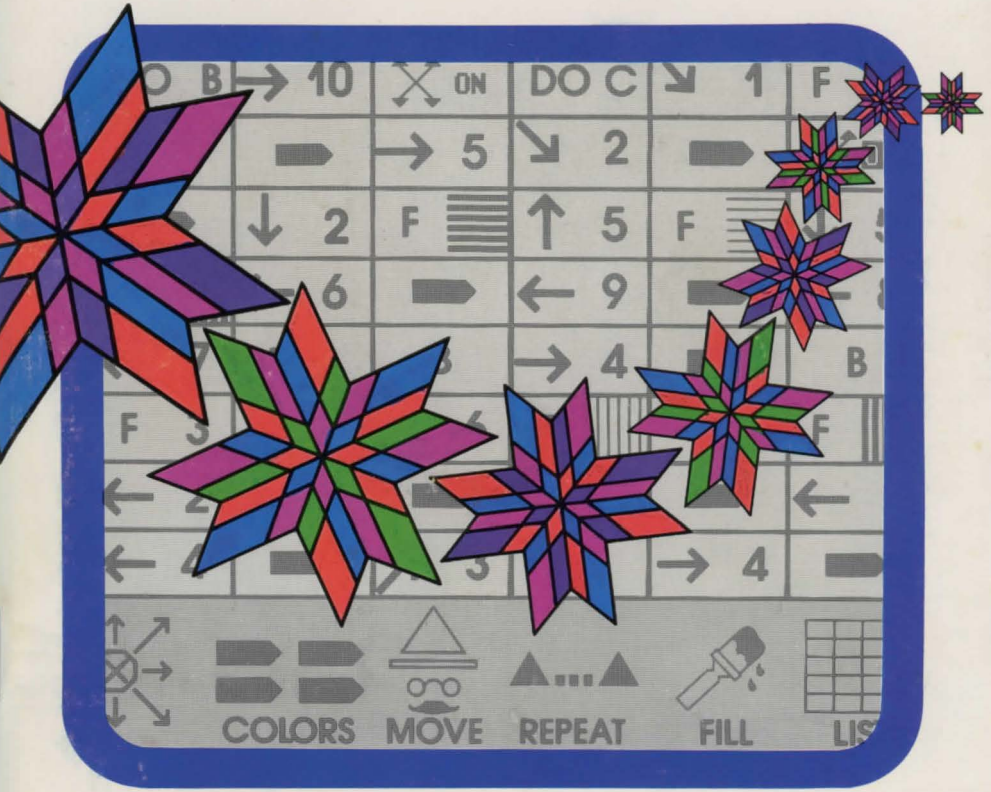
MR. PIXEL'S™ PROGRAMMING PAINT SET

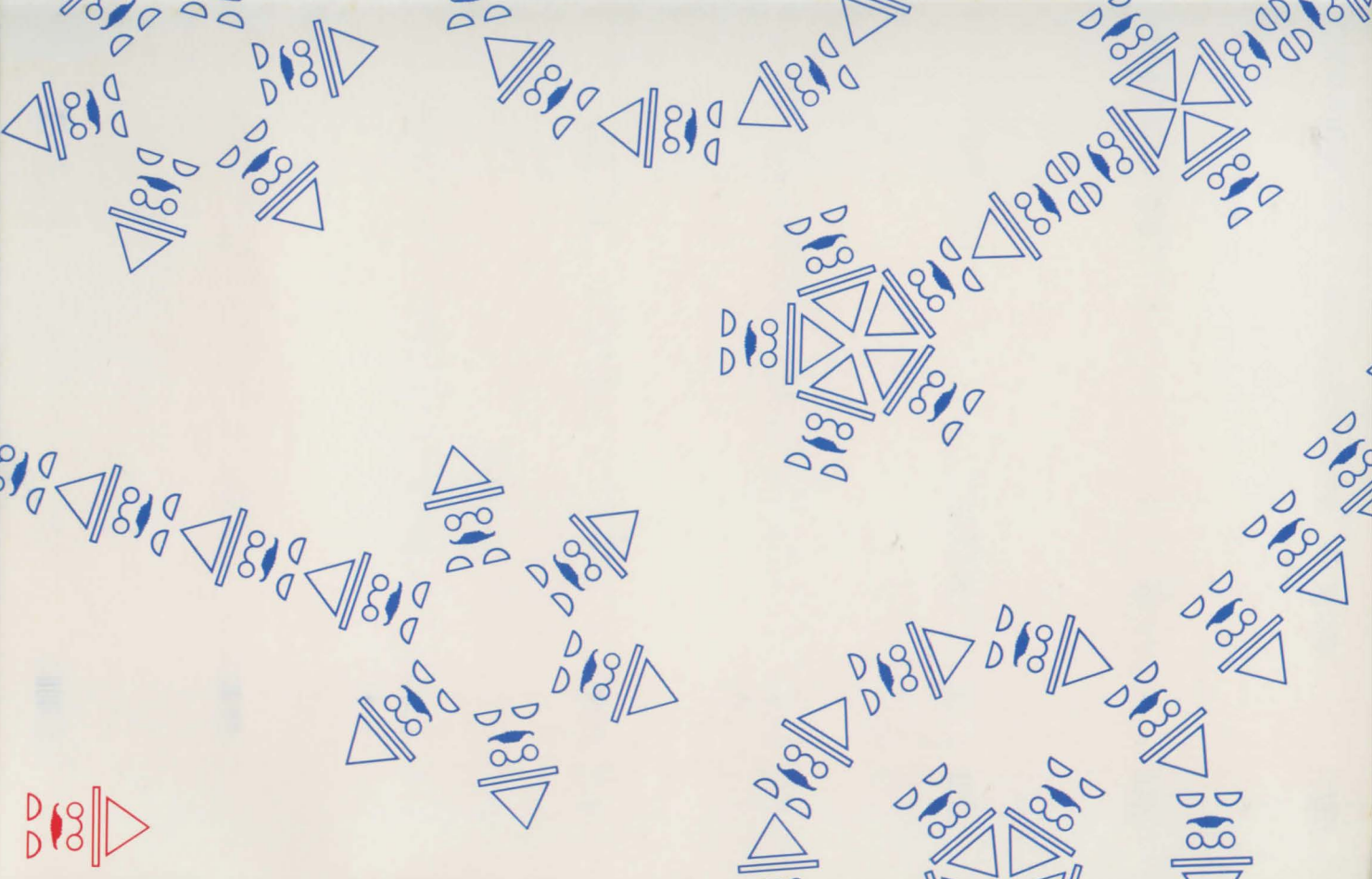
BY MASTER SOFTWARE, INC.

HELPS CHILDREN DEVELOP COMPUTER PROGRAMMING SKILLS AS THEY HAVE FUN CREATING DESIGNS AND DRAWINGS.



PIXELWERKS™

YOU SUPPLY THE IMAGINATION. WE SUPPLY THE TOOLS.
FOR AGES 8 AND UP.



A.
letter shows your current drawing; arrows show direction to scroll menu

B.
lets you move a crayon or Mr. Pixel anywhere you want on the screen

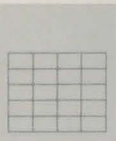
C.
erases your drawing, one command at a time

D.
lets you choose a color for drawing

E.
moves Mr. Pixel without drawing lines

F.
redraws whatever is on the screen in any location you want

G.
adds color to parts or all of your drawing

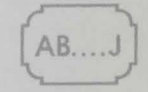


H.
lets you see commands used to make your drawing; lets you make changes

I.
lets you draw in four directions at one time when you choose **On**

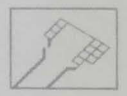
J.
turns lines, drawings, or shapes clockwise or counterclockwise in 45 degree increments

K.
makes lines, drawings, or shapes bigger or smaller

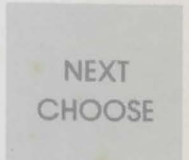


L.
places one of your drawings within another one

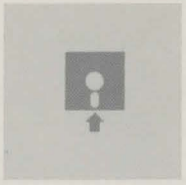
M.
makes Mr. Pixel or the crayon disappear from the screen



N.
erases your drawing from screen or erases all drawings you have not saved



O.
lets you move on to next drawing or review a completed drawing

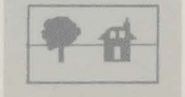


P.
saves your drawings to disk

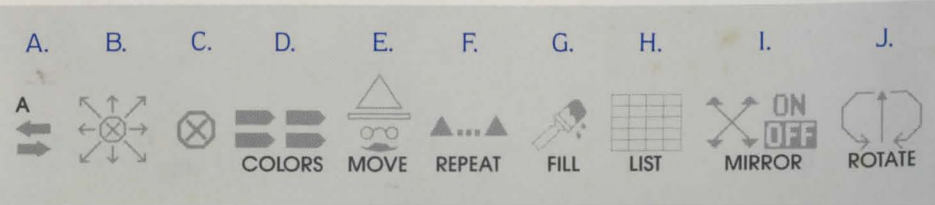
Q.
loads a saved drawing into the computer so you can see it or change it

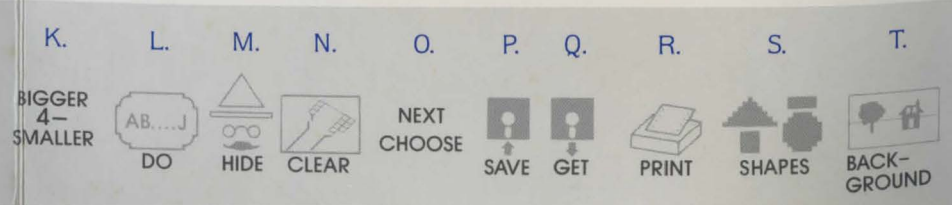
R.
prints out the drawing or list that is on the screen

S.
lets you use a predrawn shape in your design



T.
lets you save a drawing to be used as a background in Mr. Pixel's Cartoon Kit, another disk in the Mr. Pixel series



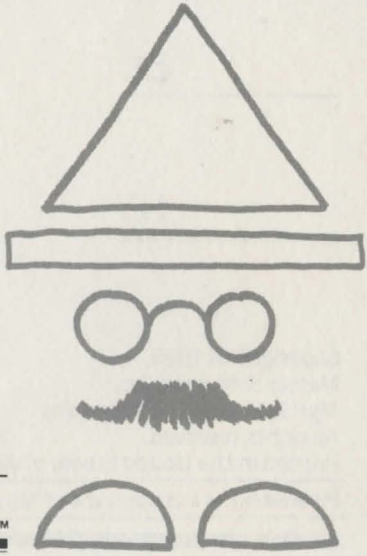


MR. PIXEL'S™ PROGRAMMING PAINT SET

BY MASTER SOFTWARE, INC.

MINDSCAPE, INC.
3444 DUNDEE ROAD
NORTHBROOK, ILLINOIS 60062

AN SFN COMPANY



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Mr. Pixel is a trademark of Master Software, Inc.

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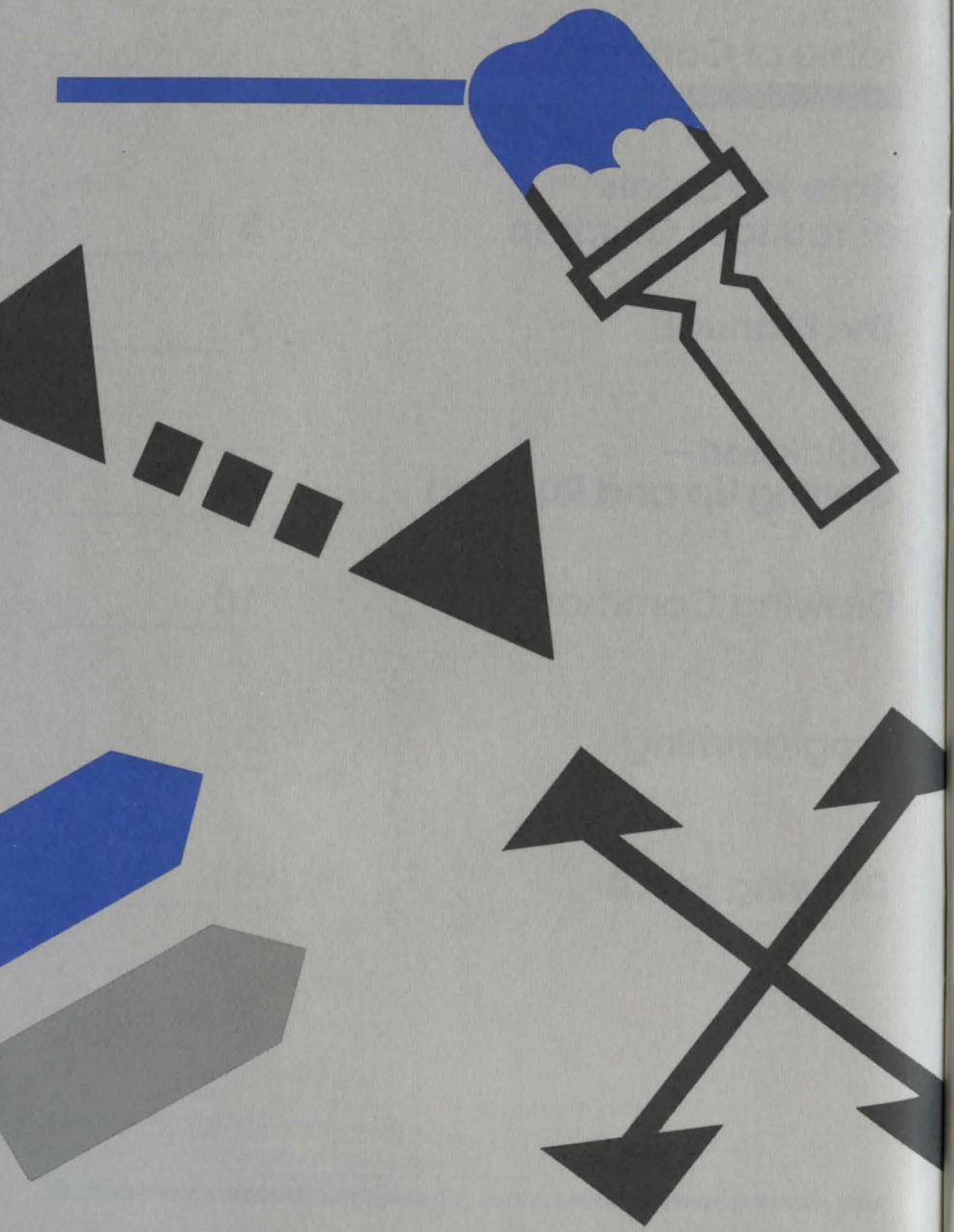


Note to Parents of Younger Children

Remember the endless hours you spent as a child having fun coloring pictures and creating all sorts of drawings and designs? That fun, creative expression is an integral part of being a child, of growing up, of learning. Now this creativity can be transferred to your home computer. Your new Mr. Pixel's Programming Paint Set disk is an innovative program that encourages children to use their natural inclinations to draw and create to explore and master the world of computers. What could be more rewarding than learning and having fun all at the same time!

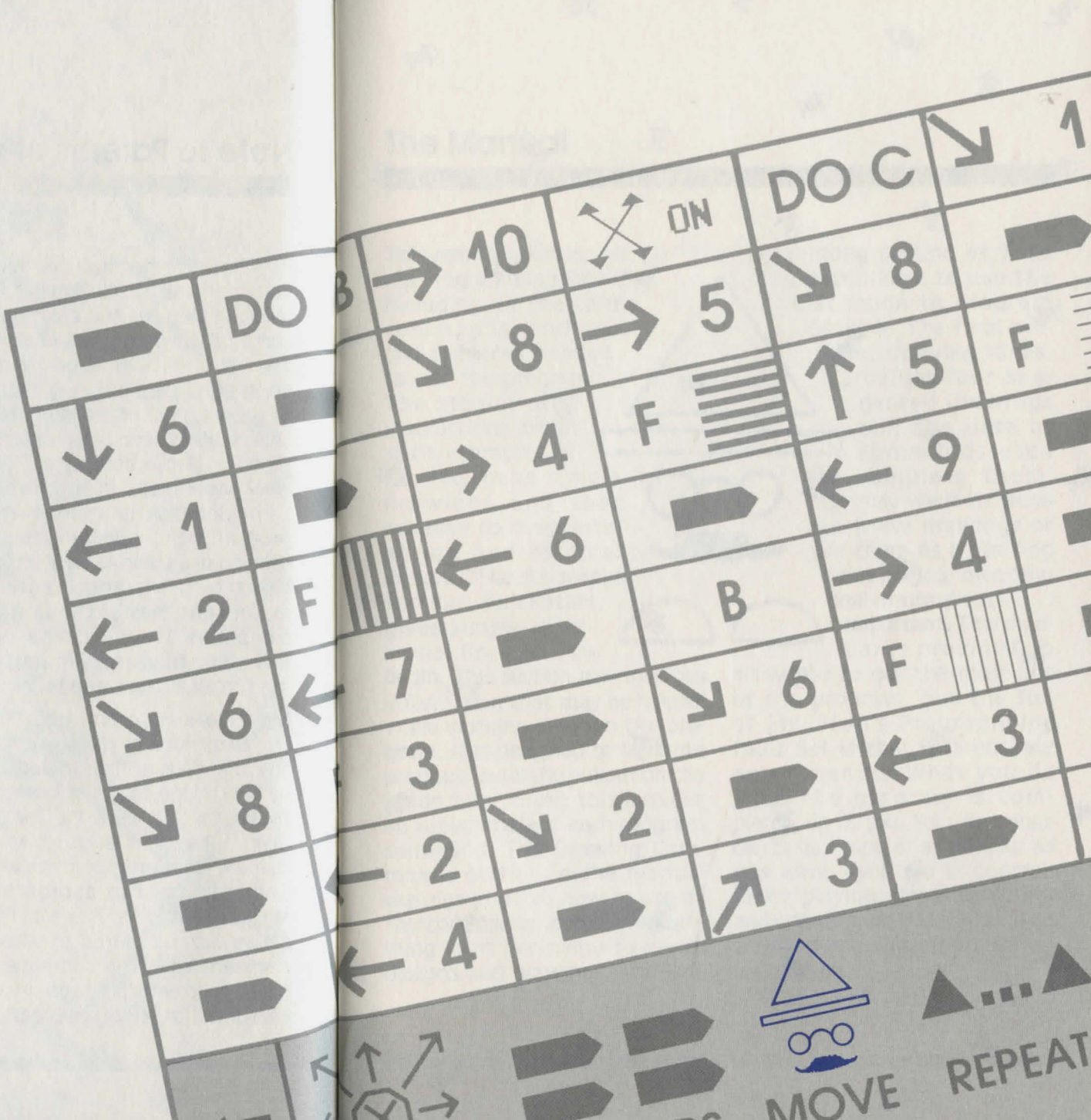
Mr. Pixel's Programming Paint Set is only one of the six disks in the Mr. Pixel series, introduced by Mindscape, Inc. and developed by Master Software, Inc. for children ages eight and up. Mindscape's philosophy is to take an entertaining, fun approach to serious learning. The Mr. Pixel series allows children to become partners with the computer in order to create pictures, music, cartoons, stories, and games. Each program in the series focuses on one of these creative activities and establishes a framework of creative play.

While playing and creating with Mr. Pixel's Programming Paint Set, children are also gaining an intuitive understanding of computer programming concepts. By utilizing a systematic approach to drawing, Mr. Pixel's Programming Paint Set reinforces the process a computer programmer uses to write a program. Children begin to understand the fundamentals of programming language structure, and they learn that *they* can control what the computer does.

In this program, drawing is accomplished by choosing from a wide range of menu commands at the bottom of the screen. These commands let children draw an unlimited number of designs and include such powerful features as **Mirror**, which creates colorful kaleidoscopic effects, **Rotate**, which turns

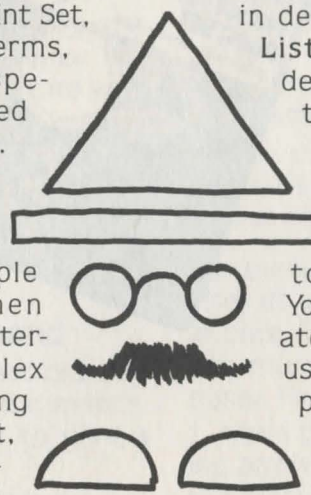
shapes and pictures at 45 degree angles, and **Repeat**, which transforms a simple drawing into a complicated computer design.

Each of the six Mr. Pixel programs provides children a sophisticated learning environment to explore. They can take creations from one program and use them in another program. For example, it is fun to take a drawing done with Mr. Pixel's Programming Paint Set and use it as a background in Mr. Pixel's Cartoon Kit. Also, since the programs share a common way of giving commands to the computer, learning one program makes it easy to learn the others. The six Mr. Pixel disks are a part of Mindscape's extensive Pixelwerks series, a full line of products dedicated to making learning fun for children eight years and older.



The Manual

This manual explains Mr. Pixel's Programming Paint Set, including all the terms, commands, and special features needed to use the program. The step-by-step instructions begin with examples of how to make simple drawings and then advance to more interesting and complex designs. The following section, **Quickstart**, gives simple directions on how to begin. This section also includes information that may be helpful while working through the program. Also designed to facilitate program use is the pullout on the inside front cover; this includes an explanation of each program command. The **Drawing Commands** section in the manual explains in detail how to use all the commands in the Programming Paint Set menu to create designs and drawings. The **Programming** section explains in depth how to use the **List** mode to program designs. The final section, **Drawing Ideas**, provides four suggested drawings and the lists of commands used to complete them. You may want to recreate these drawings or use them as a starting point for your own original masterpieces.



Important: This manual is provided to allow you to get the most out of the program, but the fun of Mr. Pixel's Programming Paint Set is that it is entirely experimental. What you do with the program is completely up to you. Your drawings can be as simple or as complex as you want—*you* are in control. Enjoy playing, experimenting, and creating with Mr. Pixel. And always keep the emphasis on having fun!

Quickstart-Getting Up and Running

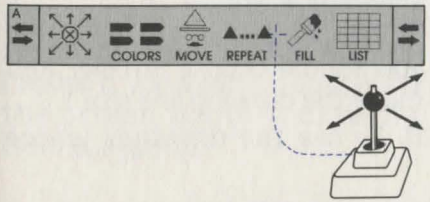
How to Load the Program

See the reference card for specific loading instructions. You may want to take this card with you to your computer to use as a quick, handy reference guide. This reference card also includes instructions for initializing a blank disk to save the drawings you create.

Choosing a Command

To make Mr. Pixel start drawing you must give him commands. Follow these steps to give a command:

1. Choose a command in Mr. Pixel's menu by moving the cursor ⊹ along the menu. To move the cursor, use either a joystick or the ↑ ↓ ← → arrow keys on the keyboard.
2. When the cursor is on top of a menu command, the command will blink and you will hear a beep.



3. Press the button on your joystick, or press **Return** if you are using arrow keys, to choose this command. This prompts a "command accepted" sound.
4. The command you choose remains in effect until you choose another command.

The menu has many commands. They do not all fit on the screen at once. To see other commands you must move, or scroll, the menu. Follow these steps:

1. Move the cursor to the scrolling arrows ⇄ on either side of the menu.
2. Choose the → arrow and hold the joystick button or the **Return** key down. The menu scrolls from right to left.
3. Release the button or **Return** to stop scrolling.
4. Use the ← arrow to make the menu scroll from left to right.

The Menu Pullout

See the inside front cover for a pullout section that includes a picture and a brief explanation of

each command in the menu. You may want to use it as a quick reference to help you get started.

Helpful Information

Words and Phrases

Menu—the list of commands at the bottom of the screen

Command—each item in the menu that tells Mr. Pixel a different thing to do; shown on the menu as a picture (icon) and/or a word

Scrolling Arrows—the arrows at the left or right side of the menu that cause the menu to move

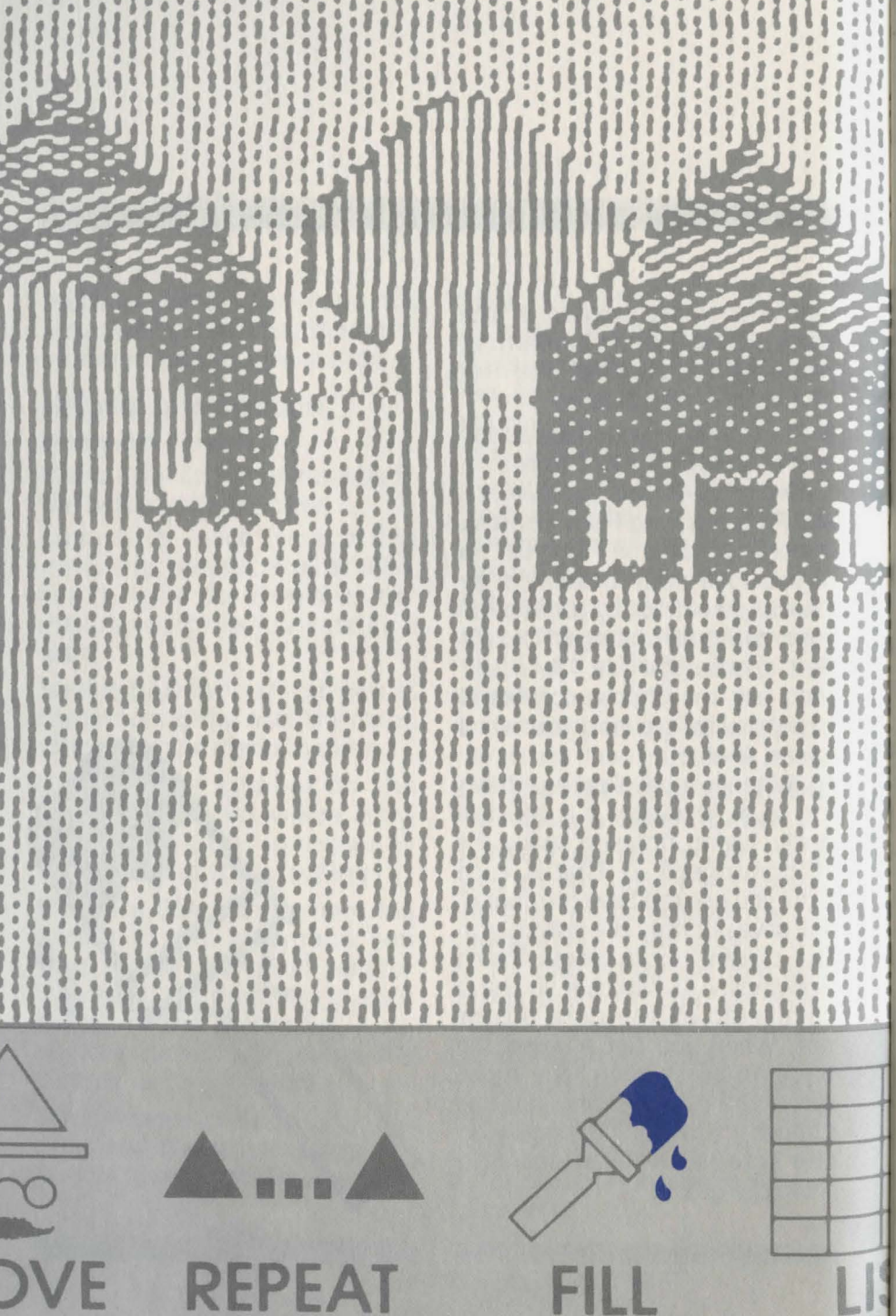
Cursor—the symbol on the screen that shows where activity is taking place; controlled by the joystick or the arrow keys

Choose a Command—move the cursor to the command you want to give to Mr. Pixel, wait for it to blink, and press the joystick button or the **Return** key (Usually the cursor must be on the picture, not on the word.)

Scroll—move the menu to the right or left using the scrolling arrows to see other commands

Facts

1. "Press the button" always means to press the joystick button or **Return**, whichever is appropriate.
2. A sound is made whenever you press the joystick button or **Return** to let you know the computer registers the command.
3. A command cannot be chosen unless the cursor is on the command and it is blinking and beeping.
4. Vertical lines appear longer on the screen than horizontal lines.
5. If you hold the button down, the crayon continues to draw.
6. When Mr. Pixel or the crayon goes off any side of the screen, the line "wraps around" to the opposite side of the screen. That is, if it goes off on the right side it reappears on the left side. Both **Fill** and direction **Arrow** commands wrap around.
7. To make details such as curves you should choose **Smaller** and make the drawing line size 1.
8. To see the drawings whose instructions are printed in the final section of the manual, **Drawing Ideas**, load the file "Activities" from disk.
9. The drawings you make as you work through this manual, Drawings A–H, are presaved on the Programming Paint Set disk under the file name "Tutorial." So if you lose your drawings by **Clear**ing the file or by turning off your computer, simply choose **Get**, choose the file "Tutorial," then use the **Choose** command to select the drawing you want to see, A–H.
10. Whenever you **Save** one drawing (e.g., Drawing A), you are really saving drawing space for 10 drawings (A–J). That is, each time you use the **Save** command, you save not only the drawing on the screen, but a whole file of drawings, A–J, whether you have completed all the drawings or not. When you **Get** a saved file back on the screen, the most recent drawing appears first. Use **Choose** if you want to display on the screen another drawing from the group.



Drawing Commands

Each command in the Mr. Pixel menu is shown by a picture and/or word. This section will explain each command in the menu. If you follow the instructions for each command, you will learn how to use the entire program. The commands are not explained in the order in which they appear in the menu, but in an order that lets you draw interesting pictures while you learn to use the program. Begin by looking at the first command on the left of the menu, the **Arrows**.

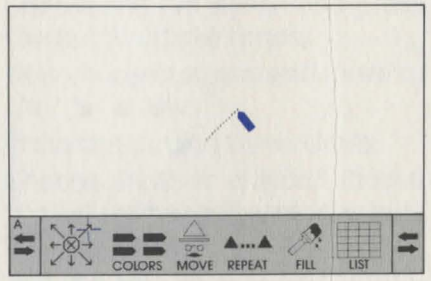
Arrows

THE ARROW COMMANDS TELL MR. PIXEL OR HIS CRAYON IN WHAT DIRECTION TO MOVE ON THE SCREEN. Follow these steps to draw a diamond:

Move the cursor to the ↗ arrow in the **Arrow** commands.

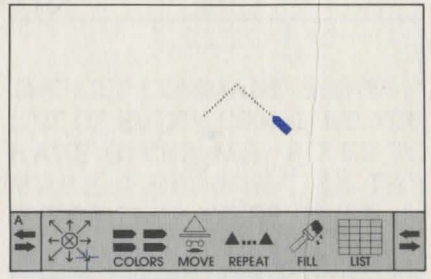
Press the button once. The crayon draws one diagonal line.

Press the button two more times to make the line longer.

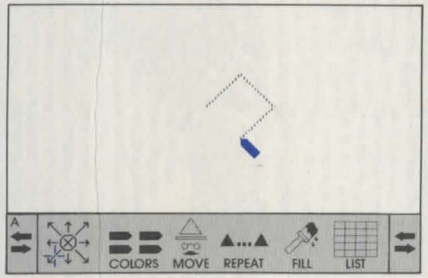


Move the cursor to the ↘ arrow.

Press the button three times to make this second line as long as the first.

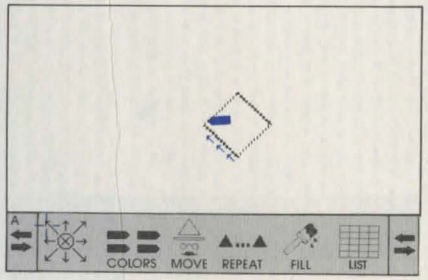


Move the cursor to the ↙ arrow and press the button three times.



Finally, move the cursor to the ↖ arrow, and press the button three times.

Your drawing should look like this.

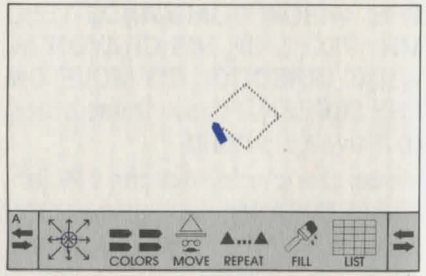


Erase

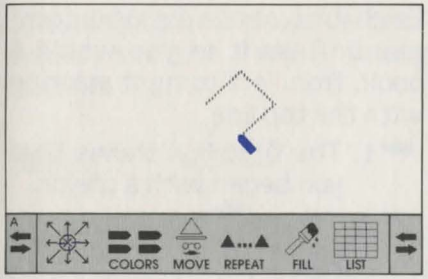
THE ERASE COMMAND TELLS MR. PIXEL OR HIS CRAYON TO MOVE BACKWARDS. Each time you choose it, the **Erase** command causes the last command that you entered to disappear. Follow these steps to erase the diamond you just drew:

Choose the **Erase** command; this is the circle with an X inside it in the middle of the **Arrows** command.

Very quickly the diamond is redrawn without the last line.



Press the button two more times and the diamond is redrawn without its fourth side.



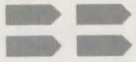
Press the button three more times to erase the third side of the diamond.

Now press the button six times to erase the last two sides.

■

Remember: Each time you press the button, one line erases. Your picture reappears without the last command you entered.

Colors



THE COLOR COMMANDS LET YOU CHOOSE WHICH COLOR MR. PIXEL USES TO DRAW A PICTURE. You have a choice of drawing colors. Follow these steps to draw a color diamond:

Choose the ↗ arrow and press the button three times.

Now choose a crayon and move to the ↘ arrow.

Press the button three times.

Choose another crayon; choose the ↙ arrow and press the button three times.

For the fourth side of the diamond, choose the first color you used and then the ↖ arrow. Press the button three times.

The color diamond is completed.

List

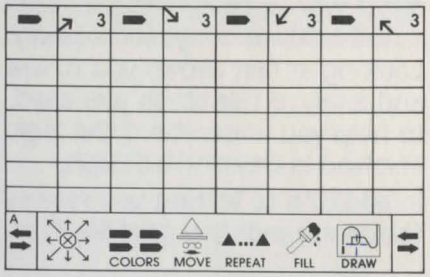
THE LIST COMMAND SHOWS A LIST OF EVERY COMMAND YOU HAVE GIVEN MR. PIXEL TO MAKE A DRAWING, IN THE ORDER THEY WERE GIVEN. In other words, these are the steps required to make your drawing. Looking at **List** allows you to see and analyze the steps you used, to help you understand the logic involved in creating a design.

In addition to letting you review the commands you gave Mr. Pixel

for a drawing, using **List** lets you do two other things.

1. You can alter your drawing by adding, deleting, moving, and changing commands. (See **Changing a Program from List** in the **Programming** section of this manual for more information.)
2. In the **List** mode, you can create a drawing by putting the commands, or steps, that make up the drawing into the **List** boxes. (See **Creating a Program from List** in the **Programming** section of the manual.)

To see Mr. Pixel's list for the color diamond you just made, simply choose the **List** command and press the button. The diamond disappears and this is what you see.



Each box contains one command. Read it as you would a book, from left to right starting with the top line.

1. The first box shows that you began with a crayon.
2. The next box shows you chose the ↗ arrow three times.
3. Then you chose a different crayon.
4. Then you chose the ↘ arrow three times.
5. This was followed by another crayon.
6. You moved the ↙ arrow three times.
7. You chose the first color again.
8. Finally you moved the ↖ arrow three times.

When you are finished with **List**, you can make your drawing reappear. Notice on the menu that **List** has been replaced by **Draw**. Choose this **Draw** command and press the button. The list disappears and the diamond reappears on the screen. For a complete explanation of **List**, including how to choose a command, see the **Programming** section.

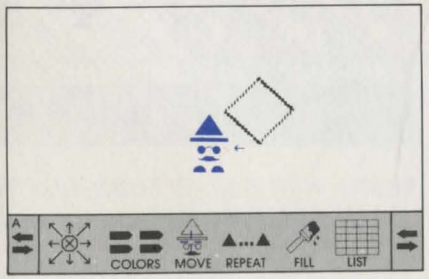
Move

THE MOVE COMMAND MOVES MR. PIXEL TO ANY PLACE ON THE SCREEN WHERE YOU WANT TO DRAW. Follow these steps to move Mr. Pixel:

Move the cursor to Mr. Pixel's face above the word **Move** in the menu. Press the button. (Scroll the menu if necessary.)

The crayon disappears and Mr. Pixel appears on the screen in its place.

Choose the ← arrow and press the button once. Mr. Pixel moves one space to the left without drawing a line.

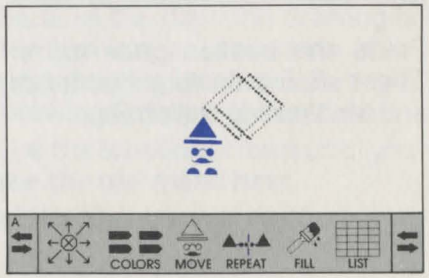


Note: Mr. Pixel and the crayon cannot be on the screen at the same time. Only crayons can draw lines. When you choose the **Move** command, Mr. Pixel always appears. Use the **Arrow** commands to move him without drawing any lines. Choose a crayon whenever you are ready to draw.

Repeat ▲...▲

THE REPEAT COMMAND TELLS MR. PIXEL TO DRAW ANY DESIGN ON THE SCREEN OVER AGAIN, STARTING FROM THE POSITION HE IS AT. To repeat the color diamond that you made, follow these steps:

Choose the **Repeat** command one time.



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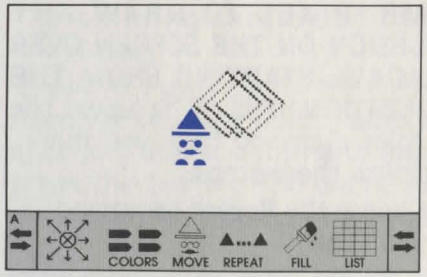
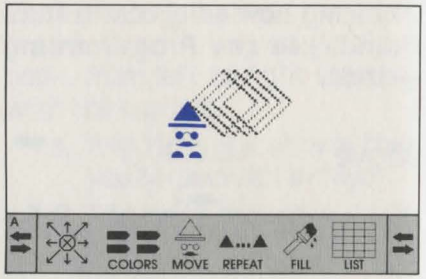
Note: The new diamond is drawn one space to the left of the first one because you moved Mr. Pixel one space to the left with the **Move** command. Every time you choose **Repeat**, Mr. Pixel repeats *every* command that came before. The drawing starts from the tip of the crayon or from the point of Mr. Pixel's head, whichever is currently displayed.

Press the button again to draw another diamond.



Press the button once more. There should be four diamonds and Mr. Pixel on the screen.



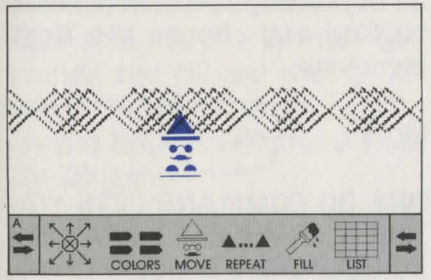
To make a design of diamonds in a row, follow these steps:

Choose the ← arrow and press the button three times. Mr. Pixel moves three spaces left without drawing a line.

Choose the **Repeat** command and press the button once to repeat the four diamonds.

Press the button four more times, waiting between each **Repeat** command until the command blinks.

Your drawing looks like this.

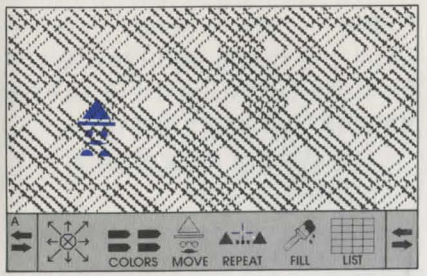


To fill the screen with rows of diamonds, follow these steps:

Choose the ↑ arrow and press the button five times.

Choose the **Repeat** command three more times, waiting between each command.

Your drawing looks like this.



If you want to see how these new commands are kept in Mr. Pixel's memory, choose **List**. Read the new commands beginning on the second row. When you are done reviewing the list, choose **Draw** to put your diamond drawing back on the screen.

Next NEXT CHOOSE

THE NEXT COMMAND LETS YOU GO ON TO A NEW DRAWING WITHOUT ERASING THE OLD ONE. Mr. Pixel can keep up to 10 drawings in his memory at once; they are called A–J. The letter above the scrolling arrows on the left tells you which drawing you are working on.

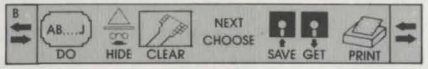
Right now the letter should be A because the diamond drawing is the first one you have done. Your next drawing is called B. To begin Drawing B, follow these steps:

Use the scrolling arrows until you see the command **Next**.

Move the cursor to **Next** and

press the button. Drawing A, the diamonds, disappears and the drawing screen is empty.

The letter B then appears above the scrolling arrows where A was.



Scroll the menu back to the **Arrow** commands.

Choose **Move**.

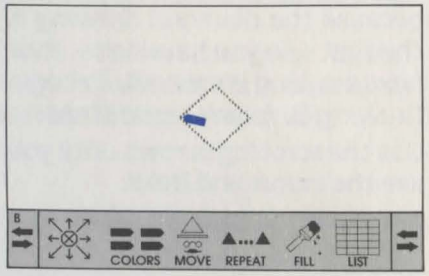
Choose the ← arrow three times.

Choose a crayon, then the ↗ arrow three times.

Next choose the ↘ arrow three times.

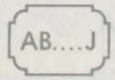
Then choose the ↙ arrow three times.

Finally, choose the ↖ arrow three times.



This diamond is Drawing B. To go on to Drawing C, scroll the menu to find and choose the **Next** command.

Do



THE DO COMMAND LETS YOU USE A COMPLETED DRAWING TO HELP CREATE A NEW DRAWING. To use Drawing B in Drawing C, first position Mr. Pixel where the drawing should begin:

Scroll to the **Arrow** commands.

Choose **Move**.

Choose the ↖ arrow three times.

Now to use the **Do** command to create Drawing C, follow these steps:

Scroll the menu and choose the **Do** command. A new menu appears that looks like this:

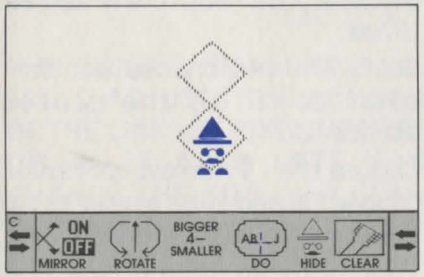
DO WHICH PROGRAM?
NONE A B

This menu can include letters A through J depending on how many drawings you have done.

Choose **B** from this menu. Mr. Pixel redraws Drawing B, the diamond, from the position you just placed him in for Drawing C.

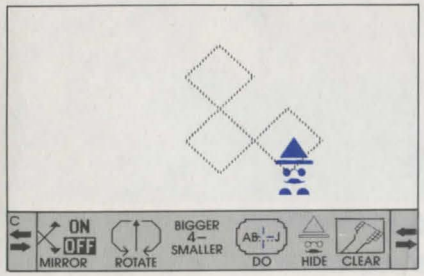
Now scroll to the **Arrow** commands and choose the ↓ arrow six times.

Choose **Do**, then choose **B** from the **Do** menu.



Choose the → arrow six times.

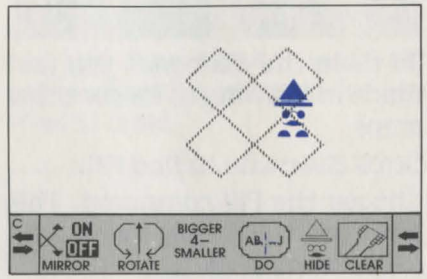
Choose **Do** and **B** again.



Now choose the ↑ arrow six times.

Choose **Do** and **B** once again.

Your drawing should look like this.

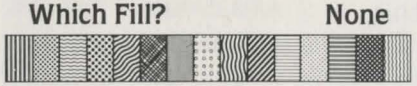


Remember: The **Do** command repeats a completed drawing to allow you to use it as part of a new drawing. You might want to choose **List** again to see where the **Do B** command fits into the memory list. If you select **Do** and then decide you don't want to use one of your earlier drawings, select **None** to return to your current drawing.

Fill

THE FILL COMMAND FILLS IN ANY PART OF A DRAWING WITH COLOR. A SPECIAL FILL MENU

GIVES YOU MANY COLORS TO CHOOSE FROM.

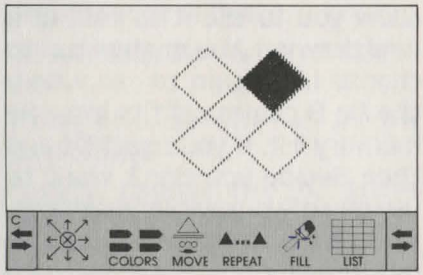


To fill in the diamonds you just made in Drawing C, follow these steps:

Scroll the menu to find **Fill**.

Choose the **Fill** command. This gives you the special menu with colors on it.

Choose the color in one of the boxes. Mr. Pixel fills in the upper right diamond with that color.



Now choose the ← arrow six times to move Mr. Pixel over six spaces so he is inside the diamond on the upper left.

Choose **Fill** again and pick another color to fill in the upper left diamond.

Choose the ↓ arrow six times.

Return to **Fill** and choose another color to fill in the third diamond.

Choose the → arrow six times.

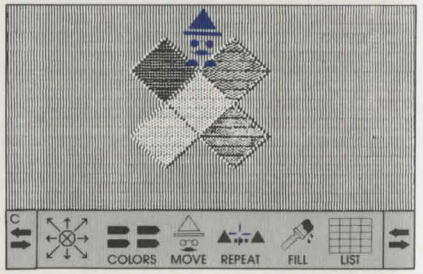
Go to **Fill** and choose a color to fill in the lower right diamond.

Choose the ↖ arrow three times.

Go to **Fill** and choose another color to fill in the center diamond.

Choose the ↑ arrow six times; choose **Fill** and then a color to fill in the whole background.

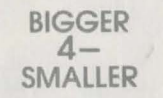
Your drawing should look like this.



■

Note: Mr. Pixel only fills in the white area that he or the crayon is pointing to. Make sure that the tip of his head or of the crayon is within the area you want filled in when you choose a **Fill** color. The color ends at the first line in any direction it is filling. If there are no lines on the screen, the entire background changes color.

Bigger/Smaller



THE BIGGER/SMALLER COMMAND ADJUSTS THE LENGTH OF THE LINE MR. PIXEL USES TO DRAW. IT ALSO LETS YOU CHANGE THE SIZE OF A COMPLETED DRAWING TO USE IN ANOTHER DRAWING. IN ADDITION, IT AFFECTS THE SIZE OF THE FOUR PREDEFINED SHAPES INCLUDED IN THE MENU, ■ ▲ ● ▬. If you don't choose **Bigger** or **Smaller**, the normal drawing line length is 4. It can be as small as 1 or as large as 12. To make a new drawing by using Drawing B and making it bigger, follow these steps:

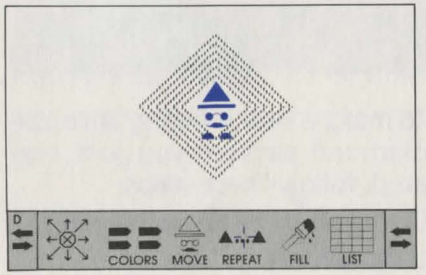
Choose **Next** to go to Drawing D.

Choose **Move**.

Choose **Do** and **B**. This causes your diamond to appear on the screen.

Find the **Bigger** command and press the button once. The line on the **Bigger** command is now 5 instead of 4.

Choose **Repeat** and press the button five times, waiting between each command for Mr. Pixel to draw.



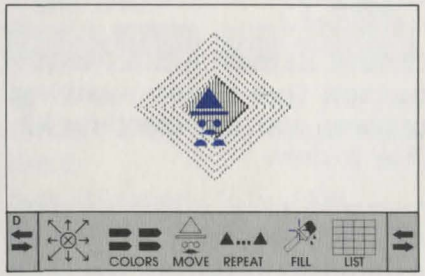
Look at the **Bigger** command again; the length of the line is now 10.

■

Note: Whenever you give Mr. Pixel a **Repeat** command after a **Bigger** command, Mr. Pixel redraws your design bigger each time you command him to repeat.

To fill in the center diamond, choose **Fill** and select a color.

Your drawing should look like this.



To make a new drawing with the diamond pattern you just created, follow these steps:

Choose **Next** to begin Drawing E.

Choose **Move.**

Choose **Do D** and watch Mr. Pixel draw the last drawing you made.

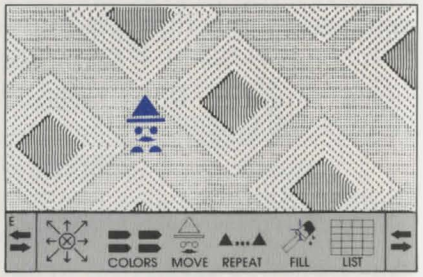
Now choose the ↖ arrow eight times.

Choose **Repeat** four times, waiting between each command.

Choose the ← arrow nine times.

Now choose **Fill** and a color to fill in the background around the diamonds.

This is what you have drawn.



Hide

THE HIDE COMMAND MAKES MR. PIXEL OR THE CRAYON DISAPPEAR SO YOU CAN LOOK AT A DRAWING WITHOUT DISTRACTION. To look at Drawing E without Mr. Pixel showing, follow these steps:

Find the **Hide** command and press the button. Mr. Pixel disappears.

Look at the menu. The word **Hide** disappeared; the word **Show** took its place.

To make Mr. Pixel show himself, choose **Show.**

Mirror

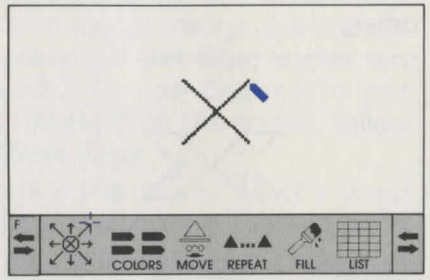
THE MIRROR COMMAND LETS YOU CREATE A KALEIDOSCOPIC EFFECT, THAT IS, DRAW LINES THAT GO IN FOUR DIRECTIONS AT ONCE. When **Mirror** is **On**, you see a line drawn in the direction you select, as well as at opposite and 90 degree angles. The center of the **Mirror** is wherever Mr. Pixel or the crayon is at the time you choose the **Mirror On** command. To make a new drawing with the **Mirror On** command, follow these steps:

Choose **Next** to go to Drawing F.

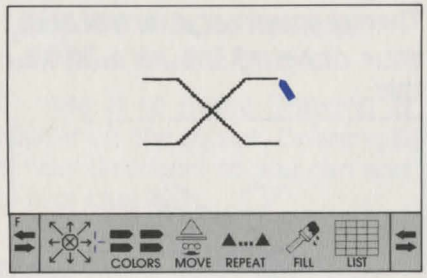
Find the **Mirror** commands and choose **On**. (This is one case where you choose the word, not the picture.)

Choose a crayon.

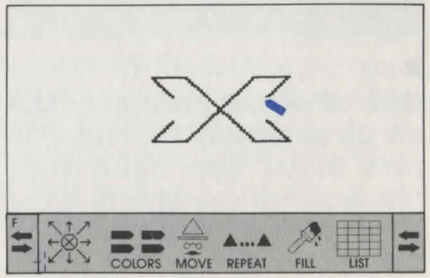
Choose the ↗ arrow three times.



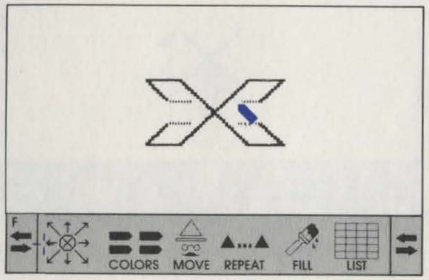
Choose the → arrow three times.



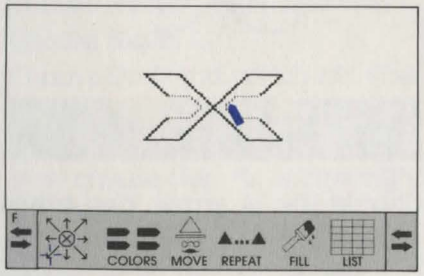
Choose the ↙ arrow two times.



Now choose a different crayon.
Next choose the ← arrow two times.



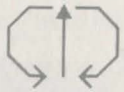
Then choose the ↙ arrow once.
Your drawing should look like this.



■

Note: Whenever you use the **Mirror On** command, Mr. Pixel mirrors *every* command that follows until you give him the **Mirror Off** command.

Rotate



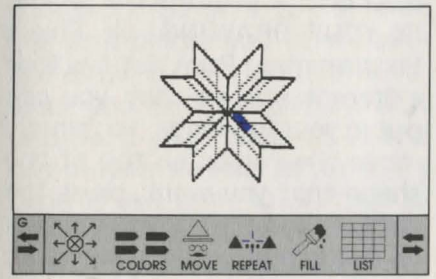
THE ROTATE COMMAND LETS YOU ROTATE ANY DESIGN YOU MAKE EITHER CLOCKWISE OR COUNTERCLOCKWISE. IT ALSO ROTATES THE DRAWING LINE AND THE FOUR PREDEFINED SHAPES ON THE MENU, ■▲●I. When you choose the **Rotate** command, Mr. Pixel rotates your drawing in that direction until you stop him with a **Rotate** command in the opposite direction. Because the **Rotate** command affects the direction of the **Arrows**, you probably want to use this command with **Repeat** and **Do** rather than with the **Arrows**. To use the **Rotate** command with the drawing you just made, follow these steps:

Choose **Next** to go to Drawing G.

Choose **Do F** to make your last drawing reappear.

Choose the clockwise **Rotate** command ↻ and press the button once.

Choose **Repeat** and press the button three times. Drawing F repeats three times, rotating once each time.



■

Note: The middle arrow in the **Rotate** command has rotated three times clockwise to show you the direction in which your drawing is rotating.

Choose

NEXT
CHOOSE

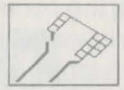
THE CHOOSE COMMAND LETS YOU PUT ONE OF YOUR EARLIER DRAWINGS BACK ON THE SCREEN. The **Choose** command brings back drawings from computer memory—that is, drawings you have created in your current work session—as opposed to the **Get** command, which brings back drawings from disk memory. (See the discussion of **Get** later in this section.) To use **Choose** to put Drawing B on the screen, follow these steps:

Move the cursor to the word **Choose** and press the button. A new menu appears with a list of your drawings that looks like this:

CHOOSE WHICH PROGRAM?
NONE A B C D E F G H I J

Choose B to make Drawing B appear on the screen. Drawing B is now displayed so you can add to it or change it.

Clear



THE CLEAR COMMAND LETS YOU ERASE ONE OR MORE OF YOUR DRAWINGS. Once you have cleared a drawing, you cannot bring it back unless you have first saved it to a disk. (See **Save** in this section.) The drawings you have made so far, A through G, have already been saved for

you on the Mr. Pixel's Programming Paint Set disk. To practice clearing drawings, follow these steps:

Choose the **Clear** command. A new menu pops up that looks like this:

CLEAR WHICH PROGRAM?
NONE B ALL

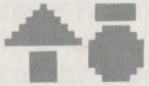
Choose **All** to erase all the drawings.

The letter between **None** and **All** is always the letter of the current drawing.

■

Note: The **Get** command, which is discussed later in this section, lets you bring back the drawings you just cleared. That is because the Programming Paint Set disk comes with Drawings A through H already saved on it; the file name of these drawings is "Tutorial." To bring back the drawing you just cleared, choose **Get.** Choose "Tutorial," and then choose the drawing you want. Normally, it is impossible to retrieve a drawing you have **Cleared** unless you saved it to disk.

Shapes



THE SHAPES COMMAND LETS YOU USE A PREDRAWN SHAPE IN YOUR DRAWING. Mr. Pixel's Programming Paint Set has four different shapes that you can put in your drawings. You simply move the cursor on top of the shape that you want, press the button, and that shape appears on the screen in whatever spot Mr. Pixel or the crayon is in. You can also change the size and rotation of the shapes by first choosing the **Bigger**, **Smaller**, or **Rotate** commands and then choosing the **Shape.**

■

Note: The color of the shape that you choose is always the same color as the crayon that you are drawing with, not the color that the shape is in the menu.

Save

THE SAVE COMMAND LETS YOU SAVE YOUR PROGRAMS TO A DISK. You can't **Save** drawings to your Mr. Pixel disk; you need to

use a blank disk. You must initialize the disk before it will accept your drawings. Initializing a disk formats it to work with your computer. Be sure to initialize the disk before you even make the drawings you want to save, since you can't initialize a disk and keep your drawing in the computer's memory at the same time. If you don't know how to initialize a disk, see the reference card. After you make some drawings and you are ready to save them, follow these steps:

Remove the Programming Paint Set disk from the disk drive. Put an initialized disk into the disk drive.

Choose the **Save** command from the menu. This is what you will see on the screen:

TYPE IN THE NAME OF THE DRAWING TO SAVE.
(OR PRESS RETURN TO GO BACK TO YOUR PICTURE.)

Pick a name for your drawing, type it in, then press **Return.** The drawing on the screen is now saved to the disk along with work space for 9 other drawings. (Remember, drawings A–J are always saved together.) You can save from 1 to 10 drawings at a time under one name.

■

Notes: If you pick a name that you have used before, the new drawing will take the place of the old drawing that has the same name.

The blank disk can store many of your programs. When it gets filled, the computer will say: **No More Room.** Then you can either erase all the drawings you have saved by initializing the same disk again or start over with another blank disk.

Get

THE GET COMMAND LETS YOU SEE ANY DRAWINGS THAT HAVE BEEN SAVED TO A DISK. (See **Save** above.) To **Get** a program that has been saved to a disk, follow these steps:

If the computer has been turned

off, load the Mr. Pixel's Programming Paint Set disk. After the program has been loaded, take the disk out. Since the program is now in the computer's memory, you can still scroll the menu and choose any command.

Now put the disk that has your drawings saved on it into the disk drive.

Choose **Get**. A list of your drawings appears on the screen:

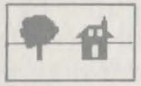
CHOOSE ONE OF THESE DRAWINGS.
(Names of Your Drawings)

Move the cursor to the drawing you want. When it blinks, press the button. That drawing will be loaded into the computer and appear on the screen. Use the **Choose** command to see other drawings in this A–J drawing space.

■

Note: If you change your mind and you don't want any drawing, move the cursor to the hand in the lower right corner and press the button. Or, if you want to **Get** the "Tutorial" or "Activities" files, load and do not remove the Programming Paint Set disk, then follow the **Get** procedure.

Background



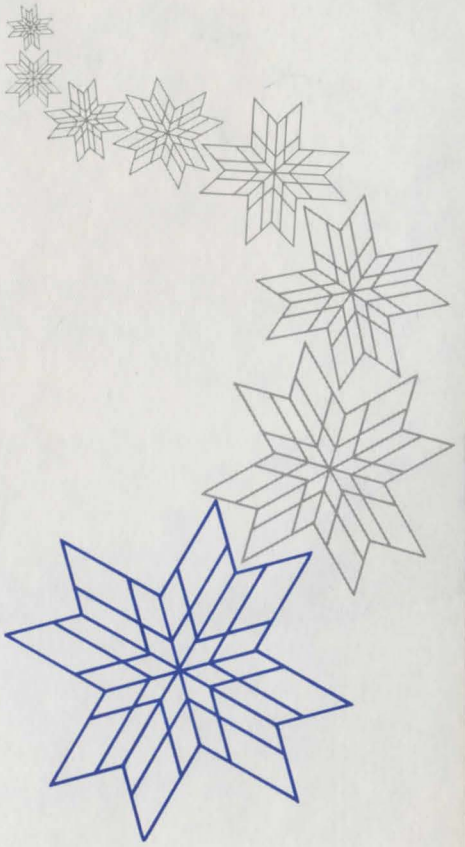
THE BACKGROUND COMMAND LETS YOU SAVE DRAWINGS TO USE AS BACKGROUNDS IN YOUR OTHER MR. PIXEL PROGRAMS, SUCH AS MR. PIXEL'S CARTOON KIT™. To do this, you follow the same steps that you use to save your drawings except that you choose the **Background** command instead of the **Save** command. This is what appears on the screen:

TYPE IN THE NAME OF THE BACKGROUND TO SAVE.
(OR PRESS RETURN TO GO BACK TO YOUR PICTURE.)

Make sure you've removed the Mr. Pixel's Programming Paint Set disk and inserted your storage disk. Type a name for the background and then press **Return**; now the drawing can be loaded as a background in another Mr. Pixel program whenever you wish. Once you save a drawing as a background you cannot get it back as a drawing in the Paint Set program. So be sure to save it as a drawing, too.

Print

THE PRINT COMMAND LETS YOU PRINT OUT YOUR DRAWINGS ON PAPER. The printer is like a camera; it takes a snapshot of the screen and prints it out. You can print out either your drawings or the **Lists** of those drawings. The printer prints *whatever is on the screen at the time.* Whenever you are ready to print out a copy of what is on the screen, simply make sure your printer is on and choose **Print**. The menu may become distorted while the printing is going on but it will return to normal when the printing is done. **The menu does not print; only what is on the drawing screen prints. Mr. Pixel and the crayon do not appear on a printout.**



Programming

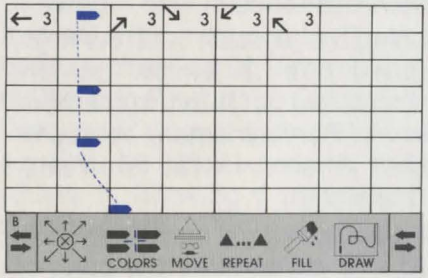
When you give Mr. Pixel commands, you are telling him exactly what to do to make the drawing you want. This is called "programming." In other words, every time you give Mr. Pixel a command you are programming him to carry out that command. Mr. Pixel can only do what you program him to do. In the previous section, **Drawing Commands**, you gave Mr. Pixel commands and watched your drawing appear on the screen. That is a way to program Mr. Pixel. Another way to program Mr. Pixel is discussed in this section.

Changing a Program from List

YOU CAN MAKE A COMPLETELY NEW DRAWING BY CHANGING COMMANDS IN OR ADDING COMMANDS TO MR. PIXEL'S MEMORY LIST. **Get** the "Tutorial" file. Using the **Choose** command, put Drawing B on the screen, then choose **List** to see the commands Mr. Pixel received to draw the diamond. To change the diamond in Drawing B from one color to another, follow these steps:

Choose a crayon of a different color and watch a copy of the crayon appear under the cursor.

Using the joystick or arrow keys, move the new crayon up the screen and put it in the second box in Mr. Pixel's memory on top of the first crayon.



Press the button to make the second crayon take the place of the original crayon.

Now, using the joystick or arrow keys, move the crayon back down the screen to the menu. When the crayon enters the

menu it disappears and the cursor reappears in its place.

Choose **Draw** to see that you changed the color of the diamond.

Now to change the diamond into a square, follow these steps:

Choose **List**.

Move the cursor to the ↑ arrow command in the menu, press the button, and watch a copy of the ↑ arrow appear under the cursor.

Using the joystick or arrow keys, move the ↑ arrow up the screen and put it in the third box in Mr. Pixel's memory on top of the ↗ arrow that is already there.

Press the button once and watch the ↑ arrow take the place of the ↗ arrow.

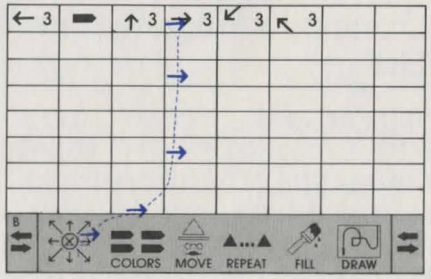
The new arrow has the number 1 beside it. Press the button again and the number 2 appears. Press the button one more time to change the 2 to a 3. You have just changed the first side of the diamond into the first side of a square.

■

Note: If you press the button too many times, just move the arrow out of the box, then move it back in and press the button three times.

Now, move the ↑ arrow back down the screen to the menu. When the arrow enters the menu it disappears and the cursor reappears in its place.

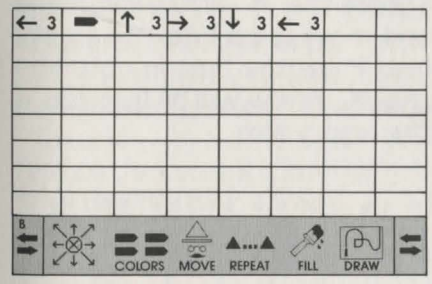
Choose the → arrow in the menu and move it up into the fourth box, press the button three times, and the → arrow takes the place of the ↘ arrow. You have just programmed Mr. Pixel to make the second side of the square.



Move the → arrow command back into the menu.

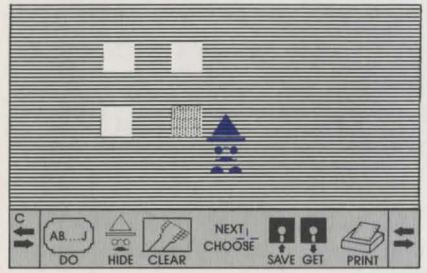
Choose the ↓ arrow and move it up into the fifth box. Press the button three times and the third side of the diamond is now the third side of the square.

Choose the ← arrow, put it in the sixth box, and press the button three times. This tells Mr. Pixel to draw the last side of the square.



You have just made a completely new program for Drawing B. Choose **Draw** to see the square.

To see what happened to Drawing C, choose **Next**.



Drawing C now has four squares instead of four diamonds. That's because there is a **Do B** command in Drawing C; when you changed Drawing B from a diamond to a square, Mr. Pixel redrew the square in Drawing C instead of the diamond.

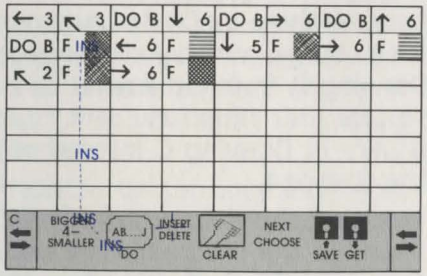
However, there is a problem, or a "bug," in the program. Only one square is filled. That's because when Mr. Pixel finished drawing the square he ended up in the wrong spot to fill all the squares properly. Fixing this bug requires the **Insert** command.

Insert

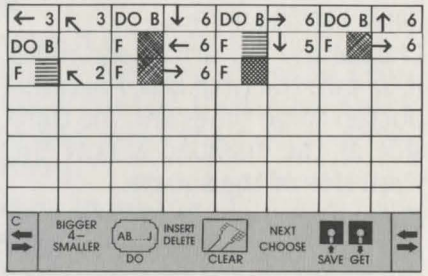
THE INSERT COMMAND LETS YOU ADD A NEW COMMAND BETWEEN TWO EXISTING COMMANDS. To use **Insert** to fix the bug in Drawing C, follow these steps:

Choose **List.**

Then choose the word **Insert** in the menu. The letters **INS** (short for **Insert**) appear under the cursor.

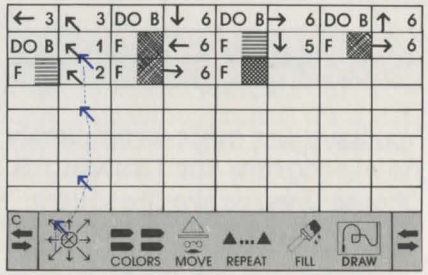


Move **INS** up the screen and put it in the box that has the first **Fill** command (second box, second line). Press the button once and watch the **Fill** command and all the commands that follow jump over into the boxes to the right.



To put a new command in this empty box:

Choose the ↖ arrow command and move it up into the empty box. Press the button once and the ↖ arrow will be **Inserted** in the empty box.



Move the ↖ arrow back to the menu and choose **Draw** to see what Drawing C looks like now.

The bug is gone! By adding, or "**Inserting**," the ↖ command, you moved Mr. Pixel to a new spot which allowed him to fill in all the squares. This is an example of only one kind of bug in your program and how you can fix it.

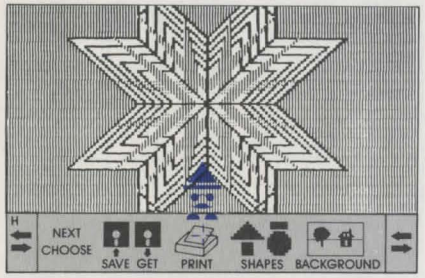
■

Note: Making these changes in Drawings B and C will in no way change Drawings B and C that are presaved on disk in the "Tutorial" file unless you **Save** these new drawings under the name "Tutorial," in which case you replace the current "Tutorial" file with this file.

Delete

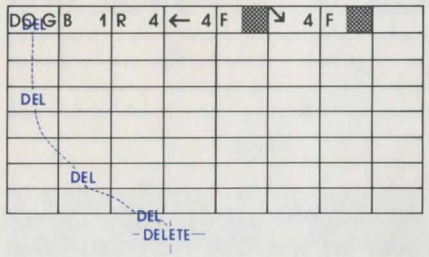
THE DELETE COMMAND LETS YOU ERASE, OR DELETE, AN INSTRUCTION TO CHANGE YOUR PROGRAM. To change one of the programs in the "Tutorial" file using **Delete**, follow these steps:

Choose Drawing H from the "Tutorial" file.

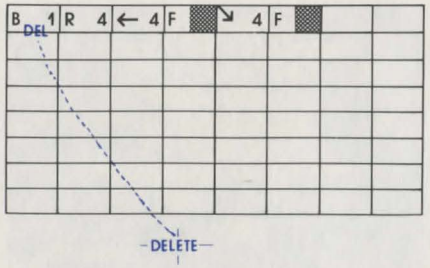


Choose **List.**

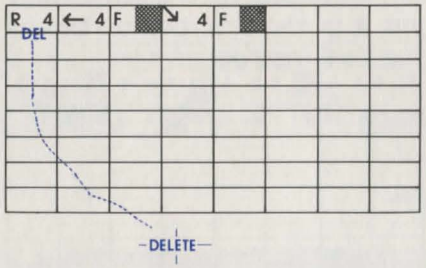
Choose **Delete** and watch the letters **DEL** appear under the cursor. Move **DEL** up the screen and put it in the first box on top of the **Do G** instruction.



Press the button and watch **Do G** disappear and all the instructions jump over one box to the left.



Keep **DEL** in the first box, press the button, and the **Bigger 1** instruction disappears.



Again, everything else moves over to the left. You can keep deleting each instruction until the whole list is empty. This completely erases Drawing H.

■

Note: You can also use the **Erase** command to erase something in **List** but this leaves an empty box and the other instructions do not move over.

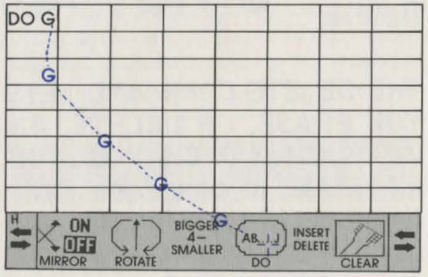
Creating a Program from LIST

You can also create, or program, a drawing entirely from **List**. To make Drawing H that you just erased above, follow these steps:

If you are not in **List**, choose **List**.

Choose **Do**; from the selection of letters, choose G. The cursor disappears and is replaced by G.

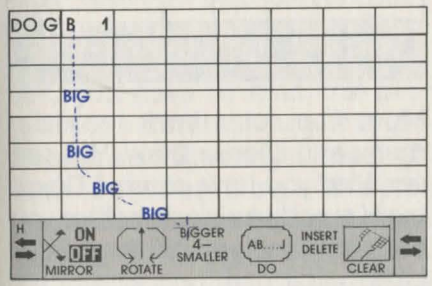
Move G up to the first box in **List** and then press the button. **Do G** appears in the first box.



Move G back down into the menu; it always becomes the cursor again when it returns to the menu.

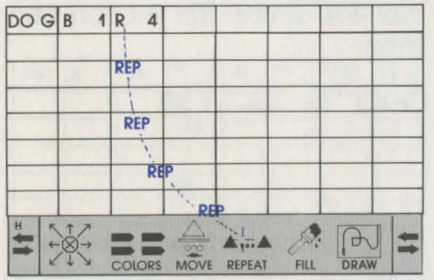
Move the cursor to the **Bigger** command and choose **Bigger. Big** appears in place of the cursor.

Move **Big** into **List** and put it in the second box. Press the button one time.



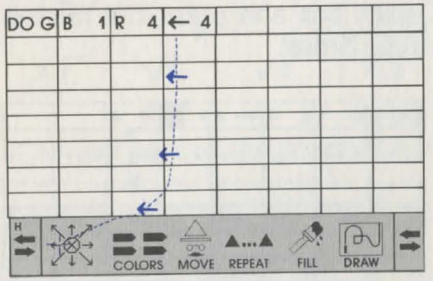
Following this same process, move **Big** back into the menu where it will become the cursor again, and choose **Repeat.**

Move **Rep** into the third box and press the button four times.



Move **Rep** down into the menu and pick up the ← arrow.

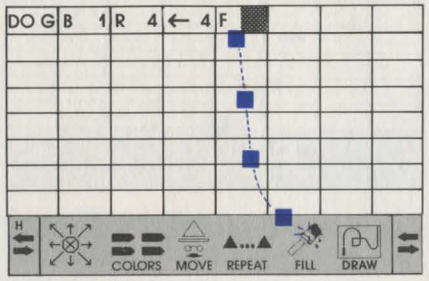
Move the ← arrow up into the fourth box and press the button four times.



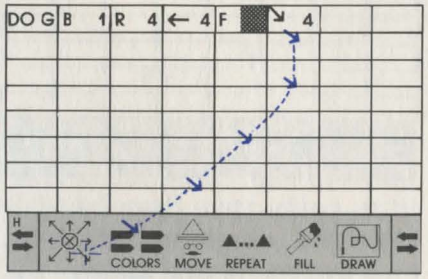
Move the ← arrow back down into the menu and choose **Fill**; select a color by pressing the button.

Move the color up into the fifth

box and press the button one time.

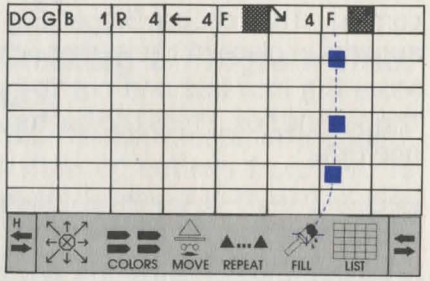


Move the color back into the menu and choose the ↘ arrow. Move the ↘ arrow up into the sixth box and press the button four times.



Finally, move the ↘ arrow back into the menu and choose **Fill** again.

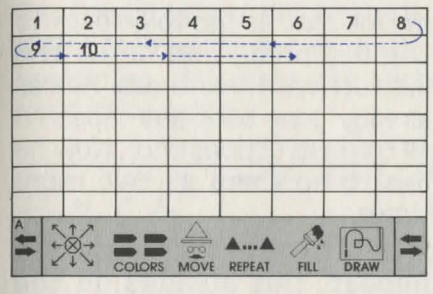
Choose a color and move it into the seventh box; press the button one time.



Move the color back into the menu and choose **Draw**. You can see that you have created Drawing H exactly as it was before you erased it, and you did it all from **List**.

Reading and Understanding Repeat and Do

The **List** command in the previous section, **Drawing Commands**, discussed how to read a program from the memory list. You always read the program from left to right and top to bottom just as you read a book.

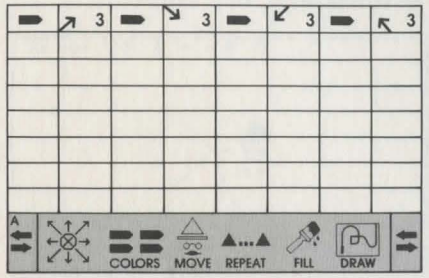


But there is one difference. Whenever you see a **Repeat (R)** or a **Do** command in the program list, you have to read the program in a different way. If it is a **Repeat** instruction, you must go back to the beginning of the program, to the first box, and start reading all over again. If you see a **Do** instruction, you have to go back and read the program that is being "Done."

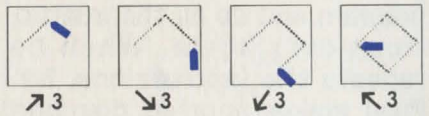
Repeat

To understand how **Repeat** works, review a program, Drawing A, that you did in the **Drawing Commands** section of this manual. Follow these steps:

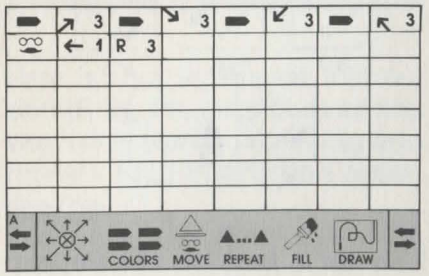
The first part of the program is:



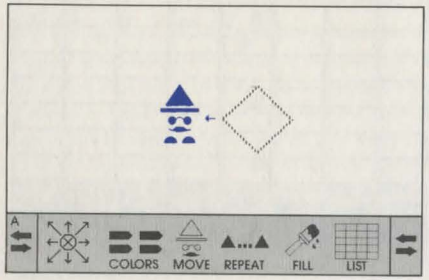
Mr. Pixel follows each instruction to draw:



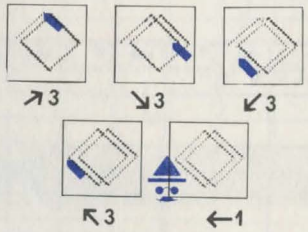
The next part of the program is:



The first two boxes tell Mr. Pixel to move over one space.

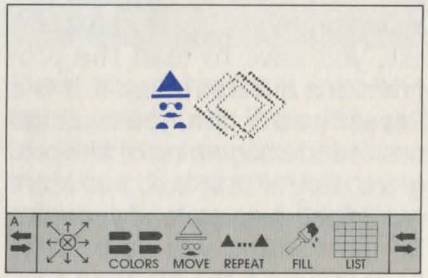


Then, **Repeat 3 (R 3)** tells him to go back to the beginning of the program and do all the instructions over again. When he repeats the instructions, Mr. Pixel makes another diamond and moves over one space:

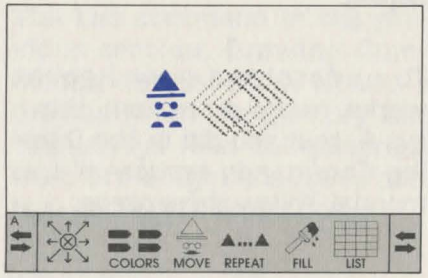


Now he is back to the **Repeat** instruction. Remember that **Repeat** has a 3 next to it. That means that he has to go back to the beginning and do all the instructions three times. He has already gone back and repeated all the instructions once. Now he has to do them all two more times.

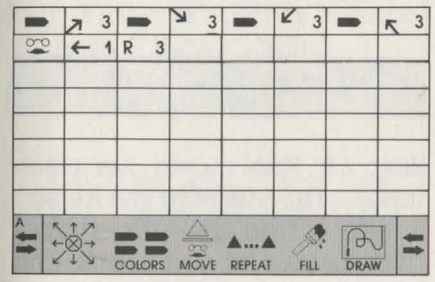
When he does the second **Repeat**, this appears on the screen.



He does the third **Repeat**. Now there are four diamonds.

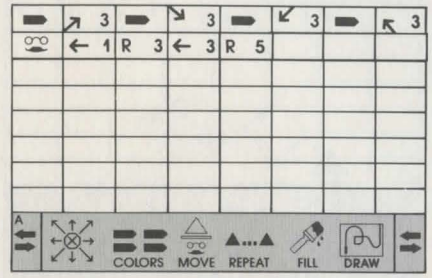


The **Repeat** instruction works by telling Mr. Pixel to go back to the beginning and carry out each instruction again.

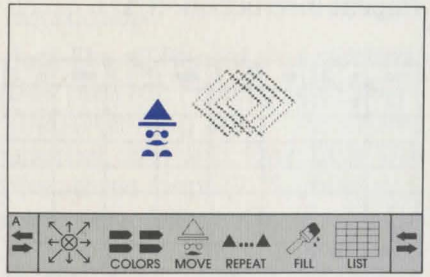


This is called a **Repeat** loop because Mr. Pixel "loops" back and goes through all the instructions. The number next to the **Repeat** instruction is called the loop counter. That's because it keeps track of, or counts, how many loops Mr. Pixel has done and how many he has left to do. Each time Mr. Pixel comes back to the **Repeat** instruction, the loop counter goes down by one number. You cannot see the loop counter counting down but Mr. Pixel can, and it tells him how many loops he has to do.

The next part of the program is:

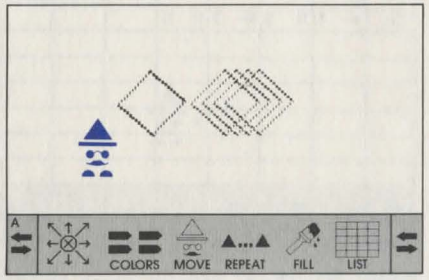


First Mr. Pixel moves over three spaces.

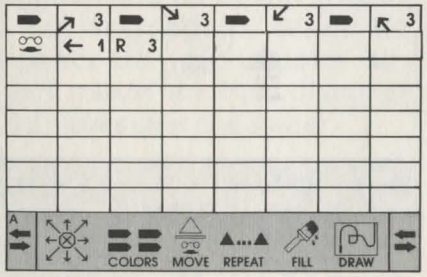


Here is another **Repeat** instruction **(R 5)**. Mr. Pixel goes all the way back to the beginning and repeats each instruction again, like this:

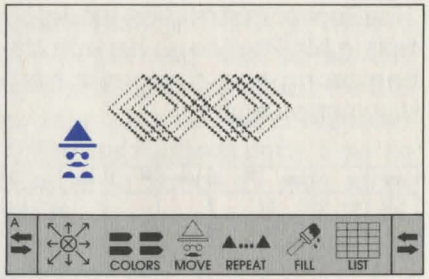
First he draws another diamond and moves over one space.



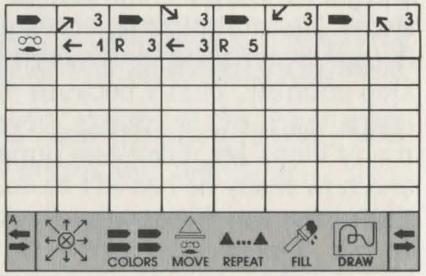
Next he comes to the first **Repeat** instruction, **R 3.**



This tells Mr. Pixel to draw three more diamonds. Now there is another set of four diamonds.

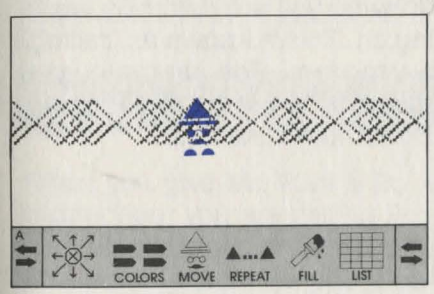


Next, Mr. Pixel moves over three spaces. Then he sees the **Repeat 5** instruction and remembers that he has to go back to the beginning and **Repeat** everything that he has just done four more times.



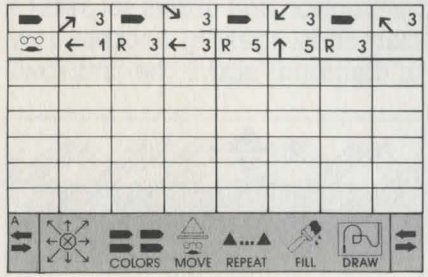
Each time Mr. Pixel reaches the **Repeat 3** instruction, he draws another set of four diamonds.

When he finishes all five **Repeats (R 5)**, there are six sets of diamonds in a row on the screen, with four diamonds in each set. (Mr. Pixel already drew one set of four diamonds before he was given the **R 5** instruction.)



The hidden loop counter has counted down from five loops to zero, telling Mr. Pixel that he can go on to the next instruction.

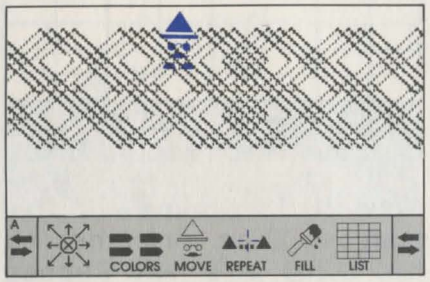
The last part of program A is:



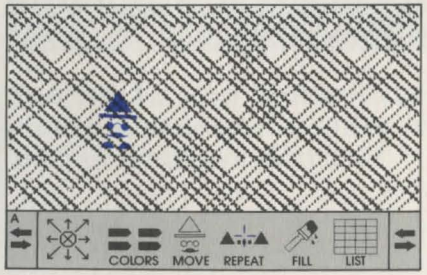
Now Mr. Pixel moves up five spaces. Then he comes to his third and last **Repeat** instruction.

Just like all **Repeat** instructions, this tells Mr. Pixel to go back to the beginning again. He draws another diamond, then does the first three loops **(R 3)**, making a new set of four diamonds. He moves over three spaces and

goes to the second **Repeat** instruction and draws six sets of diamonds, making another row of diamonds above the first row.

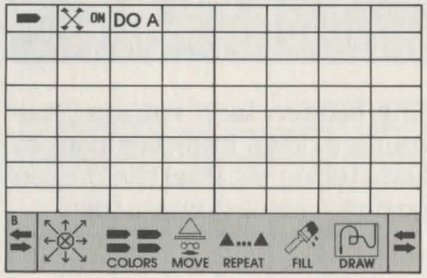


Now he is back at the third **Repeat** instruction and starts all over again from the beginning. This continues until the loop counter becomes zero. The whole screen is now filled with diamonds.

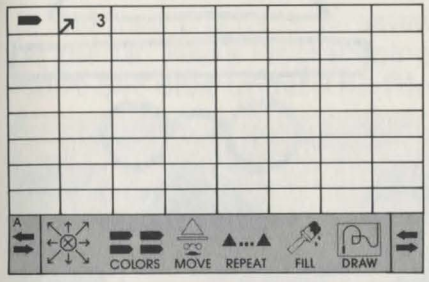


Do

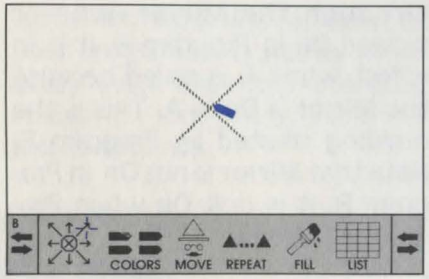
This section explains in more detail how the **Do** command works. Whenever Mr. Pixel sees a **Do** instruction, he draws a program that you have already made and puts it inside of the drawing you are currently working on. This is known as "calling" a program. For example, you might be working on a Program B that looks like this:



Your Program A might look like this:

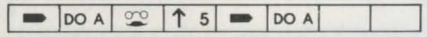


When you give Mr. Pixel a **Do A** instruction, you are calling Program A into Program B. Program A is known as the program "called." In Program B, Mr. Pixel turns **On** the **Mirror** and then calls Program A. Program A begins with all the settings that were on in Program B before you called A. Therefore, when he draws A, **Mirror** is turned **On**, because it was already on before you gave him the **Do A** instruction. Drawing B looks like this.

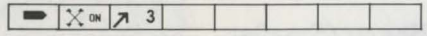


This example shows the reverse situation.

B

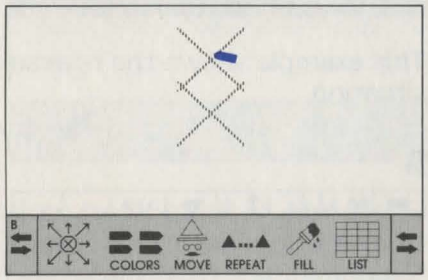


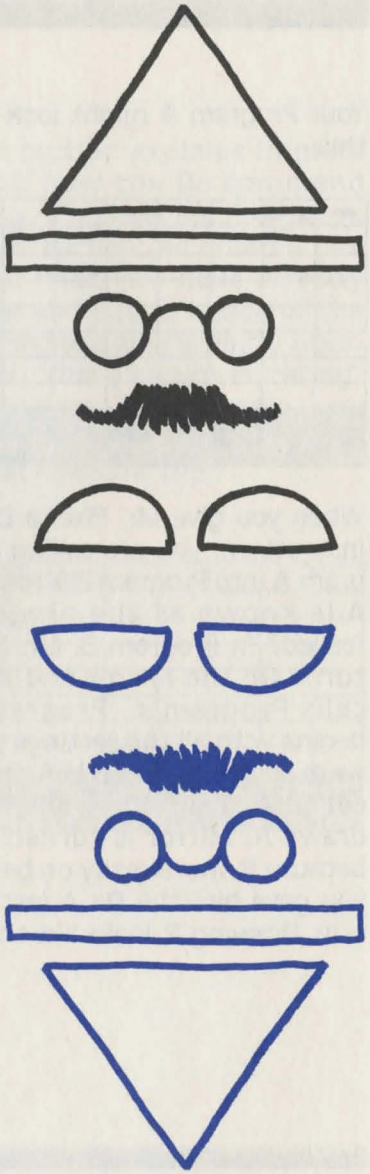
A



In Program B, the **Mirror** command has not been turned **On**. It is turned **On** in Program A, however. When Program B tells Mr. Pixel to **Do A**, A is drawn with the **Mirror On** only because the **Mirror** is **On** within Program A itself. When the **Mirror** is **On** within the called program, it will remain **On** whenever it is **Done** regardless of the **Mirror** setting of the calling program. In other words,

although the **Mirror** is never turned **On** in Program B, it is in effect when A is called because the **Mirror** is **On** in A. This is the drawing created by Program B. Note that **Mirror** is not **On** in Program B; it is *only* **On** when Program A is **Done**.





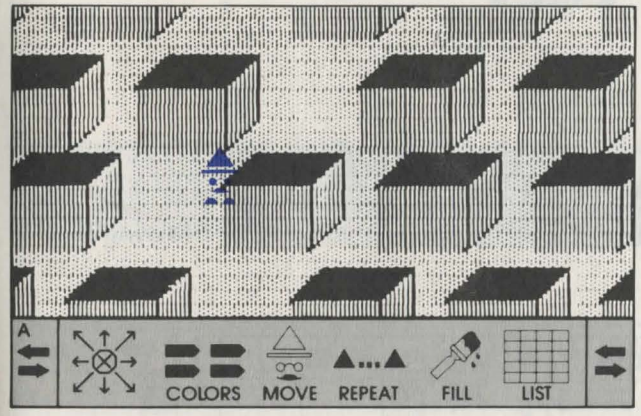
Bigger/Smaller

Note: In the **List** mode, the number in a **Bigger/Smaller** command indicates how many units bigger or smaller a line or a shape will be, relative to its current size. (The original default value is 4; the biggest value is 12, the smallest is 1.)

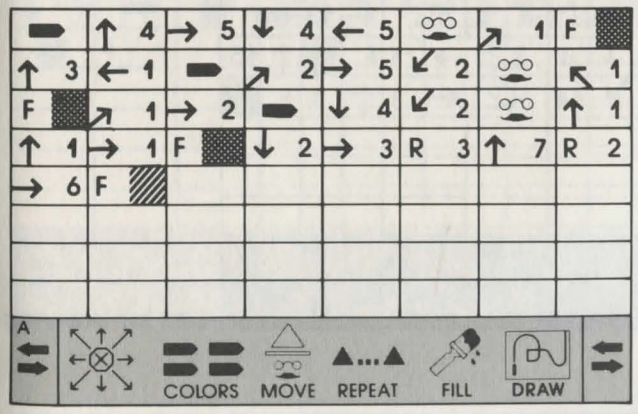
In the **Draw** mode, the number between **Bigger** and **Smaller** reflects actual size of a line or a shape.

Drawing Ideas

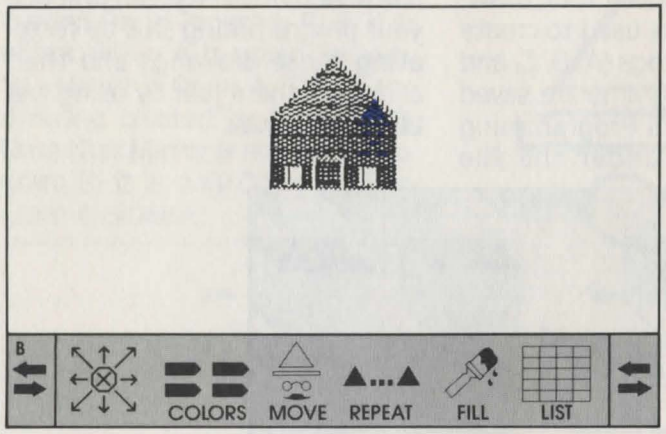
This section includes four drawings and the **Lists** used to create them. The drawings (A, B, C, and D) and their programs are saved on the Mr. Pixel's Programming Paint Set disk under the file name "Activities." You can practice your programming skill by recreating these drawings and then changing them just by using the **List** commands.



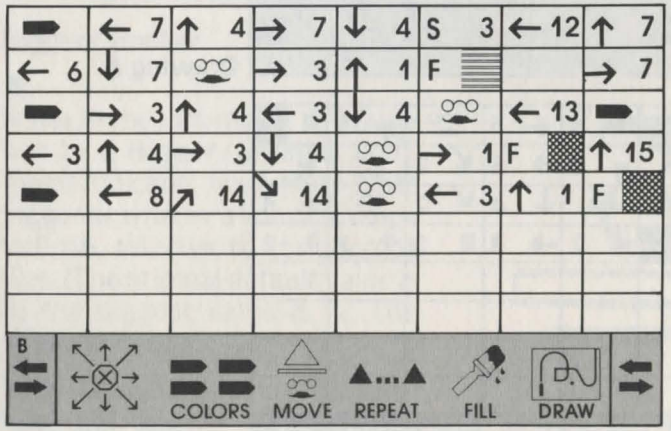
Drawing A



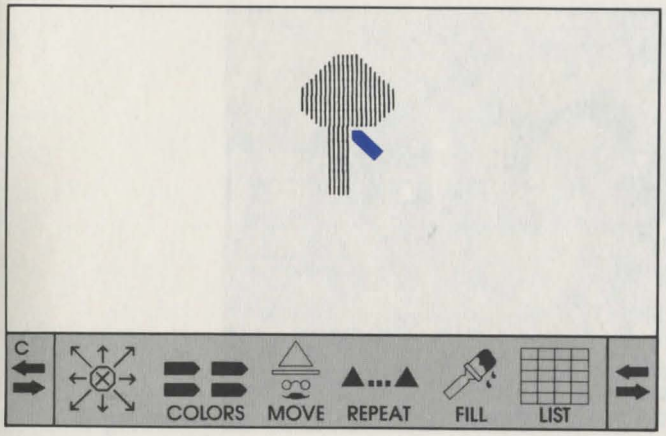
List for Drawing A



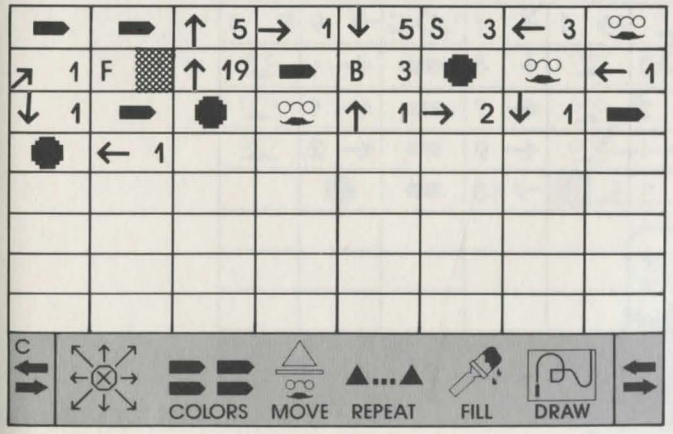
Drawing B



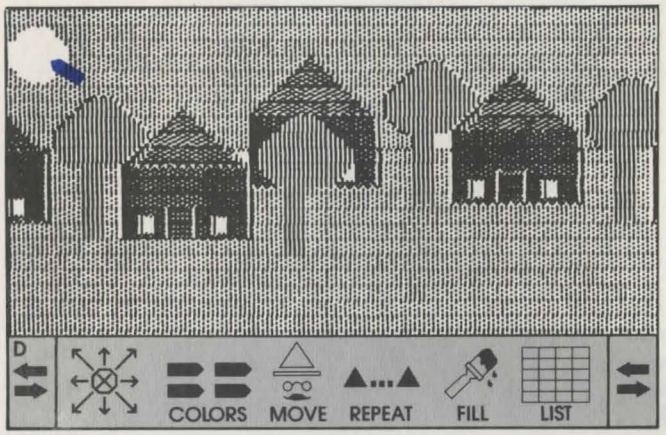
List for Drawing B



Drawing C



List for Drawing C

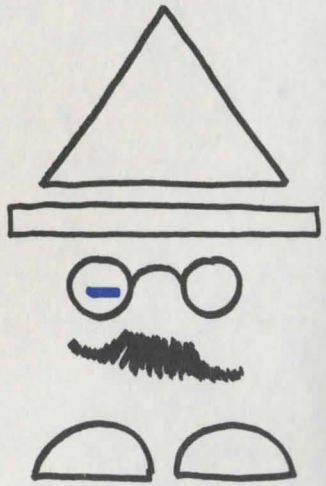


Drawing D

■	DO B	∞	→ 1	↘ 1	DO C	→ 9	R 3
↓ 6	■	→ 40	∞	↓ 8	■	← 1	∞
← 1	■	← 2	∞	← 7	■	← 1	∞
← 9	■	← 1	∞	← 9	■	← 2	∞
↓ 4	F ▒	↑ 8	F ▒	→ 10	■	●	

D COLORS MOVE REPEAT FILL DRAW

List for Drawing D



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