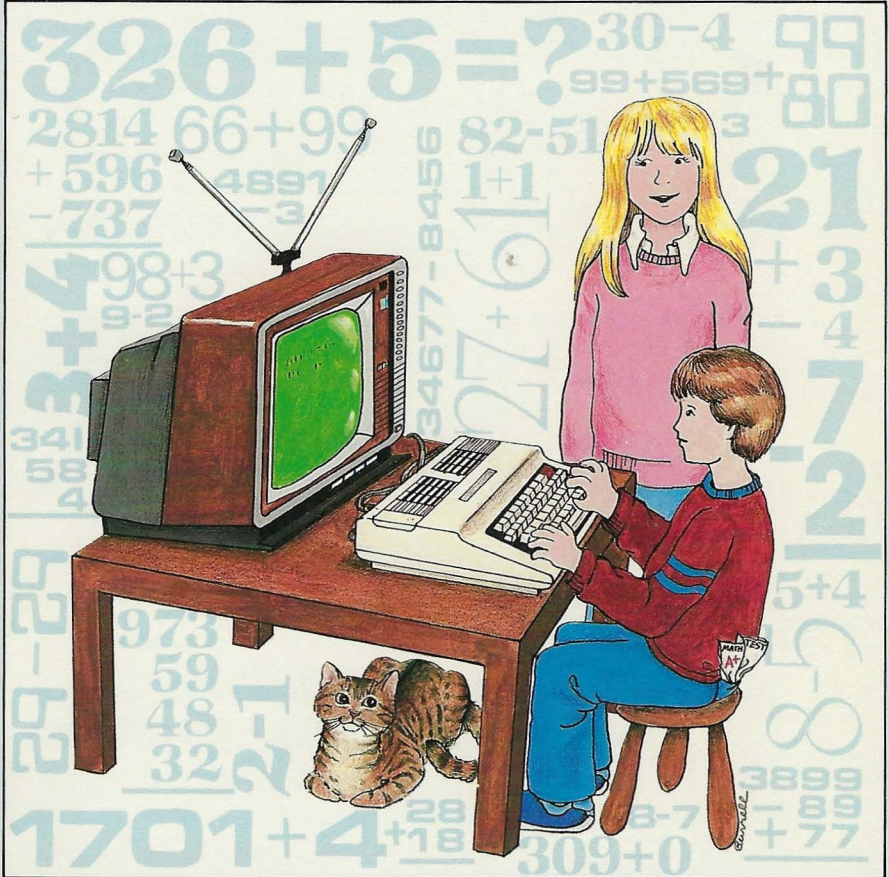


COLORMATH

CAT. NO. 26-3201

16K Required



TANDY®

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Color Math

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10 9 8 7 6 5 4 3 2

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Introduction

Tandy's Color Math program is designed so that your child can practice, in a home environment, the basic math concepts that he or she is learning in school. The program covers addition, subtraction, multiplication, and division and is suitable for children in grades one through eight. The Color Math program:

- Finds the most appropriate skill lesson for your child in each of the four math topics
- Uses skill building lessons to increase math skills in each topic, with automatic promotion as each lesson is mastered
- Tests your child on any lesson in the program to evaluate proficiency at that level

We hope your child finds the Color Math program a new and enjoyable way to learn mathematics.

System Requirements

To use the Color Math Program, you need:

- Tandy Color Computer with at least 16K RAM
- A standard television (color recommended)
- A cassette recorder and connecting cable

Loading Instructions

Math subjects are referred to as “topics” throughout this manual. Side One of the tape contains lessons on addition and subtraction, and Side Two contains multiplication and division. To load a program:

1. Connect the computer, TV, and cassette recorder as instructed in the computer Owner's Manual.
2. Turn on the TV, and select channel 3 or 4 (whichever is least active in your area).
3. On the back of the computer keyboard, move the Channel Select switch to the channel number you selected on the TV.
4. Turn on the computer by pressing the power button at the left rear of the computer. The copyright information is displayed.
5. Place the tape in the cassette recorder with the side you wish to use facing up. Set the volume of the cassette recorder to the level you have found most effective for loading programs.

Note: You may want to load Side One so you can follow along with the demonstration.

6. Rewind the tape. When the tape is rewound, press “Stop,” and then press “Play.”
7. Type CLOADM ENTER. The Program is loading properly if you see a flashing F and the program name (COLMATH1 or COLMATH2).

Note: If an error message appears, stop the recorder. Increase or decrease the recorder's volume and repeat the instructions from Step 6.

8. When the screen shows OK, type EXEC **ENTER**. The Topic Option Screen appears.
9. Press the recorder's "Stop" button and rewind the tape. When the tape is rewound, "Stop" the recorder, and return the tape to its protective holder.

Changing Topics

To switch to another topic on the same side of the tape, type RX at any time during a lesson or test or at a report screen. When the Topic Option Screen appears, type the desired topic number.

To switch to a topic on the reverse side of the tape, turn off the computer, and then turn it on again. Turn over the tape, and follow Steps 6 through 9 of the loading instructions.

Keyboard Functions

- :** Indicates the point at which the answer you type will appear.
- ENTER** Moves you to the next question or problem. Tells the computer to accept what you have typed.
- RT** Ends the session and presents a Performance Report if used during a lesson or test; returns you to the Option List if used at a report screen. (Press **R** and **T** at the same time.)
- RX** Returns you to the Topic Option Screen, at which you can select another topic. Typing **RX** again returns you to the system prompt, OK. (No Performance Report is given if you type **RX** during a lesson.) (Press **R** and **X** at the same time.)
- 0** Generates an unlimited number of problems when entered at the MAXIMUM NUMBER prompt. You must type **RT** to end the session and receive a Performance Report.
- B** or **C** Shows when a digit should be borrowed or carried on the screen (a flashing square). Press **B** for assistance with subtraction problems or **C** for help with addition or multiplication. (These aids appear automatically in beginners' lessons.)



Moves the cursor to the right to allow correction in vertical addition and subtraction problems. The answer must have more than one digit, and you must make the correction before you enter the last digit of the answer. (Corrections are not allowed in multiplication and division problems.)

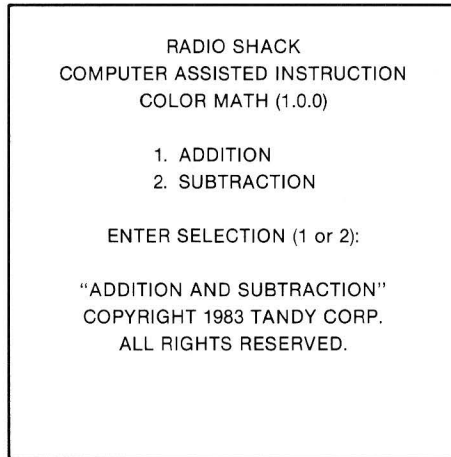
Note: In addition, the cursor shifts right one space. In subtraction, the cursor shifts to the extreme right digit in the answer.



Moves the cursor to the left to allow correction in horizontal addition and subtraction problems. Also used for backing up to correct typing mistakes (such as entering your name) before pressing **ENTER**.

Using Color Math

You can begin using Color Math when the Topic Option Screen appears:



The Topic Option Screen displays the two topics of a program. Select the topic you want. For example, if you loaded Side One for the demonstration, the two topics are Addition and Subtraction. Choose ADDITION by typing 1 (ENTER), and the screen shows:

ADDITION
MAXIMUM PROBLEMS?
TYPE CHOICE AND PRESS <ENTER>

Type the maximum number of problems you want your child to work in this lesson. For example, type 10 (ENTER), and the Option List appears:

ADDITION
A. PLACEMENT
B. LESSONS
C. TEST
D. CHANGE MAXIMUM PROBLEMS
TYPE CHOICE AND PRESS <ENTER>

Note: You can correct a typing mistake before you press (ENTER) if you press the (←) key to backspace to the point of error and retype the end of the line.

The Option List lets you choose an operating mode:

- A. PLACEMENT — finds the appropriate starting lesson for your child.
- B. LESSONS — presents skill building lessons.
- C. TEST — gives a test on any lesson.
- D. CHANGE MAXIMUM PROBLEMS — lets you change the number of problems.

Placement

Before starting your child in a subject, you might want to use Option A to find a good starting lesson for your child. The computer automatically evaluates the child's performance during the placement and places your child in the appropriate lesson for further practice.

Select PLACEMENT by typing A **ENTER**. You are asked to enter your child's name and to guess a starting lesson number. The lesson number you type should be your best guess at the most appropriate lesson for your child, considering his or her present skill level. A close estimate speeds up the time it takes the computer to find the appropriate starting lesson. If you do not wish to guess a starting lesson, you can select Lesson 1. (See the next section on example placement.)

After you enter the starting lesson, the placement session begins. The first few problems are from the lesson you selected. If your child does well on the first few problems, the computer presents problems from the next higher lesson. If your child does not do well, the computer presents the previous or the next lower lesson. The computer progresses backward and forward until it finds the appropriate lesson for your child.

The current lesson numbers are not displayed during the placement process, so the child is not aware of his direction of movement. It is possible that the starting lesson you selected is the appropriate one for your child; in this case, your child does not move backward or forward but is placed in that lesson.

When the appropriate lesson is found, the child is considered "placed." A Placement Report is displayed:

```
PLACEMENT  
LESSON 3  
PRESS <ENTER>
```

The second line gives the lesson number in which your child has been placed. It's a good idea to record this lesson number on the Record Sheet (Appendix B) to keep a history of your child's progress.

After being placed, the child is advanced to the Skill Building Lessons mode for further practice in the chosen subject. Simply press **(ENTER)**, as suggested at the bottom of the screen, and the computer presents skill building problems for the lesson in which the child was just placed.

You may continue with the skill building lesson or type **RX** to place the child in another topic. After the child has been placed

in each of the four topics, you can select the Skill Building mode whenever you wish. The next section, "Lessons," tells you more about Skill Building Lessons. Follow the example below for a sample placement run.

Example Placement

You may want to work through this demonstration by yourself or with your child. Addition is the selected topic. Type A **ENTER** to enter the Placement mode.

The screen shows:

Name?

LESSON(1-70)?

3 + 1 =

You type:

The child's name (up to 12 characters) **ENTER**.

1 **ENTER** for Lesson 1.

Your first problem may be different from the one shown above because the problems are generated randomly. The tiny blinking squares to the right of the equal sign show the location at which your answer will appear on the screen. To solve the problem, press the appropriate number key. The computer displays WRONG KEY if you press a key other than a number.

If your answer is correct, the computer beeps and displays a "Happy Face." If your answer is incorrect, the wrong answer is blocked out, and when the blinking squares return, you can try again. If your second answer is incorrect, the correct answer flashes, and the next problem appears. (If your child has difficulty with this, you might want to spend some extra time explaining this concept.)

Continue working the problems, answering some correctly and some incorrectly. Notice that when you do not respond within

30 seconds, PLEASE ANSWER appears. If you do not hear a beep after a correct answer, increase the volume on your TV set. The “Happy Face” appears only after a correct answer on the first try. You can skip the “Happy Face” by pressing any key on the keyboard immediately after typing the answer, and the next problem appears instantly. When your child reaches the Fourth Grade Lessons, a CORRECT message replaces the “Happy Face.”

The placement process generates as many problems as necessary to determine your child’s placement. When the appropriate lesson is found, the Placement Report appears.

Since a similar report appears in the Skill Building and Testing modes, this is generally called the Report Screen. The lesson number indicates the lesson at which the child should start in the chosen topic. This is an example, so it is not necessary to record the subject and lesson number on the record sheet. You are automatically advanced to the Skill Building Lessons mode.

Lessons

The Color Math program uses the Skill Building Lessons to reinforce your child’s math skills. When you wish to work on a lesson, type B (ENTER) at the Option List. (To change topics or the number of problems presented, enter RX or RT first.) Enter your child’s name as requested and the lesson number you want the child to take. The session begins.

Note: If your child advances to the Skill Building Lessons mode from placement, you need only to press (ENTER) to begin the session.

The computer presents the number of problems you specified. For example, if you enter 30 for MAXIMUM PROBLEMS, 30

problems are presented, followed by the Report Screen. If you type **0** (**ENTER**), the computer presents an unlimited number of problems.

The child hears a “beep” when a problem is answered correctly, regardless of the number of tries. When the answer is correct on the first try, the beep is accompanied by a “Happy Face” or by the word, **CORRECT** (in more advanced lessons).

In addition and subtraction, the child gets two chances to answer a problem correctly. If the child misses on the second try, the correct answer appears, and the problem is repeated until it is correctly solved. The child can correct an answer if it contains more than one digit. The correction must be made before the last digit in the answer is entered. For example, in addition, pressing **(←)** erases one digit at a time. In subtraction, pressing **(←)** erases all the digits entered so far and restarts the problem.

In multiplication and division problems, the computer checks each digit as it is typed. The child gets two chances to type each digit correctly. If both tries are incorrect, the correct digit appears, and the flashing squares move to the next digit. Note that no flashing squares appear above Lesson 40 in multiplication and that no flashing squares appear at all in division. Correction is not allowed in multiplication and division problems after you move to the next digit; the child gets only two tries for each digit.

Assistance is offered in problems that require carrying or borrowing. Flashing squares show the point at which the carried or borrowed digit should be typed. It does not matter if the borrowed or carried digit typed is correct. Only the digits in the answer matter. These aids automatically appear in beginners’ lessons. In the more advanced lessons, the child can request assistance by pressing **(C)** for carrying in addition or multiplication or **(B)** for borrowing in subtraction.

The following example shows how the "C" cursor works:

(A)	(B)	(C)	(D)
	:	1	1
49	49	49	49
<u>+ 9</u>	<u>+ 9</u>	<u>+ 9</u>	<u>+ 9</u>
:	8	:8	58

- (A) The flashing squares show the point at which the first digit of the answer should be typed. (B) After the child types 8, the flashing squares move above the 4 to signify carrying. The child then types a 1, the digit that is carried to this column. (C) After the child types the carried digit, the flashing squares move to the tens' place for the child to finish the answer. (D) The problem is completed.

The following example shows how the "B" cursor works:

(A)	(B)	(C)	(D)
	:	3:	31:
9742	9742	97■2	97■2
<u>-6633</u>	<u>-6633</u>	<u>-6633</u>	<u>-6633</u>
:			
(E)	(F)	(G)	
312	3	1	
97■■	97■2	9742	
<u>-6633</u>	<u>-6633</u>	<u>-6633</u>	
:	:9	3109	

(A) The flashing squares show the point at which the first digit of the answer should be typed. (B) Press **(B)**; the flashing squares move above the digit borrowed from. Type the number remaining after borrowing one; press **(3)**. (C) The flashing squares move over the 2. Type the borrowed digit; press **(1)**. (D) Type 2. (E) The flashing squares return to the answer line. Type the answer ($12-3=9$); press **(9)**. (F) The flashing squares move to the ten's place for the child to continue the problem; press **(0)** ($3-3=0$). (G) The flashing squares move to the hundreds place, then the thousands place until the problem is completed.

Note that the numbers borrowed from and the numbers added to are blanked out to aid in retention.

When the child completes the specified number of problems, a Performance Report automatically appears on the screen. You can see a report at any time during the lesson by typing RT. This report summarizes the problems worked so far. If you entered 0 for unlimited problems, you must type RT to end the session and receive a Performance Report.

The computer automatically advances your child as each lesson is mastered. The report indicates if a promotion or demotion has occurred.

(Promotion)

ADDITION
 LESSON 6
 (FROM 5)
 ANNE

(Demotion)

ADDITION
 LESSON 5
 (FROM 6)
 ANNE

Note: Increase the MAXIMUM PROBLEMS if a promotion or demotion does not occur within a reasonable amount of time. Some lessons require that a certain number of problems be worked for promotion and demotion. See Appendix A. For example, Lesson 15 may require 20 problems for promotion or demotion. The child must work 20 problems all at once (rather than specifying 10 for MAXIMUM PROBLEMS and taking that lesson twice). Also be aware that promotion/demotion is based on the percentage of problems that your child works correctly on the first try.

After viewing the report, record the information on the Record Sheet (in Appendix B) to chart your child's progress. The starting lesson for each session goes in the column marked "Lesson Number." Note whether the exercise was a placement or lesson in the Comment section of the Record Sheet. When a promotion or demotion occurs, note the lesson number to which the child was promoted or demoted. The child should start with this lesson the next time he or she studies this topic.

Student Record Sheet

Name PAT JONES

Score

Date	Topic	Lesson Number	Number Worked	1 Try	2 Tries	3+ Tries	Avg. Resp. Times (Sec.)	Comments
9-10-84	Add	4	10	70%	20%	10%	2.3	Started in Placement mode - Lesson 2
9-11-84	"	4	15	85%	15%	—	2.1	
9-12-84	"	4	10	90%	10%	—	2.5	Promoted to 5 during Lesson 4
9-13-84	"	5	25	60%	40%	—	3.2	
9-14-84	"	5	30	75%	20%	5%	2.8	
9-16-84	"	5	20	100%	—	—	2.5	Promoted to 6 during Lesson 5
9-17-84	"	6	20	85%	15%	—	2.2	Promoted to 7 during Lesson 6
9-18-84	"	7	25	75%	25%	—	3.1	

After reviewing the report, type RT to return to the Option List. Follow the example below to continue with the demonstration.

Example Lesson

Earlier, you were advanced to the Addition Skill Building mode from PLACEMENT. The Report Screen indicates the starting lesson number. Since you entered 10 for MAXIMUM PROBLEMS, 10 problems will be presented. Press **ENTER** to begin working problems.

Answer the problems as they appear, answering some correctly and some incorrectly. The computer “beeps” when the correct answer is entered, regardless of the number of tries. (Be sure the TV volume is high enough to hear the beeps!) A correct answer on the first try is also accompanied by a “Happy Face” or by the word CORRECT (in more advanced lessons).

The correct answer must be entered to move to the next problem. After completing all 10 problems, the Performance Report appears, similar to this:

ADDITION		
LESSON 3		
JOHN		
WORKED 10		
RIGHT (3+ TRIES):	1	10%
RIGHT (2 TRIES):	2	20%
RIGHT (1 TRY):	7	70%
AVG. RESPONSE (SEC.)	7.5	
TYPE CODE TO CONTINUE		

This report tells the number of problems worked, the number answered correctly on 1, 2, and 3 or more (3+) tries, the percentage correct on 1, 2, and 3+ tries, and the average response time (in seconds). For example, the sample report above shows that John worked 10 problems in Addition Lesson 3. He got 7 problems correct on the first try (70%), 2 correct on the second try, and 1 correct after 3 or more tries (10%). His average response time (the time it took him to complete each problem) was 7.5 seconds.

If the child excels in working the problems, the report may look like this:

ADDITION		
LESSON 4		
(FROM 3)		
ANNE		
WORKED	10	
RIGHT (1 TRY):	10	100%
AVG. RESPONSE (SEC.)		4.0
TYPE CODE TO CONTINUE		

In this example, Anne answered all 10 problems correctly on the first try, for a score of 100%. She was promoted from Lesson 3 to Lesson 4 because she did well.

Pat did not do as well on her problems:

ADDITION		
LESSON 2		
(FROM 3)		
PAT		
WORKED 10		
RIGHT (2 TRIES):	8	80%
RIGHT (1 TRY):	2	20%
AVG. RESPONSE (SEC.)	5.9	
TYPE CODE TO CONTINUE		

This report shows that Pat worked only 2 problems correctly on the first try, and she answered the remaining 8 problems on the second try. The low score indicates that Lesson 3 is too difficult for Pat at this time and that she needs further practice in an easier lesson. As a result, Pat has been demoted from Lesson 3 to Lesson 2.

As you can see, Pat is allowed to work through the lessons at her own pace. When she masters a lesson, she will be promoted to the next higher one. If a lesson proves to be too difficult, she will be moved back to the previous one for more practice. She may do well enough to avoid being demoted, but not well enough to be promoted. In this case, she will remain in the same lesson for more practice.

It is not necessary to record the example scores. The second line of the report indicates the lesson number that the child should take when drilled on this topic again. The lesson number may indicate a promotion, a demotion, or a repeat of the same lesson.

Notice the message at the bottom of the screen — TYPE CODE TO CONTINUE. When you finish viewing the report, enter RT to return to the Option List:

ADDITION

A. PLACEMENT
B. LESSONS
C. TEST
D. CHANGE MAXIMUM PROBLEMS

TYPE CHOICE AND PRESS <ENTER>

Tests

You can test your child on any lesson by resetting the MAXIMUM PROBLEMS and selecting TEST at the Option List. After you type your child's name and the desired lesson number, the problems are presented. The child gets one chance to answer each problem, and the computer does not indicate whether or not the answer is correct.

When the specified number of problems is completed, a Performance Report appears. Or, you may enter RT to end the test and receive a report at any time. If you wish to give a timed test, enter 0 for MAXIMUM PROBLEMS, and enter RT to see a report when the time is up.

After reviewing the report, record the test scores on the Record Sheet. If you record all scores for skill building lessons and

tests on the Record Sheet, you will have a complete record of your child's achievement, and you can continue charting his or her progress through the lessons. After you record the score(s), type **RT** to return to the Option List.

Student Record Sheet

Name PAT JONES

Score

Date	Topic	Lesson Number	Number Worked	1 Try	2 Tries	3+ Tries	Avg. Resp. Times (Sec.)	Comments
9-15-84	Sub	6	15	66%	—	—	—	TEST
9-18-84	"	7	20	60%	—	—	—	TEST

Example Reset and Test

Let's change the maximum number of problems and then take a test. At the Option List, type **D** (ENTER) to select CHANGE MAXIMUM PROBLEMS. When the screen shows MAXIMUM PROBLEMS?, type **15** (ENTER) (or any number you wish).

When the Option List appears again, type **C** (ENTER) for TEST. Type the child's name and press (ENTER). Type the lesson number that was indicated on the second line of the Skill Building Performance Report. This may be the same lesson number with which you started, or one to which you were promoted or demoted. Now, press (ENTER).

Answer the problems as they appear, answering some correctly and some incorrectly. You have only one chance to answer each problem. The computer does not beep or display the "Happy Face" or CORRECT message.

The Performance Report appears when you complete all of the problems. For example:

```

      ADDITION
      LESSON 3
      JOHN'S TEST
      WORKED    15
      RIGHT     10    66%
      TYPE CODE TO CONTINUE

```

The report tells you the number of problems you worked, the number answered correctly, and the percentage you answered correctly. The sample report above shows that John worked 15 problems in Addition Lesson 3, getting 10 problems correct, for a score of 66%. It is not necessary to record the test score for this example.

After reviewing the report, type **RT** to return to the Option List. At this point, you can:

- Continue working in the Addition program by typing **B** (**ENTER**) to take another skill building lesson.
- Take another test by typing **C** (**ENTER**).
- Change the maximum number of problems by typing **D** (**ENTER**).

- Change to another math topic by following the instructions for “Changing Topics.”
- Stop using Color Math by turning off the computer and the television. Be sure to remove the cassette from the recorder and place it in the cassette holder to protect it from damage.

Appendix A — Mastery Levels

Addition Mastery Levels

Lesson	Problems to be Worked Prior to Evaluation	Minimum % Score to Advance	Minimum % Score to Remain on Level
1	10	90%	N/A
2 - 4	10	90%	40%
5 - 10	20	80%	40%
11 - 12	10	90%	40%
13 - 17	20	80%	40%
18 - 19	10	90%	40%
20	20	80%	40%
21	10	90%	40%
22 - 27	20	80%	40%
28	10	90%	40%
29 - 30	20	80%	40%
31	10	90%	40%
32 - 43	20	80%	40%
44 - 45	10	90%	40%
46 - 47	20	80%	40%
48	10	90%	40%
49 - 51	20	80%	40%
52	10	90%	40%
53 - 57	20	80%	40%
58	10	90%	40%
59 - 70	20	80%	40%

Subtraction Mastery Levels

Lesson	Problems to be Worked Prior to Evaluation	Minimum % Score to Advance	Minimum % Score to Remain on Level
1	10	90%	N/A
2 - 4	20	90%	40%
5	10	90%	40%
6 - 10	20	90%	40%
11	10	90%	40%
12 - 25	20	80%	40%
26	10	90%	40%
27 - 28	20	90%	40%
29	10	90%	40%
30	20	80%	40%
31	10	90%	40%
32 - 45	20	80%	40%
46	10	90%	40%
47	10	80%	40%
48 - 53	20	80%	40%
54	10	80%	40%
55	20	90%	40%
56 - 60	20	80%	40%
61	10	90%	40%
62	20	80%	40%
63	10	90%	40%
64 - 65	20	80%	40%
66	10	90%	40%
67	20	80%	40%
68	10	90%	40%
69 - 70	20	80%	40%

Multiplication Mastery Levels

Lesson	Problems to be Worked Prior to Evaluation	Minimum % Score to Advance	Minimum % Score to Remain on Level
1	10	90%	N/A
2	10	90%	0%
3	15	85%	40%
4 - 5	10	90%	40%
6	30	90%	0%
7	30	90%	40%
8	5	80%	0%
9	10	90%	40%
10 - 17	20	80%	40%
18	10	90%	40%
19 - 50	20	80%	40%

Division Mastery Levels

Lesson	Problems to be Worked Prior to Evaluation	Minimum % Score to Advance	Minimum % Score to Remain on Level
1	10	90%	N/A
2	10	90%	0%
3 - 4	20	90%	40%
5	20	80%	40%
6	20	90%	40%
7 - 8	20	80%	40%
9	10	90%	40%
10 - 37	20	80%	40%

RADIO SHACK
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