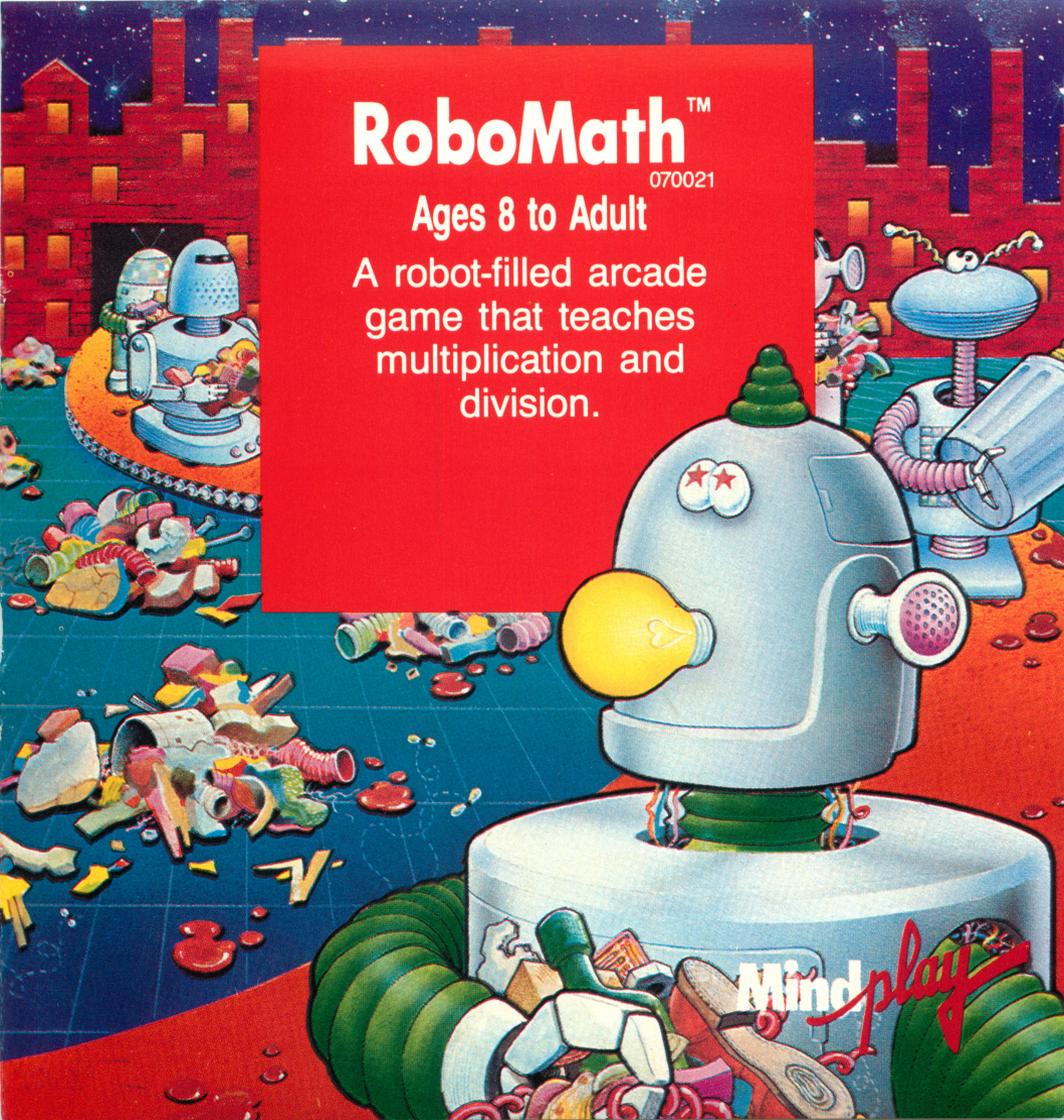# RoboMath™

070021

Ages 8 to Adult

A robot-filled arcade game that teaches multiplication and division.

Mindplay

Mindplay®

METHODS & SOLUTIONS, INC.
TUCSON, ARIZONA
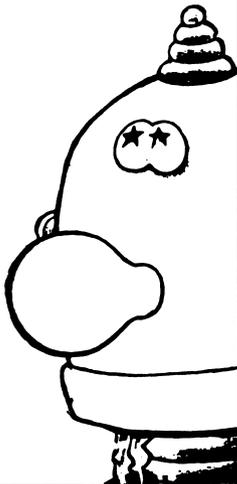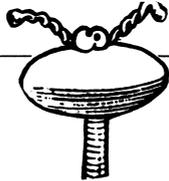
TABLE OF CONTENTS

1

INTRODUCTION TO ROBOMATH™

RoboMath™ is another MindPlay® product designed to be enjoyed by children. RoboMath™ combines the fun of an arcade game with the challenge of multiplication and division.

The objective of RoboMath™ is to rid your town of trash by defeating the Trashbots. Trashbots are robot-like creatures who are opening up factories in your town. They are irresponsible and discard trash without regard for the environment. You and Roboman, a responsible robot, can clean up your town by closing the Trashbots' factories. Your multiplication and division skills play an important role in your efforts to help Roboman.

RoboMath™ is another MindPlay® product that features Challenge Upgrade™. RoboMath™'s many components can be upgraded to accomodate each child's changing fine motor skills and multiplication and division skills, thus providing years of fun and learning.

Parents can help their children get the most out of RoboMath™ by following the guidelines in *MESSAGE TO PARENTS* (p. 14). This section of the manual explains how to keep children playing and learning with RoboMath™.

■

GETTING STARTED

To use RoboMath™ in your computer:

1. Insert the RoboMath™ disk into the disk drive (label facing up) and close the door.

2. Turn on the computer and TV or monitor. The red light on the disk drive will come on. In a few seconds, you will see the main menu. At this point, you will be ready to play RoboMath™.

NOTICE: NEVER INSERT OR EXTRACT THE DISK FROM THE DISK DRIVE WHEN THE RED LIGHT ON THE DISK DRIVE IS ON.

NEVER TURN THE COMPUTER OFF WHEN THE RED LIGHT ON THE DISK DRIVE IS ON.

Choosing from the main menu

NOTICE: IBM PCjr and IBM PC computer owners: The ENTER key should be substituted whenever the term RETURN key is used in these instructions.

Apple Macintosh owners: The TAB key should be substituted whenever the term ESC key is used in this manual.

The main menu includes the following:

> **Play Game**
> **Instructions**
> **Age**
> **Sound**
> **Control**
> **Version**
> **Challenge Upgrade**
> **Exit** (Macintosh only)

Pressing the SPACE BAR moves the white highlight, line by line, through these menu features. Be sure to select your choice for Age, Sound, Control, Version and/or Challenge Upgrade before selecting Play Game.

Instructions

Press RETURN when this feature is highlighted to view on-screen instructions. Press the ESC key to return to the main menu.

Age

Press RETURN when this feature is highlighted to select the player's age (8 to Adult). At the older ages the game skills and the multiplication and division skills are more challenging.

Sound

Press RETURN when this feature is highlighted to choose sound ON or OFF. If sound ON is selected, music and sound effects are heard during game play.

Control

Press RETURN when this feature is highlighted to select the control device: Keyboard, Joystick (Apple II/IBM), or Mouse (AppleII/ Macintosh).

Version

Press RETURN when this feature is highlighted to choose the SHORT or LONG version of the game. If Version is set to SHORT, only five factories need to be closed to win. If Version is set to LONG, sixteen factories need to be closed.

Challenge Upgrade

Press RETURN when this feature is highlighted to go to the Game Options menu and the Math Options menu. Game Options and Math Options allow you to completely customize both the game play difficulty and arithmetic components to suit each player.

Play Game

Press RETURN when this feature is highlighted to play RoboMath™.

Exit (Macintosh computers only)

Press RETURN when this feature is highlighted to eject the RoboMath disk from your Macintosh.

■

PLAYING ROBOMATH ™

The objective of RoboMath™ is to rid your town of trash by defeating the Trashbots. The Trashbots have built sixteen factories in your town. Each factory builds a different Trashbot who will drop trash in your town. Only you and Roboman, a responsible robot, can clean up your town. To defeat the Trashbots you must close all sixteen Trashbot factories.

Use the paddle and a ball to close each factory, one at a time, by hitting the ball through the narrow entrance on either side of the factory wall. Once the ball enters the factory, it knocks down the factory and you capture a trashbot. But be careful! If the ball hits the fatory wall, a new Trashbot is built. This Trashbot will throw more litter on the playing screen, making it more difficult to hit the ball into a factory entrance. At the start of each new screen, Roboman appears and places *Quizboxes* on the screen. When a ball hits a *Quizbox*, a multiplication or division question will appear. If the question is answered correctly, all the trash on the screen will be packaged. Packaged trash can be removed by hitting it with a ball. The trash will remain packaged for only a limited amount of time. Trash that is not packaged cannot be removed and it blocks your path to the factory entrance.

Roboman appears randomly to package trash. If a ball hits Roboman, he will energize, place a quizbox on the screen, package some trash and give you points.

The Trashbots are banished when all sixteen Trashbot factories have been closed. If you close all sixteen factories and you have the highest score, you can add your name to the town's honor roll. If you run out of balls before all the factories are closed, the Trashbots win until the next game.

■
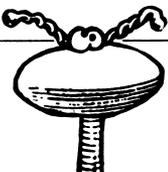
SCORING AND PLAYING HINTS

There are 16 different types of Trashbots and trash, each corresponding to a screen.

You earn points every time you hit a Trashbot, trash or *Quizbox*. You earn extra points for answering questions correctly.

Scoring Hints:

- Close a Trashbot Factory, earn 100 points times the number of the factory just closed.
- Remove packaged trash, earn **20 pts.**
- Hit Roboman, earn **100 pts.**
- Hit Trashbot, earn **10 pts.**
- Hit Quizbox, earn **20 pts.**
- Answer a question correctly, earn **40 pts.**
- Hit trash, earn **1 pt.**

Playing Hints:

When Roboman is on the screen, the factory wall turns white. No new Trashbots will be built when Roboman is on the screen.

The quantity of trash the Trashbots put on the screen increases with each new screen.

The size of the paddle gets smaller as more Trashbots are defeated.

If a joystick is used for game play, remember to move the joystick smoothly.

If the paddle misses the ball, you lose the ball.

To correct an answer, press the DELETE key, the <- key or the BACKSPACE key.

RoboMath™ can be restarted during game play by pressing the ESC key.

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To Answer Questions

Decimals:

Press the period (.) key to move and place the decimal.

Multiplication Entries:

To enter an answer from right to left, type in the answer from right to left and press RETURN.

Example: 16
           x 4
            64   (enter 4, then 6)

To enter an answer from left to right, press the SPACE BAR, then type in the answer from left to right and press RETURN.

Example: 16
           x 4
            64   (enter 6, then 4)

Division Entries:

For long division, type in the first number of the quotient. Continue entering quotient numbers as you multiply and subtract, "showing your work."

Example: 16
            4) 64
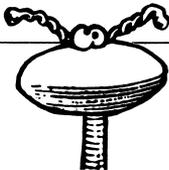   4
               24
               24
               00

Press RETURN when completed.

For short division, press the SPACE BAR, then type in the answer.

Example: 16
            4)64

Press RETURN when completed.

■

CHALLENGE UPGRADE™

GAME OPTIONS

The Game Options menu of RoboMath™ allows the game skills to be upgraded to challenge the player's fine motor skill ability.

Press the SPACE BAR to move the white highlight, box by box, through the options.

> # Questions
> # of Balls
> Factory Size
> Paddle Size
> Game Difficulty
> Play Game

Questions

Press RETURN when this option is highlighted to select the number of arithmetic questions (*Quizboxes*) per screen (0 to 9).

of Balls

Press RETURN when this option is highlighted to select the number of balls (1 to 8) available per game.

Factory Size

Press RETURN when this option is highlighted to change the size of the entrance to the Trashbot factory. Select 1 for the largest opening, allowing the easiest entry. Select 5 for the smallest opening, making entry the most difficult.

Paddle Size

Press RETURN when this option is highlighted to change the paddle size used to begin game play. Select 1 for the smallest paddle. Select 5 for the largest paddle.

Game Difficulty

Press RETURN when this option is highlighted to select the game difficulty. When Game Difficulty is set to EXTRA TRICKY or TRICKY, the paddle will occasionally function in reverse. If you

move the control device to the right, the paddle will move to the left. If you move the control device to the left, the paddle will move to the right. When the border of the screen turns white, your paddle is "tricky."

Play Game

Press RETURN when this option is highlighted to return to the main menu.

Press the "M" key to see the Math Options menu.

MATH OPTIONS

The Math Options menu allows the arithmetic questions to be adjusted to the player's multiplication and division ability.

Press the SPACE BAR to move the highlight through the options.

MULTIPLY
RETRIES
DIVIDE
CREATE QUESTIONS
PERFORMANCE
PLAY GAME

Press the "O" key to return to the Game Options menu.

MULTIPLY

ON in the bottom right of this box indicates that multiplication questions are to be presented in the game. OFF indicates that multiplication questions are not to be presented in the game.

Press RETURN while this option is highlighted to go to the Multiply Menu.

Press the SPACE BAR to move the white highlight over these options:

> **Multiplication**
> **Numbers**
> **Regrouping**
> **Maximum Digits**
> **Tables**
> **Finished**

Multiplication

Press RETURN when this option is highlighted to choose whether or not multiplication questions will be presented during the game.

If Multiplication is set to ON, then multiplication questions will be presented.

If Multiplication is set to OFF, then multiplication questions will not be presented.

If both Multiplication and Division are set to OFF, multiplication will automatically be presented in the game.

Numbers

Press RETURN when this option is highlighted to choose the type of numbers used in the game (whole, decimals, all).

Regrouping

Press RETURN when this option is highlighted to choose whether regrouping will be used in the game.

If Regrouping is set to ON, the questions may require the carrying of values.

Example: 12
            $\underline{\times 9}$
             108

Note: 9x2 is 18, the 8 is typed in, the 1 is carried.

If Regrouping is set to OFF, the questions will not require any carrying of values.

Example: 12
            $\underline{\times 4}$
             48

Note: 4x2 is 8, no number is carried.

Maximum Digits

Press RETURN when this option is highlighted to choose the maximum number of digits (1 to 8) allowed in an answer.

Tables

Press RETURN when this option is highlighted to choose whether multiplication tables (2 to 12) are to be used in the game.

If Tables is set to 2, then the hardest question will be 2x12.

If Tables is set to 12, then the hardest question will be 12x12.

If Tables is set to OFF, then multiplication tables will not be used.

Finished

Press RETURN when this option is highlighted to return to the Math Options menu.

RETRIES

Press RETURN when this option is highlighted to select the number of additional attempts (0 to 3) the player will have to correctly answer a question.

DIVIDE

ON in the bottom right of this box indicates that division questions are to be presented in the game. OFF indicates that division questions are not to be presented in the game.

Press RETURN while this option is highlighted to go to the Divide Menu.

Press the SPACE BAR to move the white highlight over these options:

Division
Numbers
Regrouping
Maximum Digits
Tables
Finished

Division

Press RETURN when this option is highlighted to choose whether or not division questions will be presented during the game.

If division is set to ON, then division questions will be presented.

If division is set to OFF, then division questions will not be presented.

Numbers

Press RETURN when this option is highlighted to choose if remainders, decimals, whole numbers or all of the above will be used in the questions.

Regrouping

Press RETURN when this option is highlighted to choose whether regrouping will be used in the game.

If Regrouping is set to ON, the questions may require the carrying of values when multiplying the divisor by the quotient.

If Regrouping is set to OFF, the questions will not require the carrying of values.

Maximum Digits

Press RETURN when this option is highlighted to choose the maximum number of digits (1 to 8) allowed in any dividend.

Tables

Press RETURN when this option is highlighted to choose whether division tables (2 to 12) are to be used in the game.

If Tables is set to 2, then the hardest question will be $2\overline{)12}$.

If Tables is set to 12, then the hardest question will be $12\overline{)12}$.

If Tables is set to OFF, then division tables will not be used.

Finished

Press RETURN when this option is highlighted to return to the Math Options menu.

CREATE QUESTIONS

Press RETURN when this option is highlighted to author your own questions. Follow the on-screen instructions. If you answer NO to all the on-screen questions, the computer will generate all questions presented during game play.

Multiplication Questions

Use the "X" key for the multiplication sign.

The answer for multiplication questions cannot exceed eight (8) digits. The maximum number of digits for the first number is five (5). Decimal points are not included. Example: 55.555.

The maximum number of digits for the second number is three (3). Decimal points are not included in the number. Example: 5.55.

Division Questions

Press the SLASH key (/) for the division sign.

The answer for division questions cannot exceed five (5) digits. The maximum number of digits for the first number is eight (8). Decimal points are not included. Example: 222.22222.

The maximum number of digits for the second number is three (3). Decimal points are not included in the number. Example: 22.2.

In multiplication and division questions, the answer cannot be between .1 and 0. The answer can equal zero (0).

Up to twenty questions can be entered.

Press the ESC key after entering all your questions.

PERFORMANCE

Press RETURN when this option is highlighted to see a summary of the player's arithmetic performance. Press the "Z" key to reset the summary to zero.

Note: An answer is recorded as "correct" if a player gives a correct answer within the number of tries selected in the RETRIES feature.

PLAY GAME

Press RETURN when this option is highlighted to return to the main menu.

■

Personal computers are machines that can be fantastic supplements to a child's education. But these machines will never replace teachers or parents. MindPlay® educational software will reinforce your child's education. In order for children and family to receive the maximum educational benefit from RoboMath™, it may be necessary for a parent or older child to work along with the younger child.

RoboMath™ combines children's interest in arcade games with multiplication and division questions, creating a game that is both educational and fun.

RoboMath™ is designed to be enjoyed by children. The ability to adjust individual components of the game and arithmetic skills allows children to be successful and challenged for many years.

In the Game Options menu, the game components can be upgraded by adjusting the number of questions, the number of balls, the size of the paddle, the size of the factory entrance.

In the Math Options menu, the multiplication and division components can be fine tuned to the individual player. You can choose whole or decimal numbers, regrouping, multiplication or division tables, maximum number of digits in the answers and you are able to enter your own questions. This way you are able to ensure your child is working on the same type of questions at home as he or she is in school.

The Performance option allows parents to observe the multiplication and/or division performance of a player. If there is a performance problem indicated, you may want to check to be sure that the Math options are set to include only those skills in which the player has received formal instruction. Continued poor performance indicates that the player may require assistance from a parent or teacher. As a player improves, RoboMath™ presents an opportunity to congratulate the player, encouraging success.

RoboMath™ allows you to present up to twenty specific questions of your own during the game. As the child plays the game these questions are asked repeatedly. This option allows for flexibility in the program allowing the child to work on questions that may be difficult for him or her.

The following plan suggests a way you and your child can work together to achieve success with RoboMath™.

1. Play the game yourself to get a feel for the fine motor skills required.

2. Select the Game Options menu and experiment with the different options. See how each affects the game. Then set them according to your child's fine motor skills.

3. Select the Math Options menu and experiment with the different options. Then set them according to your child's skill. If the child has specific multiplication skills he or she is learning in school, the specific questions can be entered in the Create Questions option.

4. Explain the object of the game to the child. The object of the game is to get your ball through each factory entrance before you run out of balls.

5. Choose the type of control device to use for game play. For most children, the joystick or mouse is the easiest to use. Show the child how the control device works in relation to the paddle on the screen.

6. Explain how to make corrections.
The numbers are deleted (erased) by
pressing the DELETE key, the left
arrow key or the BACKSPACE key.

7. Observe the child playing and adjust
the game options and math options to
suit their individual skills. Set these
options to allow the child to be
challenged, yet successful.

8. Challenge the child to complete all
sixteen levels and enter his or her
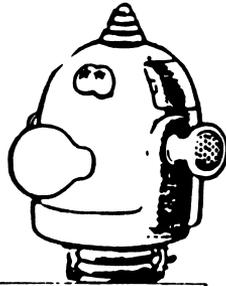initials in the town honor roll.

9. Sit back and watch your child enjoy
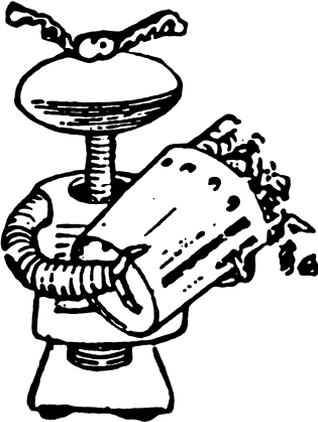learning.

■

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RoboMath™

Multiplication
and Division

Grade 2 to Adult

TEACHER'S SUPPLEMENT

Mindplay

INTRODUCTION

RoboMath™ is one of many MindPlay® games available for use in the classroom. Each MindPlay® game is designed for independent learning that is challenging and exciting.

RoboMath™ — and every MindPlay® program — features Challenge Upgrade™. Challenge Upgrade™ provides you with a teaching tool that lets you adjust and create lessons to meet your teaching needs for years to come.

This special school edition contains a colorful user's manual for students plus a teacher's guide to help you use RoboMath™ in your classroom.

EDUCATIONAL OBJECTIVE

RoboMath™ is designed to provide drill and practice of multiplication and division problems within an enjoyable game format. Graphics, animation and music are used to maintain interest and provide positive feedback.

In addition, RoboMath™ provides students with a format for working out problems. Students practice with a structured, step-by-step approach to solving difficult multiplication and long division problems that will lead to a better understanding of place values and procedures.

The Challenge Upgrade Menu makes it possible for you to choose the type of multiplication and division questions being studied in your class or to reinforce particular skills. By using the Challenge Upgrade Menu, you can program in your own questions or control the number of digits, the range of numbers, carrying, remainders and decimals.

## GAME OBJECTIVE

The object of the game is to rid the town of trash by defeating the Trashbots. These Trashbots are Robot-like creatures who are opening up factories in town. They are irresponsible and discard trash without regard for the environment.

To win the game, players must close down all the Trashbot Factories. To do this, they must hit the ball into the narrow entrances of the factory walls.

DIRECTIONS

I. THE MAIN MENU
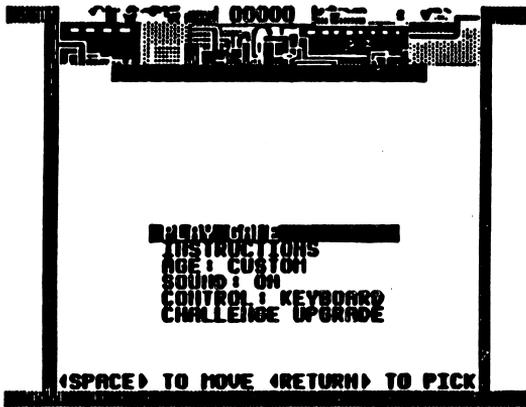
Press the Space Bar to move through the menu. When the option you wish to choose is highlighted, press the Return key.

Play Game

This should not be chosen until all other changes have been entered.

Instructions

On-screen directions should be viewed before playing.

Age

Settings for ages 8 to 12 and Adult may be selected. Use the following chart to determine the appropriate age setting for your students or use Challenge Upgrade™ to customize lessons.

AGE LEVEL	8	9	10	11	12	ADULT
# QUESTIONS	3	3	3	3	3	3
# BALLS	8	8	7	6	6	5
FACTORY SIZE	1	1	2	2	3	3
PADDLE SIZE	5	4	4	3	3	2
GAME DIFFICULTY*	Normal	Normal	Normal	Normal	Normal	Normal
MULTIPLICATION	ON	ON	ON	ON	ON	ON
NUMBERS	Whole	Whole	Whole	Whole	Whole	Whole
REGROUPING	ON	ON	ON	ON	ON	ON
DIGITS	1	2	2	3	4	5
TABLES	OFF	3	12	OFF	OFF	OFF
DIVISION	OFF	OFF	ON	ON	ON	ON
NUMBERS	Whole	Whole	Whole	Remain.	Dec.	All
REGROUPING	ON	ON	ON	ON	ON	ON
DIGITS	1	2	2	3	4	5
TABLES	OFF	3	12	OFF	OFF	OFF
RETRIES	1	1	1	1	1	1

Sound: ON/OFF

Music may be turned OFF if other classmates are bothered by the sound.

Control: Keyboard   ⟵ KEY—LEFT
                                         ⟶ KEY—RIGHT

                     Joystick
                     Mouse

Before play begins, selection should be made depending upon the equip-
ment available.

Version: SHORT/LONG

The short version runs approximately ten minutes. The student must close

down five factories. The long version runs approximately 30 minutes and requires 16 factories to be closed.

Challenge Upgrade™

Use Challenge Upgrade™ to select the playing options and the math components to match the student's fine motor skills and math needs. See "Challenge Upgrade™" section on pages 7 through 13.

II. PLAYING ROBOMATH™

When the player chooses PLAY GAME from the Main Menu, a screen will appear with the factory at the top, Trashbots, and boxes with question marks below. A paddle appears on the bottom of the screen with balls lined up above it.

Using the paddle, the player must hit the ball through either of the side entrances of the factory wall. When the ball goes through one of the entrances, the factory will close down.

Once a ball is set in motion by the player, several things can happen:

1. The player is unable to hit the ball with the paddle: *The ball is lost.*

2. The ball hits a Trashbot: *The Trashbot disappears and the player scores points.*

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3. The ball hits the outer wall of the factory: *A new Trashbot is built and it deposits unpackaged trash on the screen.* (Unpackaged trash cannot be removed by hitting it with the ball until it has been packaged.)

4. RoboMan appears while the player is hitting the ball: *RoboMan packages trash so it can be removed by hitting it.*

RoboMan is hit by a ball. This energizes him: *The player gets an additional question box plus bonus points.*

5. The player hits a question box (?): *A question appears.*

    (1) The player answers correctly: Trash is packaged and bonus points are awarded.

    (2) The player answers incorrectly and play continues.

6. The ball enters one of the factory entrances: *That factory is closed down.*

The game ends when all the factories have been closed down or the player has used up all the balls.

III. ANSWERING QUESTIONS

Answers to multiplication and division questions may be entered by working out the answers on screen or by using the short form answer method.

Short Form Answers

Many questions do not require problems to be worked out on the screen. This is true for simple multiplication and division problems. In this case, students should press the Space Bar before beginning computations with numbers. The screen will prompt the student when to press the Space Bar.

Note: In these examples, the bold numbers in parenthesis above each entry indicate the order in which students will be prompted to enter numbers.

Using the short form for multiplication questions, answers are entered
from left to right.

Example: 16
           x 4
           (12)
            64

Long Form Answers

If the student does not press the Space Bar before entering the answer, the
long form will be used for answering.

                273
               x 41
               (321)
                273
              (7654)
               1092
            (12 11 10 9 8)
              11193

Decimals

1. Multiplication

When all computations have been entered, the computer prompts the
student to move the decimal to the correct place.

Example: 1.2
           x 12.
           (21)
            24
           (43)
            12
           14.4.

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2. Division

When decimals appear in division problems, students will be prompted to move the decimals before computing.

Example: $.24\overline{)1776.00}$

The decimal in the divisor is moved by pressing the "." key. When it is in place, the student presses the Return key. Next, the decimal in the dividend is moved in the same way.

If decimals are not moved to the correct place, the program will automatically make the necessary corrections. Once the decimals are in place, the student begins computation using either the long or the short method of inputting answers.

Making Corrections

To make corrections, students simply press the ← key or the Delete key. If the answer is incorrect, the player may be given another chance. (See page 13 for "Retries.") Once the player uses up all opportunities to correct an incorrect answer, the program automatically makes all the corrections. Students will then see where the computation error occurred.

CHALLENGE UPGRADE™

A. GAME OPTIONS MENU

Each of these options affects the game difficulty but not the math content. They should be set so that play is challenging but not frustrating to students.

The menu on the screen shows the current settings. In the sample screen above, there are nine questions per factory, eight balls per game, etc.. Use the Space Bar and the Return key to make changes.

# of Questions: 1 to 9

# of Balls: 1 to 8 (Choose fewer balls for more challenging play.)

Factory Size

The horizontal bar represents the size of the factory wall. The longer the bar, the smaller the entrance. Press RETURN to make factory wall shorter (easier) or longer (harder).

Paddle Size: 1 to 5

One is the shortest (hardest). Five is the longest (easiest).

Game Difficulty: Normal/Tricky/Extra Tricky

A Tricky or Extra Tricky setting means the paddle may reverse direction on its own. This requires exceptional eye/hand coordination and motor skills; and it makes a very exciting game.

Play Game

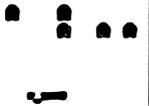Before selecting this option, go to the Math Option Menu to check the math content. Press the "M" key.

B. MATH OPTIONS MENU

RoboMath™ offers three ways to structure multiplication and division questions:

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1. Using the multiplication tables. (Choose Multiply or Divide on Math Option Menu shown below.)

2. Using the full range of numbers, but setting limits or requirements for whole or decimal numbers, carrying, remainders and maximum number of digits. (Choose Multiply or Divide from the menu below.)

3. Using "CREATE QUESTIONS" from the menu to enter specific questions.

Note that you can return to the Game Options Menu by pressing the "O" key.

MULTIPLY

Multiplication: ON/OFF

RoboMath™ cannot be played without math questions. Therefore, if both Multiplication and Division are turned OFF, multiplication questions will appear. Be sure to turn Division to OFF if only multiplication questions are desired.

Numbers: Whole/Decimals/All

When set to All, both whole and decimals will be used.

Regrouping: ON/OFF

OFF — No carrying   Example: 12
                                                 x 4
                                                   48

ON — Carrying may be necessary   Example: 12
                                                 x 9
                                                  108

Maximum Digits: 1 to 8 digits for answers.

Tables: OFF or 1-12

Using the multiplication tables is an excellent way to practice math facts. The range of the multiplier can be set from 1 to 12. The multiplicand is automatically set to range from 1 to 12.

        1-12 (Preset Multiplicand)
        x 1-12 (Choose Multiplier Range)

Example: Multiplier set at 3

              1-12
              x 1-3

Questions will be generated from the 1, 2, and 3 times tables. The easiest will be 1x1 and the hardest 12x3.

Numbers may be set to Whole/Decimals/All as desired.

DIVIDE

Be sure to turn Multiplication to OFF if only division questions are desired.

```
                    DIVIDE

          DIVISION: ON
          NUMBERS: ALL
          REGROUPING: ON
          MAXIMUM DIGITS: 5
          TABLES: OFF
          FINISHED


          (SPACE)  TO MOVE
          (RETURN) TO CHANGE
```

Division: ON or OFF

Numbers: Whole/Remainders/Decimals/All

Choose one of the first three choices or All for a random combination of the three.

Regrouping: ON or OFF

When set to OFF, no carrying of values will be required in solving problems. When set to ON, carrying will be necessary to work out some or all of the questions.

Maximum Digits: 1 to 8

Set the maximum number of digits in the dividend.

Tables: OFF or 1 to 12

The division tables are the inverse of the multiplication tables. You set the maximum divisor. The quotient will automatically range between 1 and 12. The dividend will be the product of the divisor and quotient.

  Example: Set divisor at 3

$$\begin{array}{r} 12 \quad \text{(Quotient)} \\ 3\overline{)\ 36} \quad \text{(Dividend)} \end{array}$$

  (Divisor)

By setting the divisor at 3, all questions will be generated from the 1, 2, and 3 times tables. The easiest question will be $1 \div 1$, and the hardest $3 \div 36$.

NUMBERS should be set to Whole unless decimals are desired.

CREATE QUESTIONS: ON/OFF

Select this option to enter up to twenty questions to be used in play. If questions have previously been entered, they will appear on the screen. You may use these questions or replace them by following on-screen instructions. If no questions were previously entered, follow the on-screen directions to enter questions. To make corrections, use the Delete key or the ← key before you press RETURN to enter questions.

You can determine whether the "Create Questions" is ON or OFF by referring to the Math Menu.

 ON: Your questions will be used
OFF: Questions will be determined by other menu selections

Multiplication and division questions are limited with respect to the number of digits. In addition, answers cannot be between 1 and 0. Answers of zero are acceptable. The screen will prompt you at any time your question is not acceptable.

Creating Multiplication Questions

The first number (multiplicand) may have up to 5 digits; the second (multiplier) up to 3 digits; and the answer may have a maximum of 8 digits.

Example: 2.2222 x 8.11

    2.2222   (5-digit Multiplicand)
   x 8.11   (3-digit Multiplier)
  18.022042   (8-digit Product)

Be sure to enter the multiplicand as the first number and the multiplier as the second.

Creating Division Questions

The slash key (/) is used as the symbol for division.

Example: 18.022042/8.11 will appear in the game as

                      (Quotient)
(Divisor) 8.11)18.022042   (Dividend)

NOTE: 8 digit maximum for dividend
       3 digit maximum for divisor
       5 digit maximum for quotient

BE SURE TO TURN CREATE QUESTIONS OFF WHEN YOU WISH TO USE OTHER MATH OPTIONS FOR DEVELOPING QUESTIONS.

RETRIES: 0, 1, 2, 3

PERFORMANCE

The screen will display the type of question, the number of correct answers divided by the number of questions presented, and the percentage of correct answers.

Performance summaries are cumulative. Therefore, performance summaries should be set to zero before a new student uses the program or new material is introduced.

FOR FURTHER STUDY

Use the Create Questions option to enter questions that relate to recent lessons. The following are several examples:

1. Enter each times table as it is taught.

2. Enter multiplication questions along with division questions that would illustrate the inverse relationship between multiplication and division.

   $2 \times 6 = 12$ $12 \div 2 = 6$

3. Enter "Near Number" questions such as 99 and 49 to reinforce estimating skills and number concepts.

Give students a copy of the times table (from 1x1 to 9x9) with only a few numbers filled in by you. Have them fill it in and use the table to show associative and commutative properties of multiplication.

   Associative: 3x2x4   Commutative: 6x3=18
                   3x(2x4)   3x6=18
                   (3x2)x4

BINGO — For 3 to 5 Players

Develop your own 3x3 bingo cards using products of two dice (or 5x5 cards using three dice). The players in turn throw the dice. They then work out the product. Every player whose card has that number covers the appropriate box. The winner is the first player to cover all the squares in a row, horizontally, vertically or diagonally.

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