YOUR NEW FILE HAS
   BEEN SAVED.
INSERT TEACHER DISK
  PRESS [START]
```

When you follow these instructions, the teacher program menu, Figure 10, redisplays.

If you've entered some names, and you decide you want to start over, or you want to double check your list, type S. You can begin again with letter A.

Select R to return directly to the teacher program menu, Figure 10. The program prompts you to insert the teacher diskette. If you select this option, the teachers' names you typed won't be saved. To save the names, select option E.

C CLEAR THE FILE

After you have reviewed and printed out all the student information, clear the student diskette so that there's room for storing more new information. Type C and press the RETURN key. First you see instructions to insert the student diskette. When you finished, press the START key. The following question displays on the screen:

```
DO YOU WANT TO
    CLEAR
PRINTOUT DATA FILE?
```

Answer Y for yes or N for no and press the RETURN key. This option gives you several chances to change your mind so that you don't delete a file by mistake. If you answer Y, the program requests confirmation as follows:

```
ANSWER - YES
PRESS [RETURN]
PRESS ANY KEY TO CHANGE YOUR ANSWER
```

If you press the RETURN key, you see a notice that it's clearing the file.

If you type N, the same message displays, except that the word NO appears instead of YES. If you press the RETURN key, the program returns to the menu. If you press any other key, option C begins again.

Remember that once you've completed the instructions to "clear printout data file" in this option, all the records on the diskette are deleted!

OPTION D - MAIN STUDENT PROGRAM

To return to the student program (choice 1 on the first display screen, Figure 1), type D. You see a notice that the program is loading, and then the following message:

```
INSERT STUDENT DISK.
PRESS [START]
```

After you follow these instructions, you see the START display screen (Figure 2).

Classroom suggestions

After the novelty of using the computer in class wears off, it's up to you to keep your students interested in continuing to work on the program. Some of the following suggestions might help.

Each student should have his own computer folder with a record sheet in it. A sample (Figure 21) appears on the next page. You could fill in ten to fifteen passwords for the student's level, and highlight the one you assign for that day in yellow. Whenever you print a summary, make sure it's placed in the student's folder.

Timed practice is a way to vary the drill. Set the fifth letter of each password at the same time (4 minutes, for example). Then set the third letter of the password at A (leaving the total number of problems open). The student's goal is to see how many problems he can answer correctly in the time allowed. You could use certificates (a rating of EXPERT for 15 correct, PRO for 25 correct, and a special reward for five PRO certificates) or a privilege for exceptional achievement. This kind of drill builds speed and accuracy.

Number practice Set a specific number of problems (using the third letter of the password). Students try to answer as many as possible correctly. Rewards increase the challenge. Students might race against the clock to see how fast they can accurately complete the set number of problems.

A student can compete on several levels: with himself, with a small group close to his ability level, or with a whole class. The teacher has only to set the passwords.

At the elementary level, each student should use THREE R MATH SYSTEM about three times a week for 3 to 5 minutes per session. Avoid using any drill program for more than 5 to 10 minutes at a time. Short, frequent sessions are always better than a few long ones.

PROGRAM NAME: _____

1. A 1 A P D H C	18 9/30	23 10/2								
2. A 4 A P D H C	10 10/4	11 10/5								
3. C 2 A P D H C	3 10/9	6 10/12	15 10/16	17 10/20						
4. A 5 A P D H C										
5. B 1 A P D H C										
6. B 3 A P D H C	12 10/8	15 10/17								
7.										
8.										
9.										
10.										
11.										
12.										
13.										
14.										
15.										

This is a sample student record sheet. With a yellow highlighting pen, mark a box next to the program you want the student to do. When it's his turn to use the computer,he gets his folder, looks for your yellow mark, and types his password.

At the end of the day, print a mini summary and use it to enter the number the student answered correctly and the date on his record sheet. As you do this, you can mark the next program you want him to do.

This minimizes classroom disruption when it's his turn to go to the computer. It also minimizes the time you have to spend keeping records.

Figure 21 Sample student record sheet

Summary

One of the advantages of THREE R MATH SYSTEM is its ease of use. Here's a brief summary of the steps to follow:

1. Insert the teacher diskette and load the program into computer memory. Select 1 (student program).

2. Refer to APPENDIX A for a seven-letter password for each student's assignment.

3. The student types his name and password, and begins solving problems. When he answers the required number of problems, or when his time is up, a summary of his work displays on the screen.

4. The student can save his problem data for a printout. Then the program returns to the beginning for a new student.

5. At the end of the day (or class period), insert the teacher diskette and load that program into computer memory.

6. Choose an option from the teacher diskette menu to obtain the student records. These options range from viewing the results on the TV screen to printing detailed summaries on paper.

7. Follow instructions to insert the student diskette and run the option you selected for reviewing the student records.

8. Clear the diskette so that that student's records won't be printed on the summaries for other students.

9. If you're printing several students' records, insert the next student diskette and press the START key.

10. Check the student's record to pinpoint his strengths and weaknesses. Note what problems he answered correctly and incorrectly, and how long it took him to work his problems. This helps you prepare his next password.

11. Use the ten extra problems the program prints to give the student additional practice.

PART II:

THREE R MATH

PRACTICE WORKSHEETS

Introduction

Overview

The THREE R MATH PRACTICE WORKSHEETS program allows you to create and print custom-tailored worksheets from the same 101 levels of addition, subtraction, multiplication, and division problems as you use in THREE R MATH SYSTEM. The worksheets have practice pages of 30 to 36 problems in three different formats: problems without answers, problems with every other answer given, and problems with all answers given (answer keys). You can combine these three formats, and you can request any number of different problem sets within the same level.

It's a rare school district that has enough computers for each student to get as much individual time at the computer as he needs. But drill is essential to learning computational skills. The THREE R MATH PRACTICE WORKSHEETS program lets you supplement other methods with some written problem-solving at the level that's just right for each student.

Required accessories

ATARI BASIC Language Cartridge
32K RAM
ATARI 810 Disk Drive
ATARI 825 80-Column Printer or Epson printer

Getting started

Loading THREE R MATH PRACTICE WORKSHEETS into computer memory

1. Insert the ATARI BASIC Language Cartridge in the cartridge slot of your computer.

2. Turn on your disk drive.

3. When the BUSY light goes out, open the disk drive door and insert the THREE R MATH PRACTICE WORKSHEETS diskette with the label in the lower right-hand corner nearest to you. Close the door. (Use disk drive one if you have more than one drive.)

4. Turn on your computer and your TV set. The program will load into computer memory and start automatically.

The first display screen

After the program has loaded into computer memory, the following screen displays:

```
**********************************
*          THREE R MATH          *
*            PRACTICE            *
*           WORKSHEETS           *
**********************************

By Dan Rohr                (c)1983

     Press [START] to continue.
```

Figure 22 Practice worksheets first display screen

Using THREE R MATH PRACTICE WORKSHEETS

Problem code

After you press the START key, the following prompt appears on the screen:

```
PROBLEM CODE?
  __  __
Refer to program documentation for
the problem codes of the 101 options.

Type code and press [RETURN]
```

Figure 23 Practice worksheets code request

Look in APPENDIX A of this manual at the codes. These are the letter and number that you use at the beginning of the student's password in THREE R MATH SYSTEM. Type a letter and a number from the codes, and press the RETURN key.

Suppose you typed A3 and pressed the RETURN key. The following message would display:

```
NEXT CODE:
  ?_ __
----------------
----------------
CODES ENTERED:
A3,

Up to 15 codes can be entered.
Type code and press [RETURN]
If all are entered, press [START].
```

Figure 24 Practice worksheets code entry

You can enter as many as 15 codes at one time. Each code will generate a separate worksheet; the codes won't be mixed on a single worksheet.

If you're typing codes and you change your mind as you work, press the ESC key. The program clears all the codes and you can start over. When you've finished typing all the codes you want, press the START key.

Number and type of worksheets

You can request up to 99 copies of each worksheet, but it's probably faster to request one of each and make copies on a photocopy machine.

The next prompts help you to request the number and type of worksheets you want. The first is as follows:

```
HOW MANY
STUDENT WORKSHEETS
(NO ANSWERS GIVEN)

NUMBER: ?
ENTER NUMBER AND PRESS [RETURN]
```

Figure 25 Type and number of worksheets

This kind of worksheet has 36 randomly generated problems (30 for division) for the code you requested. No answers are given for the problems. Type the number of worksheets you want and press the RETURN key. Just press the RETURN key if you don't want any of this kind.

The next prompt is the same as Figure 25, except that the first three lines of the display are as follows:

```
HOW MANY
STUDENT WORKSHEETS
(HALF ANSWERS)
```

On these worksheets, every other answer is given. This is a useful format for students who are doing a lot of individual work. They can check their work with the answered problems and get help before they've gone too far on the problems.

Type the number of this kind of worksheets you want and press the RETURN key. Just press the RETURN key if you don't want any of this kind.

Next, you can request answer keys for the worksheets you're printing. The prompt is the same as the Figure 25, but in place of the first three lines, you see the following:

```
HOW MANY
ANSWER KEYS
```

Type the number of answer keys you want and press the RETURN key. If you don't want any answer keys, just press the RETURN key.

You have a chance to confirm the numbers and types you've requested when the following screen displays:

```
WORKSHEETS REQUESTED
1. Student worksheets (No answers)...1
2. Student worksheets (Half answers).1
3. Answer keys.....0

TO REVISE - TYPE WORKSHEET NUMBER
   TO CONTINUE - PRESS [START]
```

Figure 26 Confirmation of worksheet type and number

If you want to make a change, type the number of the kind of worksheet you want to

change. Suppose, for example, you decide that you need an answer key after typing 0, as in Figure 26. Just type 3, and you have a chance to request a number of answer keys from 0 through 99.

When you finish changing your request, or when the confirmation screen is correct, press the START key.

Preparing the printer

Before you go any further, make sure your printer is on, your interface module is on, the paper is lined up, and the printer is in the ONLINE mode.

Different sets

Next, you can choose different sets for the codes you've requested. If you've typed A4, you can get 2 different sheets of the same kind of problems. Perhaps one student has finished a set but still needs practice.

When a screen like the following displays, review your instructions and type the number of sets you want:

```
      YOU HAVE REQUESTED THE FOLLOWING
              WORKSHEET CODES:
 1) A3  2) A4  3) B6  4)    5)
 6)    7)    8)    9)   10)
11)   12)   13)   14)   15)

      How many DIFFERENT sets of each
              do you want?
            NUMBER OF SETS?
```

Figure 27 Number of sets of worksheets

When you type a number from 1 to 99 and press the RETURN key, the screen displays a request to "PLEASE WAIT" and then a message that it's "GETTING ORGANIZED." You have about 20 seconds to wait while it sets up your requests.

Printing

You can stop the printing any time by pressing the ESC key. To resume printing, press the START key. When the program is finished printing your worksheets, the program requests another problem code, and you can start over or stop the program.

See Appendix B for samples of the worksheets you can print.

Suggestions for using the worksheets

The THREE R MATH PRACTICE WORKSHEET program offers custom-tailored worksheets for the exact level of each student's ability. Teachers know that even if the class is working on "page 67", there are always students working above or below that level. Now there's a way to provide appropriate assignments to each student within the limits of the time in a teacher's day.

Now that the worksheets are ready, the next and most difficult challenge is to get students to do them. Given the choice, most students would rather ride their bikes or play computer games. While there's no magic formula to guarantee that all students won't be able to put their pencils down until they finish their worksheets, the following suggestions might help.

Even though it's easy to print hundreds of worksheets, don't force the students to do too many. One or two worksheets each week may be enough. The most important principle is consistency. It's impossible to overemphasize the need to do only one or two worksheets a week, but to do them <u>every</u> week.

The program can be used at home as well as in the classroom. The best challenge a parent can give a child is to take the time to sit down and work the problems with him. Since most students have already learned how to work the problems, parents won't have to provide a high-level mathematical discourse. Rather some joking, some helpful hints, and undivided attention (newspaper down, meal finished, and TV off) work wonders to motivate children.

It's sometimes a good idea to reward a student with something like extra time on the computer for a favorite game, but it's important not to put too much emphasis on a reward. It could be frustrating, especially if the child is already having a difficult time working the problems.

Success is more likely if the student receives an abundance of praise. Few of us mind doing a job if we know someone is watching us and encouraging us as we go along.

Remember not to spend too much time on each worksheet. Five to ten minutes twice a week may be enough. If a child can't finish his problems in this much time, he should be praised for what he has done. Suggest that he'll probably be able to do more the next time. It's better to stop too soon than to force a child to work beyond his limits.

Some children are motivated by keeping simple graphs of the number of problems they've been able to do in a set amount of time. But take care that this doesn't put a lot of pressure on the child.

The 101 levels of problems are designed to get progressively more difficult. It's much more effective to have a child complete a worksheet that's slightly too easy rather than one that's slightly too hard. Remember that each session should be positive and fun. Because the program is sequential, it's easy to take the child forward in small steps toward his goal. Some children even like to go back a few steps and do easier problems to show how good they are. Encourage this, because any extra practice on basic facts will help the child master the more difficult problems later.

Since the worksheets accompany the THREE R MATH SYSTEM, they can be a good warm-up exercise before children begin their individual sessions with the computer.

Also, if a student has had difficulty with a particular assignment on the computer, a page of problems from the same level can help.

In any class, there will be students on many different levels. Correcting papers is simplified by the answer keys. Another suggestion is to let students check their own answers against the keys.

PART III:

THREE R MATH GRADEBOOK

Introduction

Overview

The THREE R MATH GRADEBOOK simplifies and improves your record keeping when you use the THREE R MATH SYSTEM. Since the gradebook is specifically designed to accompany the other two parts of the THREE R MATH CLASSROOM KIT, you can't use it as a general purpose gradebook.

The gradebook allows you to keep cumulative records for the work your students are doing in the THREE R MATH SYSTEM program. It takes less than five minutes to store the results of an average size class's daily work, and you can print the results or view them on the screen. You can review the records of the whole class or just one student. The program shows you a student's entire record, or just selected portions. For the student, you can print a complete individual copy; for your own records, you can print a continuous sheet for the entire class.

You create your own gradebook diskettes to store information. Each one holds records for up to 51 students. You can store one thousand individual entries on each diskette. The program gives you a warning if you're approaching the maximum capacity of a diskette.

The prompts are so simple that even computer novices can use them. While the gradebook is designed primarily for classroom use, parents can use it to keep track of their children's progress in THREE R MATH SYSTEM exercises.

Required accessories

ATARI BASIC Language Cartridge
40K RAM
ATARI 810 Disk Drive
Additional DOS-II formatted diskettes

Optional accessories

ATARI 825 80-Column Printer or Epson printer

Getting started

Loading THREE R MATH GRADEBOOK into computer memory

1. Insert the ATARI BASIC Language Cartridge in the cartridge slot of your computer.

2. Turn on your disk drive.

3. When the BUSY light goes out, open the disk drive door and insert the THREE R MATH GRADEBOOK diskette with the label in the lower right-hand corner nearest to you. Close the door. (Use disk drive one if you have more than one drive.)

4. Turn on your computer and TV set. The program will load into computer memory and start automatically.

The first display screen

When the program has loaded into computer memory, the following menu displays on the screen:

```
          THREE R MATH SYSTEM GRADEBOOK

                    MAIN MENU

Copyright (c) 1983   By Dan Rohr
              1. ADD GRADES
              2. PRINTOUT GRADES
              3. TV(Screen) SEARCH
              4. EDIT GRADE DISK
              5. CREATE NEW STUDENT LIST

            Type option number: -?-
```

Figure 28 Gradebook menu

The ESCAPE key

If you make a response and decide to change it, you can always press the ESC key. This returns you to the previous display. For example, if you type a number to choose a menu option, and decide you want another, just press the ESC key to return to the main menu.

Using THREE R MATH GRADEBOOK

Preparing diskettes

You need three diskettes to use the THREE R MATH GRADEBOOK program. In the prompts, they're referred to as follows:

PROGRAM DISK

This diskette contains the THREE R MATH GRADEBOOK program.

GRADE DISK

You create this diskette yourself, following the instructions in option 5 from the menu in Figure 28. Use a blank DOS-II formatted diskette. This diskette stores the student's cumulative records.

STUDENT DISK

This is the diskette you created in the THREE R MATH SYSTEM program. It stores the student's current records. Refer to the instructions in that section of this manual to prepare the STUDENT DISK.

Option 1 Add grades

This option allows you to put grades into a student's record, either manually one by one, or automatically by transferring them from the STUDENT DISK.

Before you use this option, you must have a GRADE DISK. If you don't have one, use Option 5 to create one for your class.

Type 1 to record grades. The title screen displays, and you press the START key when you're ready to begin. The screen displays a choice between entering the grades (1) automatically or (2) manually. Type the number of your choice.

Entering grades manually:

First, the program asks you to type the date in the following format:

\- - / - - / - -

Type a number in place of each dash. If the month is a single digit, such as February, type 02 rather than 2 to fill each space. The following screen displays:

```
INSERT
GRADE DISK
------------------
------------------
WHICH DISK DRIVE?
1 OR 2

TYPE DRIVE NUMBER -?-
```

Figure 29 GRADE DISK instructions

If you have two disk drives, insert the GRADE DISK in disk drive two and close the door. Type 2. If you have one disk drive, remove the PROGRAM DISK and insert the GRADE DISK. Type 1.

The program lists the names of the students in the class, with a number at the left of each name. Decide which student's records you want to work on. At the bottom of the screen, the following instructions display:

```
ENTER STUDENT NUMBER, PRESS [RETURN]
NUMBER___
```

When you type the number beside the name of one of the students, the following list appears (although the right column displays only the student's name at first). Type in numbers and letters like those in the right column in response to the prompts:

```
TYPE RESPONSE AND PRESS [RETURN]

1. STUDENT.................JACK
2. PROGRAM..............E4BPFAA
3. SCORE...................3450
4. TIME.....................3
5. TOTAL CORRECT............5
6. WRONG....................4
7. NOT DONE.................1
8. RIGHT 1st TRY............5
```

Figure 30 Entering grades manually

When you finish, the question "DO YOU WANT TO MAKE ANY CHANGES?" appears at the bottom of the screen. If you do, type Y and press the RETURN key. Enter the line number to correct and press the RETURN key. Then enter correct information and press the RETURN key. If you don't want to make any changes, type N and press the RETURN key.

Entering grades automatically:

If you chose to add grades automatically, you need the GRADE DISK and the STUDENT DISK from your most recent session of THREE R MATH SYSTEM.

First enter the date (just as you do for the manual mode).

The program prompts you to insert the STUDENT DISK, and asks you to type the number of the disk drive you're using. If you have two disk drives, insert it in disk drive two and close the door. Then type 2. If you have one disk drive, remove the PROGRAM DISK and insert the STUDENT DISK. Type 1.

Next the prompt asks you to insert the GRADE DISK and type the number of the disk drive you're using (as in Figure 29, above). If you have two disk drives, remove the PROGRAM DISK from disk drive one and insert the GRADE DISK. Type 1. If you have one disk drive, remove the STUDENT DISK and insert the GRADE DISK. Type 1. If you insert the wrong diskette, the program notifies you and you can start over.

The screen displays a message that it's working. When it finishes copying information from the STUDENT DISK to the GRADE DISK, it prints a class list of the students' names. Next to each name is the number of entries the file contains for that student. If you've reached the maximum, you find that out at this time.

Note. If your STUDENT DISK contains records for students who aren't entered on the GRADE DISK, you can't go on. The following message displays:

```
The following records WERE NOT
entered into the Grade Disk.
The student's name or
teacher's name DID NOT match
your Grade Disk.

PRESS ANY KEY TO CONTINUE
```

When you follow the instructions to press a key, the following display reviews the records that aren't on the GRADE DISK:

```
RECORDS NOT ADDED TO THE GRADE DISK

REC.      STUDENT      TEACHER      PROGRAM
#1        (name)       (name)         (password)

PRESS ANY KEY TO CONTINUE
```

Figure 31 Records not on GRADE DISK

The program offers you the choice to start the ADD RECORDS option again, return to the main menu, or end. Return to the main menu and select option 4 (if you have a few names to change) or option 5 (if you have to create a whole new class list).

Whether you entered this information automatically or manually, you have the same choices as soon as you finish:

```
1. Start ADD RECORDS program.
2. Return to MAIN MENU.
3. End
```

If you choose 1, you start over to enter information. If you choose 2, you see the complete menu (Figure 28) on the screen. If you type 3, you see the following message:

```
Press [START] to end.
Press [ESC] to return to menu.
```

If you press the START key, you see the READY prompt on the screen.

Option 2 Printout grades

This option allows you to print the accumulated records from your GRADE DISK. Type 2 to begin.

First, the title screen displays to confirm that you're beginning the option to print out grades. Press the START key to continue.

Next, you see instructions to insert the GRADE DISK. As in Figure 29, the question of which disk drive you're using displays. Type the number to answer.

Next, decide which of the following you want:

```
1. PRINTOUT ALL GRADES AUTOMATICALLY?
2. PRINTOUT ONE STUDENT'S GRADES?
```

Type the number of your choice. If you select 2, to print out one student's grades, the screen displays a list of the students with a number beside each name.

The program asks how many of the files you want:

```
1. ENTIRE FILE(S)
2. ONLY PROGRAMS FROM SET DATE
```

Type the number of your choice. If you choose 2, programs from a specific date, you have to enter the date next.

If you prefer the entire file, you must provide instructions for the printer. (If you're printing information for your own records, you can have all the students' records printed continuously on the same sheets. But if you're preparing individual reports to distribute to students or send home to parents, you might want each student's on a separate sheet of paper.) The choice appears as follows:

```
1. CONTINUOUS
2. EACH STUDENT'S ON A SEPARATE SHEET
```

Type the number of your choice.

Make sure your printer and interface module are on, your paper is lined up, and your printer is in the ONLINE mode. The following screen is the last choice you make before printing begins:

```
TO ENTER OR CHANGE--TYPE NUMBER(S)
WHICH DO YOU WANT PRINTED?

     1. ADDITION
     2. SUBTRACTION
     3. MULTIPLICATION
     4. DIVISION

     5. A L L PROGRAMS

PRESS [SPACE BAR] TO CONTINUE
```

Figure 32 Type of records to print

This allows you to focus on how students are doing with a specific skill, or (using no. 5) in all math skills. Type a number to show your choice. When you're ready, press the SPACE BAR, and the printout begins immediately.

The name of the student whose records are printing appears on the screen. If a student doesn't have any records in his file, his name isn't printed. If you chose to print the record of only one student, and there are no records for him on the diskette, the program displays the last screen of this option (below).

Note. You must have at least three records in each student's file to guarantee that his records are printed. But if you have fewer than three, it doesn't mean that his records are lost.

When it's finished, you can choose to start option 2 over again, return to the menu, or end.

Figure 33 shows a sample printout from option 2.

```
**********************************      MERLE      **********************************
-------------------------------------------------------------------------------------
DATE    RIGHT      WRONG      NOT DONE   TOTAL (R-1st,R-2nd) TIME     SCORE  PROGRAM
-------------------------------------------------------------------------------------
SUB.(E4)xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
02/14    5(100%)    0(  0%)    0(  0%)     5      ( 4, 1)     1 min.  5400    E4BFPAA

ADD.(A1)xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
02/14    1( 33%)    1( 33%)    1( 33%)     3      ( 1, 0)     8 min.   666    A1BKEHA
```

Figure 33 Sample printout from gradebook

Option 3 TV (Screen) SEARCH

This option allows you to view the accumulated student records from your GRADE DISK on the TV screen. Type 3 to begin.

First, the title screen displays to confirm that you're beginning the option of a screen search. Press the START key to continue.

Then you see instructions to insert the GRADE DISK, as in Figure 29. If you have one disk drive, remove the PROGRAM DISK and insert the GRADE DISK. Type 1 to indicate disk drive one. If you have two disk drives, insert the GRADE DISK in disk drive two. Type 2.

Next choose how many students' records to view. The display is as follows:

```
          DO YOU WANT TO
1. VIEW ALL GRADES AUTOMATICALLY?
2. VIEW ONE STUDENT'S GRADES?
```

Type the number of your choice.

If you choose 2, to view one student's grades, the screen displays a list of the students with a number beside each name. This list enables you to type a number for the student whose records you want to view.

Next decide if you want to see the work done for all the time you've been keeping records, or just for a certain time. The following choice displays:

```
          DO YOU WANT
1.  ENTIRE FILE(S)
2.  ONLY PROGRAMS FROM SET DATE
```

Type the number of your choice. You have to type the date if you choose 2.

The last choice you make in this option is the type of problems you want to view. You may select one or more of the types in the following display, or a combination of them all:

```
TO ENTER OR CHANGE--TYPE NUMBER(S)
    WHICH DO YOU WANT TO VIEW?
        1. ADDITION
        2. SUBTRACTION
        3. MULTIPLICATION
        4. DIVISION
        5. ALL PROGRAMS
```

Figure 34 Select type of problem

Type 1 to select addition. The word "addition" appears in inverse letters. Suppose you change your mind; type 1 again and the word returns to the original type. When you've finally highlighted the one or ones you want, press the RETURN key.

The records begin to appear on the screen. They move continuously down the screen until you press the SPACE BAR to pause. When you want the movement to resume, press the START key.

The following message displays only for a short time:

```
Press [SPACE BAR] to stop.
```

The screen looks like this example:

```
ANN      SUBTRACTION        E4
DATE   RIGHT    WRONG      TOTL.    SCOR.    TIME
2/14   5(100%) 0(0%)          5       5400      1

          PRESS [START] TO CONTINUE
```

Figure 35 Sample screen record display

While the program is searching for the next student's records, the previous student's display remains on the screen. The background color changes. The name of the student whose records are being searched displays at the bottom of the screen. The search takes one or more seconds depending on how many records there are in the student's file.

If a student has fewer than three records in his file, his records won't display on the screen.

When the program has displayed all the records you requested, you have the choice to start this option over, return to the menu, or end.

Option 4 Edit gradebook

This option allows you to add or delete students' names or print a class list on the GRADE DISK. Type 4 to begin.

First the title screen displays to confirm that you're beginning the option to edit your gradebook. Press the START key to continue.

First the program intructs you to insert the GRADE DISK, as in Figure 30. If you have two disk drives, insert the diskette in disk drive two and type 2. If you have one disk drive, remove the PROGRAM DISK and insert the GRADE DISK. Type 1. Then request a choice from the following by typing the appropriate number:

```
   DO YOU WANT TO
1. ADD A NAME
2. DELETE A NAME
3. PRINT CLASS LIST
```

<u>If you're going to delete</u>:

A class list displays with a number beside each student's name. Type the number of the name you want to delete. After a few seconds, the class list redisplays (in alphabetical order) without that name. Press the RETURN key to continue.

Note. If you have more than one name to delete, press the ESC key when the class list redisplays. This shortcut saves you time.

If you chose to add a name to your class list:

First, a class list displays. Then the following instructions appear:

```
NEW NAME
^^^^^^^^^^
PRESS [RETURN] WHEN FINISHED
```

Type the new name, up to 10 letters, spaces, and punctuation marks. Check your entry carefully, because you can't change it after you've pressed the RETURN key.

Don't enter the same name twice; at this stage, the program accepts the duplicate, and you might be confused later.

After a few seconds, the updated class list displays (in alphabetical order).

If you have several names to add at once, press the ESC key when the class list redisplays. This shortcut saves you time.

If you choose to print the class list:

Be sure your printer is on. Press the START key. The class list (plus the total number of records for each student) prints.

When you're finished, the following choices display:

```
1. Start EDIT GRADEBOOK program
2. Return to MAIN MENU
3. End
```

Type the number of your choice.

Option 5 Create new student list

Before you get started, remember a few rules. Names on the GRADE DISK must be identical to those on the STUDENT DISK. If you typed "SUSAN" on the STUDENT DISK when you were using THREE R MATH SYSTEM, you can't type "SUE" for the same person on the GRADE DISK. If you have two students with the same first name, it's a good idea to use the first initial of their last names to distinguish them. ("TOM S." and "TOM B.", for example). Teachers' names must be identical, too. If you didn't enter a teacher's name on the STUDENT DISK, the program calls the teacher "YOUR TEACHER." You can't type "MR. FINLEY" on the GRADE DISK for the same class. Make sure you type names in capital letters.

The GRADE DISK holds records for as many as 51 students. There's room for as many as 1,000 individual entries (such as scores, percentages, or times). A student may have up to 100 entries in his file. By dividing the number of students in your class into 1,000, you can tell approximately how many entries you can keep for each student. In a class of 25, each student could have about 40 entries in his file (1000/25=40). The

entries, you can use the same GRADE DISK until it contains its maximum of 1,000 entries.

When you use this option, all the information on the diskette is deleted. Don't use this option to add new students to a list you already have; use option 4 (Edit GRADE DISK) for this purpose.

To begin option 5, type 5. After a notice that the program is loading, the following screen displays:

```
THREE R MATH
  GRADEBOOK

  CREATE A
GRADE DISK

Press [START] to continue.
(c)1983  By Dan Rohr
```

Figure 36 Create GRADE DISK title screen

Press the START key. Next, record the teacher's name, up to 15 characters (letters, spaces, or punctuation marks). Press the RETURN key. Then you can begin listing your students. The program alphabetizes them for you. The following screen displays to help you:

```
CREATE NEW GRADE DISK
PRESS [RETURN] AFTER EACH NAME
  TYPE 'END' WHEN FINISHED

STUDENT'S NAME______
```

Figure 37 List students' names

After you type the last name, type END in response to the STUDENT? prompt. The screen displays your complete class list with a number beside each name. The program asks if you want to make any changes. If you do, type Y and press the RETURN key. The program prompts you to type the number of the name you want to change. Type a number that already has a name beside it and press the RETURN key. (If you forgot a name and want to add one, you have to select option 4, edit GRADE DISK, later.) Respond to the following prompt by typing the name you want:

```
OLD NAME: (name)
CHANGE TO:?_____
```

When you finish, the class list redisplays, with the correction. Again the program asks if you want to make any changes. When you're finally satisfied with the list, type N.

Next the program requests that you insert a new formatted diskette, and specify which disk drive you're using. If you have one disk drive, remove the PROGRAM DISK and replace it with a blank DOS-II formatted diskette, which will become your GRADE DISK. Type 1. If you have two disk drives, you can insert the diskette in disk drive two and type 2.

which disk drive you're using. If you have one disk drive, remove the PROGRAM DISK and replace it with a blank DOS-II formatted diskette, which will become your GRADE DISK. Type 1. If you have two disk drives, you can insert the diskette in disk drive two and type 2.

At this point you see the following caution:

```
CAUTION!
ALL OLD RECORDS ON
THE GRADE DISK
WILL BE ERASED!
```

This is helpful if you're using an old diskette to create a new GRADE DISK. If you don't want to erase the material on this diskette, press the ESC key to stop and go to the menu. If this caution doesn't apply to you, press the START key to continue.

You have a short wait before you have the following three choices:

```
1. Start CREATE NEW DISK program
2. Return to MAIN MENU
3. End
```

Type the number of your choice. If you choose 1, you start over to create a new GRADE DISK. If you choose 2, you see the complete menu (Figure 29) on the screen. If you type 3, you see the following message:

```
Press [START] to end.
Press [ESC] to return to menu.
```

If you press the START key, you see the READY prompt on the screen.

Miscellaneous notes

The THREE R MATH GRADEBOOK is designed so that people with minimal computer experience can use it with ease. Each question that displays on the screen is concise and understandable, and most responses require that you press only one key.

If you make an incorrect response, the program politely informs you of the problem, and tells you how to correct it. If you make a response and decide to change it, you can always press the ESC key. This returns you to the previous display. For example, if you type a number to choose a menu option, and decide you want another, just press ESC to return to the previous menu.

It's a good idea to make backup copies of the GRADE DISK in case of loss or damage to the diskette. Follow the instructions in the DOS menu to copy a diskette.

Several teachers can use the program at one time because the PROGRAM DISK doesn't contain student data. Each teacher keeps his or her own GRADE DISKS, but everyone can share the PROGRAM DISK. Student aides, secretaries, or a specific teacher can be responsible for adding records from STUDENT DISKS to the GRADE DISKS.

Parents appreciate frequent communications from their children's school. This program generates reports that you can send home to let parents know how their children are progressing. Be sure to include an explanation of the appropriate codes from APPENDIX A.

This program gives you the tools you need to individualize your students' math drills and keep track of their progress. By letting the computer do the mundane record keeping, you have more time to give the students specific help.

If you come up with interesting ideas or unique uses of THREE R MATH CLASSROOM KIT, please share them with me.

PART IV:

APPENDIX A

CODES

Password code key

1—2 Program Letters	3 No. of Problems	4 Speed Per Problem	5 Total Time	6 Min. % Correct	7 Teacher's Name
First 2 Spaces	A-Not Set	A-Not Set	A-Not Set	A-Not Set	A-
	B- 5	B- 1 Sec.	B- 1 Min.	B- 10%	B-
	C- 10	C- 2	C- 2	C- 20%	C-
See Password Problem Codes	D- 15	D- 3	D- 3	D- 30%	D-
	E- 20	E- 4	E- 4	E- 40%	E-
	F- 25	F- 5	F- 5	F- 50%	F-
	G- 30	G- 6	G- 6	G- 60%	G-
	H- 35	H- 7	H- 7	H- 70%	H-
	I- 40	I- 8	I- 8	I- 80%	I-
	J- 45	J- 9	J- 9	J- 90%	J-
	K- 50	K- 10	K- 10	K- 100%	K-
	L- 55	L- 11	L- 11	L-Z (Not Set)	L-
	M- 60	M- 12	M- 12		M-
	N- 65	N- 13	N- 13		N-
	O- 70	O- 14	O- 14		O-
	P-Z (Not Set)	P- 15	P- 15		P-
		Q- 16	Q- 16		Q-
		R- 17	R- 17		R-
		S- 18	S- 18		S-
		T- 19	T- 19		T-
		U- 20	U- 20		U-
		V- 30	V- 21		V-
		W- 40	W- 22		W-
		X- 50	X- 23		X-
		Y- 60	Y- 24		Y-
		Z- 90	Z- 25		Z-

Addition code summary

CODES	DESCRIPTION
A1	Add two 1 digit numbers (numbers from 1-5)
A2	Add two 1 digit numbers (sums less than 10)
A3	Add two 1 digit numbers (all sums greater than 10)
A4	Add two 1 digit numbers (any sum)
A5	Add a 2 and 1 digit number (no regrouping)
A6	Add a 2 and 1 digit number (all regrouping)
A7	Add a 2 and 1 digit number (mixed)
B1	Add two 2 digit numbers (no regrouping)
B2	Add two 2 digit numbers (all regrouping)
B3	Add two 1 or 2 digit numbers (mixed)
B4	Add two 2 digit numbers (mixed)
B5	Add two 3 digit numbers (no regrouping)
B6	Add two 3 digit numbers (all regrouping)
B7	Add two 3 digit numbers (mixed)
C1	Add two 2 or 3 digit numbers (mixed)
C2	Add three 1 digit numbers (mixed)
C3	Add three 1,2, or 3 digit numbers (mixed)
C4	Add three 1 or 2 digit numbers (mixed)
C5	Add three 2 or 3 digit numbers (mixed)

Subtraction Code summary

CODES	DESCRIPTION
D1	Subtract a 1 digit from a 1 digit number
D2	Subtract a 1 digit from a 2 digit no.(no regrouping)
D3	Subtract a 1 digit from a 2 digit number (regrouping
D4	Subtract 7, 8, or 9 from a 2 digit number (mixed)
D5	Subtract a 1 digit from a 2 digit number (mixed)
E1	Subtract a 2 digit from a 2 digit no.(no regrouping)
E2	Subtract a 2 digit from a 2 digit number(regrouping)
E3	Subtract a 2 digit from a 2 digit number (mixed)
E4	Subtract a 2 digit from a 3 digit no.(no regrouping)
E5	Subtract a 2 digit from a 3 digit number(regrouping)
E6	Subtract a 2 digit from a 3 digit number (mixed)
F1	Subtract a 3 digit from a 3 digit no.(no regrouping)
F2	Subtract a 3 digit from a 3 digit number(regrouping)
F3	Subtract a 3 digit from a 3 digit number (mixed)
F4	Subtract a 3 digit from a 4 digit number(regrouping)
F5	Subtract a 3 digit from a 4 digit number (mixed)
F6	Subtract a 4 digit from a 4 digit number(regrouping)
F7	Subtract a 4 digit from a 4 digit number (mixed)

Multiplication code summary

CODES	DESCRIPTION
G1	Multiplication Table 2
G2	Multiplication Table 3
G3	Multiplication Table 4
G4	Multiplication Table 5
G5	Multiplication Table 6
G6	Multiplication Table 7
H1	Multiplication Table 8
H2	Multiplication Table 9
H3	Multiplication Table 10
H4	Multiplication Table 11
H5	Multiplication Table 12
I1	Multiplication Tables 2, 3, or 4
I2	Multiplication Tables 4, 5, or 6
I3	Multiplication Tables 6, 7, or 8
I4	Multiplication Tables 7, 8, or 9
I5	Multiplication Tables 7 - 12
I6	Multiplication Tables 2 - 12
J1	Multiply a 2 digit by a 1 digit number (2-5)
J2	Multiply a 2 digit by a 1 digit number (4-9)
J3	Multiply a 2 digit by a 1 digit number (any)
J4	Multiply a 3 digit by a 1 digit number (2-5)
J5	Multiply a 3 digit by a 1 digit number (4-9)
J6	Multiply a 3 digit by a 1 digit number (any)
K1	Multiply a 2 digit by a 2 digit number (10-19)
K2	Multiply a 2 digit by a 2 digit number (any)
K3	Multiply a 3 digit by a 2 digit number (10,20,...)
K4	Multiply a 3 digit by a 2 digit number (11-19)
K5	Multiply a 3 digit by a 2 digit number (any)
L1	Multiply a 3 digit by a 3 digit number (101-199)
L2	Multiply a 3 digit by a 3 digit number (any)
L3	Multiply a 4 digit by a 2 digit number (11-19)
L4	Multiply a 4 digit by a 2 digit number (any)
L5	Multiply a 4 digit by a 3 digit number (any)

Division code summary

CODE	DESCRIPTION		
M1.....	2 . . .	Divided into	2 - 24
M2.....	3 . . .	Divided into	3 - 36
M3.....	4 . . .	Divided into	4 - 48
M4.....	5 . . .	Divided into	5 - 60
M5.....	6 . . .	Divided into	6 - 72
M6.....	7 . . .	Divided into	7 - 84
N1.....	8 . . .	Divided into	8 - 96
N2.....	9 . . .	Divided into	9 - 108
N3.....	10 . .	Divided into	10 - 120
N4.....	11 . .	Divided into	11 - 132
N5.....	12 . .	Divided into	12 - 144
P1.....	2 - 4 .	Divided into	8 - 48
P2.....	4 - 6 .	Divided into	12 - 72
P3.....	6 - 9 .	Divided into	12 - 108
P4.....	9 - 12	Divided into	18 - 144
P5.....	2 - 9	Divided into	8 - 108
P6.....	6 - 12	Divided into	12 - 144
P7.....	2 - 12	Divided into	8 - 144
Q1.....	2 - 4	Divided into	100 - 500
Q2.....	4 - 6	Divided into	100 - 500
Q3.....	6 - 9	Divided into	100 - 500
Q4.....	9 - 12	Divided into	100 - 500
Q5.....	2 - 9	Divided into	100 - 500
Q6.....	6 - 12	Divided into	100 - 500
R1.....	2 - 9	Divided into	100 - 999
R2.....	11 - 15	Divided into	100 - 999
R3.....	20 - 40	Divided into	100 - 999
R4.....	2 - 9	Divided into	1000 - 9999
R5.....	11 - 15	Divided into	1000 - 9999
R6.....	20 - 50	Divided into	1000 - 9999
R7.....	50 - 99	Divided into	1000 - 9999

A D D I T I O N

CODE	PROBLEM	SAMPLE	
A 1	Add two 1 digit numbers (Numbers from 1 to 5)	1 + 1 ---	5 + 5 ---
A 2	Add two 1 digit numbers (Sums less than 10)	1 + 1 ---	9 + 0 ---
A 3	Add two 1 digit numbers (All sums greater than 10)	5 + 6 ---	9 + 9 ---
A 4	Add two 1 digit numbers (Any sum)	2 + 3 ---	8 + 6 ---
A 5	Add a 2 digit and 1 digit number (No regrouping)	11 + 1 ---	98 + 1 ---
A 6	Add a 2 digit and 1 digit number (All regrouping)	11 + 9 ---	99 + 9 ---
A 7	Add a 2 digit and 1 digit number (Mixed)	23 + 5 ---	67 + 8 ---

A D D I T I O N

CODE	PROBLEM	SAMPLE	
B 1	Add two 2 digit numbers (No regrouping)	11 +11 ---	88 +11 ---
B 2	Add two 2 digit numbers (All regrouping)	19 +11 ---	99 +99 ---
B 3	Add two 1 or 2 digit numbers (Mixed)	15 + 3 ---	99 +87 ---
B 4	Add two 2 digit numbers (Mixed)	12 +13 ---	98 +86 ---
B 5	Add two 3 digit numbers (No regrouping)	111 +111 ---	798 +201 ---
B 6	Add two 3 digit numbers (All regrouping)	111 +109 ---	999 +999 ---
B 7	Add two 3 digit numbers (Mixed)	123 +105 ---	999 +888 ---

A D D I T I O N

CODE	PROBLEM	SAMPLE	
C 1	Add two 2 or 3 digit numbers (Mixed)	111 + 11 ---	888 +888 ---
C 2	Add.three 1 digit numbers (Mixed)	2 1 + 3 ---	9 9 + 9 ---
C 3	Add three 1,2,or 3 digit numbers (Mixed)	15 3 +211 ----	699 487 +678 ----
C 4	Add three 1 or 2 digit numbers (Mixed)	2 13 + 1 ----	98 86 + 99 ----
C 5	Add three 2 or 3 digit numbers (Mixed)	11 11 + 11 ----	98 201 +989 ----

S U B T R A C T I O N

CODE	PROBLEM	SAMPLE	
D 1	Subtract a 1 digit number from a 1 digit number	2 - 1 ---	9 - 5 ---
D 2	Subtract a 1 digit number from a 2 digit number (No regrouping)	11 - 1 ---	99 - 6 ---
D 3	Subtract a 1 digit number from a 2 digit number (Regrouping)	15 - 6 ---	98 - 9 ---
D 4	Subtract 7, 8, or 9 from a 2 digit number (Mixed)	17 - 7 ---	98 - 9 ---
D 5	Subtract a 1 digit number from a 2 digit number (Mixed)	11 - 1 ---	98 - 9 ---

S U B T R A C T I O N

CODE	PROBLEM	SAMPLE	
E 1	Subtract a 2 digit number from a 2 digit number (No regrouping)	11 - 10 ---	99 - 21 ---
E 2	Subtract a 2 digit number from a 2 digit number (Regrouping)	21 - 19 ---	88 - 39 ---
E 3	Subtract a 2 digit number from a 2 digit number (Mixed)	15 - 12 ---	82 - 59 ---
E 4	Subtract a 2 digit number from a 3 digit number (No regrouping)	132 - 11 ---	958 - 46 ---
E 5	Subtract a 2 digit number from a 3 digit number (Regrouping)	121 - 12 ---	998 - 79 ---
E 6	Subtract a 2 digit number from a 3 digit number (Mixed)	211 - 19 ---	899 - 69 ---

S U B T R A C T I O N

CODE	PROBLEM	SAMPLE	
F 1	Subtract a 3 digit number from a 3 digit number (No regrouping)	111 - 100 ----	999 - 645 ----
F 2	Subtract a 3 digit number from a 3 digit number (Regrouping)	221 - 119 ----	988 - 699 ----
F 3	Subtract a 3 digit number from a 3 digit number (Mixed)	315 - 112 ----	882 - 659 ----
F 4	Subtract a 3 digit number from a 4 digit number (Regrouping)	1132 - 109 -----	8958 - 967 -----
F 5	Subtract a 3 digit number from a 4 digit number (Mixed)	2121 - 111 -----	7998 - 679 -----
F 6	Subtract a 4 digit number from a 4 digit number (Regrouping)	3211 -1219 -----	5897 -1998 -----
F 7	Subtract a 4 digit number from a 4 digit number (Mixed)	1123 -1010 -----	9867 -6989 -----

MULTIPLICATION

CODE	PROBLEM	SAMPLE	
G 1	2's multiplication table	1 x 2 ---	12 x 2 ---
G 2	3's multiplication table	1 x 3 ---	12 x 3 ---
G 3	4's multiplication table	1 x 4 ---	12 x 4 ---
G 4	5's multiplication table	1 x 5 ---	12 x 5 ---
G 5	6's multiplication table	1 x 6 ---	12 x 6 ---
G 6	7's multiplication table	1 x 7 ---	12 x 7 ---

MULTIPLICATION

CODE	PROBLEM	SAMPLE	
H 1	8's multiplication table	1 x 8 ---	12 x 8 ---
H 2	9's multiplication table	1 x 9 ---	12 x 9 ---
H 3	10's multiplication table	10 x 1 ---	12 x10 ---
H 4	11's multiplication table	11 x 1 ---	12 x11 ---
H 5	12's multiplication table	12 x 1 ---	12 x12 ---

MULTIPLICATION

CODE	PROBLEM	SAMPLE	
I 1	2's, 3's, or 4's multiplication tables	1 x 2 ---	12 x 4 ---
I 2	4's, 5's, or 6's multiplication tables	1 x 4 ---	12 x 6 ---
I 3	6's, 7's, or 8's multiplication tables	1 x 6 ---	12 x 8 ---
I 4	7's, 8's, or 9's multiplication tables	1 x 7 ---	12 x 9 ---
I 5	7's through 12's multiplication tables	1 x 7 ---	12 x12 ---
I 6	2's through 12's multiplication tables	1 x 2 ---	12 x12 ---

MULTIPLICATION

CODE	PROBLEM	SAMPLE	
J 1	Multiply a 2 digit number by a 1 digit number (2 - 5)	11 x 2 =	99 x 5 =
J 2	Multiply a 2 digit number by a 1 digit number (4 - 9)	11 x 4 =	99 x 9 =
J 3	Multiply a 2 digit number by a 1 digit number (Any)	11 x 2 =	99 x 9 =
J 4	Multiply a 3 digit number by a 1 digit number (2 - 5)	123 x 2 =	989 x 5 =
J 5	Multiply a 3 digit number by a 1 digit number (4 - 9)	101 x 4 =	789 x 9 =
J 6	Multiply a 3 digit number by a 1 digit number (Any)	111 x 2 =	898 x 9 =

MULTIPLICATION

CODE	PROBLEM	SAMPLE	
K 1	Multiply a 2 digit number by a 2 digit number (10 - 19)	11 x 10	99 x 19
K 2	Multiply a 2 digit number by a 2 digit number (Any)	11 x 11	99 x 99
K 3	Multiply a 3 digit number by a 2 digit number (10,20,30, ...)	121 x 10	898 x 90
K 4	Multiply a 3 digit number by a 2 digit number (11 - 19)	123 x 11	989 x 19
K 5	Multiply a 3 digit number by a 2 digit number (Any)	101 x 10	889 x 99

MULTIPLICATION

CODE	PROBLEM	SAMPLE	
L 1	Multiply a 3 digit number by a 3 digit number (101 - 199)	111 x 101 -----	999 x 199 -----
L 2	Multiply a 3 digit number by a 3 digit number (Any)	123 x 111 -----	898 x999 ----
L 3	Multiply a 4 digit number by a 2 digit number (11 - 19)	2121 x 11 -----	9898 x 19 -----
L 4	Multiply a 4 digit number by a 2 digit number (ANY)	1123 x 11 -----	8989 x 99 -----
L 5	Multiply a 4 digit number by a 3 digit number (Any)	1010 x 110 -----	7889 x 699 -----

D I V I S I O N

CODE	PROBLEM	SAMPLE	
M 1	2's division table	2 /2	2 /24
M 2	3's division table	3 /3	3 /36
M 3	4's division table	4 /4	4 /48
M 4	5's division table	5 /5	5 /60
M 5	6's division table	6 /6	6 /72
M 6	7's division table	7 /7	7 /84
N 1	8's division table	8 /8	8 /96
N 2	9's division table	9 /9	9 /108
N 3	10's division table	10 /10	10 /120
N 4	11's division table	11 /11	11 /132
N 5	12's division table	12 /12	12 /144

D I V I S I O N

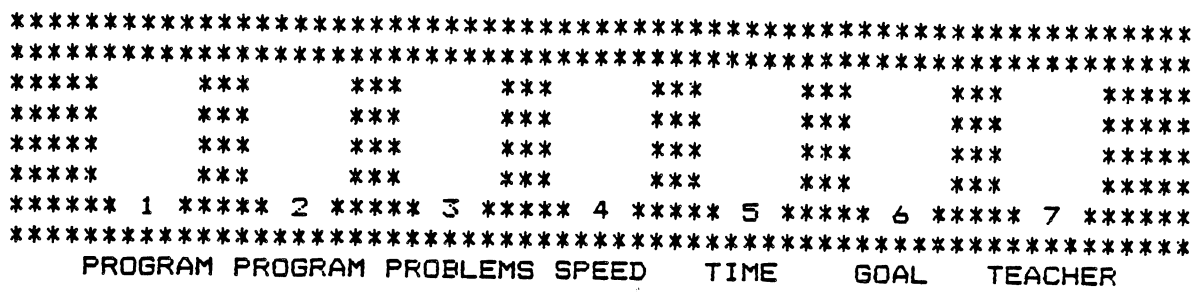
CODE	PROBLEM	SAMPLE
P 1	2-4 divided into 8-48	2 /8 4 /48
P 2	4-6 divided into 12-72	4 /12 6 /72
P 3	6-9 divided into 12-108	6 /12 9 /108
P 4	9-12 divided into 18-144	9 /18 12 /144
P 5	2-9 divided into 8-108	2 /8 9 /108
P 6	6-12 divided into 12-144	6 /12 12 /144
P 7	2-12 divided into 8-144	2 /8 12 /144
Q 1	2-4 divided into 100-500	2 /100 4 /500
Q 2	4-6 divided into 100-500	4 /100 6 /498
Q 3	6-9 divided into 100-500	6 /108 9 /495
Q 4	9-12 divided into 100-500	9 /108 12 /492
Q 5	2-9 divided into 100-500	2 /100 9 /495
Q 6	6-12 divided into 100-500	6 /108 12 /492

D I V I S I O N

CODE	PROBLEM	SAMPLE
R 1	2-9 divided into 100-999	2 /100 9 /999
R 2	11-15 divided into 100-999	11 /110 15 /990
R 3	20-40 divided into 100-999	20 /100 40 /960
R 4	2-9 divided into 1000-9999	2 /1000 9 /9999
R 5	11-15 divided into 1000-9999	11 /1100 15 /9990
R 6	20-50 divided into 1000-9999	20 /1000 50 /9950
R 7	50-99 divided into 1000-9999	50 /1000 99 /9999

Appendix B
Sample forms

THREE R MATH SYSTEM-A: STUDENT PASSWORD FORM



START: _____ STOP: _____ PROBLEMS: _____ SPEED: _____

NAME: _____ GRADE: _____

TEACHER: _____ ROOM: _____

COMMENTS:

Name _____ Date _____ Program: A3 #_____

Start_____ Stop_____ Time_____ Right_____Wrong_____Score_____

8 + 7	4 + 7	9 + 6	2 + 9	7 + 4	4 + 9
4 + 7	8 + 6	3 + 9	2 + 9	4 + 9	6 + 8
2 + 9	7 + 4	6 + 9	5 + 6	3 + 9	6 + 8
4 + 8	4 + 9	3 + 8	3 + 9	2 + 9	3 + 9
5 + 8	4 + 9	4 + 8	6 + 9	6 + 9	4 + 7
6 + 7	4 + 9	8 + 9	8 + 9	6 + 6	7 + 4

Name _____ Date _____ Program: A3 #_____

Start_____ Stop_____ Time_____ Right_____Wrong_____Score_____

8 + 7 =	4 + 7 = 11	9 + 6 =	2 + 9 = 11	7 + 4 =	4 + 9 = 13
4 + 7 =	8 + 6 = 14	3 + 9 =	2 + 9 = 11	4 + 9 =	6 + 8 = 14
2 + 9 =	7 + 4 = 11	6 + 9 =	5 + 6 = 11	3 + 9 =	6 + 8 = 14
4 + 8 =	4 + 9 = 13	3 + 8 =	3 + 9 = 12	2 + 9 =	3 + 9 = 12
5 + 8 =	4 + 9 = 13	4 + 8 =	6 + 9 = 15	6 + 9 =	4 + 7 = 11
6 + 7 =	4 + 9 = 13	8 + 9 =	8 + 9 = 17	6 + 6 =	7 + 4 = 11

PROGRAM:A3 #_____

ANSWER KEY

8 + 7 = 15	4 + 7 = 11	9 + 6 = 15	2 + 9 = 11	7 + 4 = 11	4 + 9 = 13
4 + 7 = 11	8 + 6 = 14	3 + 9 = 12	2 + 9 = 11	4 + 9 = 13	6 + 8 = 14
2 + 9 = 11	7 + 4 = 11	6 + 9 = 15	5 + 6 = 11	3 + 9 = 12	6 + 8 = 14
4 + 8 = 12	4 + 9 = 13	3 + 8 = 11	3 + 9 = 12	2 + 9 = 11	3 + 9 = 12
5 + 8 = 13	4 + 9 = 13	4 + 8 = 12	6 + 9 = 15	6 + 9 = 15	4 + 7 = 11
6 + 7 = 13	4 + 9 = 13	8 + 9 = 17	8 + 9 = 17	6 + 6 = 12	7 + 4 = 11

APX ATARI® PROGRAM EXCHANGE
P.O. Box 3705
Santa Clara, CA 95055

Review Form

We're interested in your experiences with APX programs and documentation, both favorable and unfavorable. Many of our authors are eager to improve their programs if they know what you want. And, of course, we want to know about any bugs that slipped by us, so that the author can fix them. We also want to know whether our instructions are meeting your needs. You are our best source for suggesting improvements! Please help us by taking a moment to fill in this review sheet. Fold the sheet in thirds and seal it so that the address on the bottom of the back becomes the envelope front. Thank you for helping us!

1. Name and APX number of program.

2. If you have problems using the program, please describe them here.

3. What do you especially like about this program?

4. What do you think the program's weaknesses are?

5. How can the catalog description be more accurate or comprehensive?

6. On a scale of 1 to 10, 1 being "poor" and 10 being "excellent", please rate the following aspects of this program:

   _____ Easy to use
   _____ User-oriented (e.g., menus, prompts, clear language)
   _____ Enjoyable
   _____ Self-instructive
   _____ Useful (non-game programs)
   _____ Imaginative graphics and sound

7. Describe any technical errors you found in the user instructions (please give page numbers).

8. What did you especially like about the user instructions?

9. What revisions or additions would improve these instructions?

10. On a scale of 1 to 10, 1 representing "poor" and 10 representing "excellent", how would you rate the user instructions and why?

11. Other comments about the program or user instructions:

From

STAMP

ATARI Program Exchange
P.O. Box 3705
Santa Clara, CA 95055

[seal here]