

DELTA DRAWING™



SPINNAKER™
We make learning fun.

Learn computer programming concepts while creating your own colorful pictures.

Ages 4-14

DELTA DRAWING™



Delta Drawing is the perfect game for kids of all ages—even if they've never used a computer before.

Because Delta Drawing lets children have fun drawing and coloring, and at the same time, learn about computer programming.

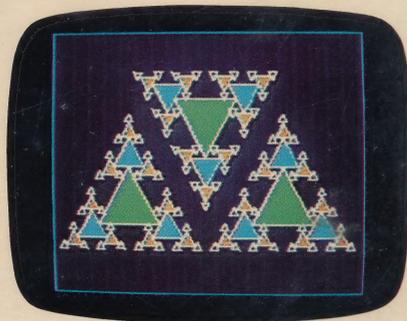
With Delta Drawing, your child first creates a picture. As the picture is being drawn, the computer keeps track of every keystroke and

records it as a program in the text mode. Then, by touching a single key, the child can see the program that was written. As children progress, they can write their programs in the text mode and then switch to the graphics mode to see their picture. This helps children learn procedural thinking—the kind of step-by-step approach needed to solve problems with computers.

For first time users, Delta Drawing comes with easy-to-follow fast-start cards. In fact, Delta Drawing is easier to use than the turtle graphics portion of LOGO. For more advanced users, a complete instruction manual is enclosed.

Drawings can be saved, and printed, if you have a printer with graphics capability.

Computer Access Corp., creators of Delta Drawing, specializes in educational software that makes the computer understandable to people of all ages.



Educational Value: Delta Drawing helps children develop their creativity, learn to write computer programs, and build an understanding of procedural thinking.

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DELTA DRAWING COMMAND SUMMARY

DRAWING

	DRAW D	MOVE M	LEFT TURN L	RIGHT TURN R	U TURN U
	HALF DRAW CTRL D	HALF MOVE CTRL M	HALF LEFT TURN CTRL L	HALF RIGHT TURN CTRL R	RANDOM SHIFT ?

EDITING

ERASE E	ERASE PICTURE CTRL E	OPEN PROGRAM CTRL O	ZAP CTRL Z
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PROGRAM

1	2	3	4	5	6	7	8	9
---	---	---	---	---	---	---	---	---

DISPLAY

GRAPHICS G	TEXT T	WRAP W	BOUNCE B	VOICE V	HIDE H	CENTER X	REVERSE COLOR CTRL C
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COLOR

SELECT COLOR C	FILL SHAPE CTRL F	ADD BACKGROUND SHIFT +
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REPEAT

REPEAT REPT	AUTOMATIC A	SELECTED AUTOMATIC CTRL A
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SYSTEM

ESCAPE ESC	DISK SYSTEM CTRL S	RESET RESET
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PRINTING

PRINT P	LARGE PICTURE PRINT CTRL P
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LOADING DELTA DRAWING

DELTA DRAWING is designed for use with the Apple® II or Apple® II Plus computer with 48K memory, one disk drive, and DOS 3.3. The program requires an Apple computer disk controller card, which must be installed in slot #6. DELTA DRAWING can also be used with the Apple® III in emulation mode. The DELTA DRAWING program will operate with a black and white or color monitor, and with or without a printer.

This version of DELTA DRAWING (2.0) is written in MicroMotion FORTH-79, version 2. The instructions for loading DELTA DRAWING are written for the Apple® II Plus. If you do not have an Apple® II Plus, refer to your Apple user's manual for instructions on loading a program into disk drive #1.

Loading Procedure

1. Turn on the peripherals: monitor, fan, printer – whichever peripherals you usually use.
2. Insert the DELTA DRAWING program disk into disk drive #1 and leave the disk drive door open.
3. Turn the computer on.
4. Shut the disk drive door.

DELTA DRAWING is loaded into your computer when the DELTA DRAWING program title and publication data are displayed on your monitor. It is a good practice to remove the DELTA DRAWING program disk immediately after loading and put it in a safe place.

If your computer is already on when you decide to load DELTA DRAWING, you should first make sure the disk drive is empty. Then turn the computer off for at least 30 seconds. Follow the above Loading Procedure beginning with step two.

To end a DELTA DRAWING session, make sure the disk drive is empty before you turn off the computer.

DELTA DRAWING FAST START CARDS

DRAWING A SQUARE

To draw a square

Press **[D]** Four Times

Press **[R]** Three Times

Press **[D]** Four Times

Press **[R]** Three Times

Press **[D]** Four Times

Press **[R]** Three Times

Press **[D]** Five Times

OOPS!

Press **[E]**

To erase the square

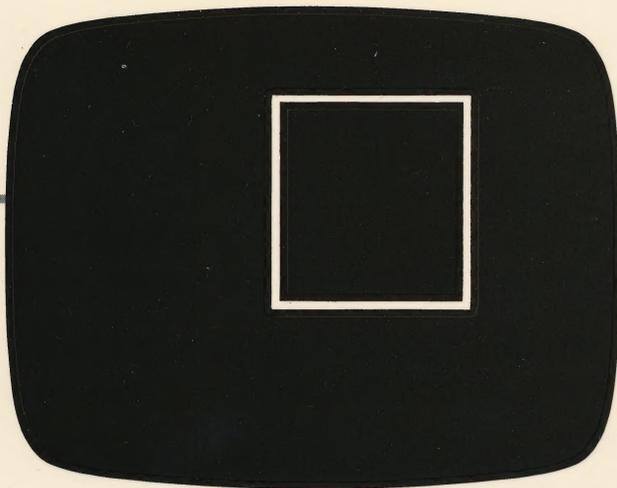
Press **[E]** Twenty-five Times

How to read a command list

A list of commands can be written in shorthand. You read the shorthand version of a command list from left to right and down the page, in the same way that you are reading the words in this paragraph. The following is the shorthand version of the list of commands you used to draw a square:

4**[D]** ... 3**[R]** ... 4**[D]** ... 3**[R]** ... 4**[D]**

3**[R]** ... 4**[D]**



4**[D]** means Press **[D]** four times. 3**[R]** means Press **[R]** three times, and so forth (ERASE is not included in a command list). The next few DELTA DRAWING CARDS will use this shorthand for writing command lists.

New Delta Drawing Commands

Command	Key(s)
DRAW	[D]
RIGHT TURN	[R]
ERASE	[E]

1

See Basic Drawing, page 13, DELTA DRAWING USER'S GUIDE.

DELTA DRAWING FAST START CARDS

DRAWING A CIRCLE

To draw a circle

D ... **L** ... **D** ... **L** ... **D**
L ... **D** ... **L** ... **D** ... **L**
D ... **L** ... **D** ... **L** ... **D**
L ... **D** ... **L** ... **D** ... **L**
D ... **L** ... **D** ... **L**

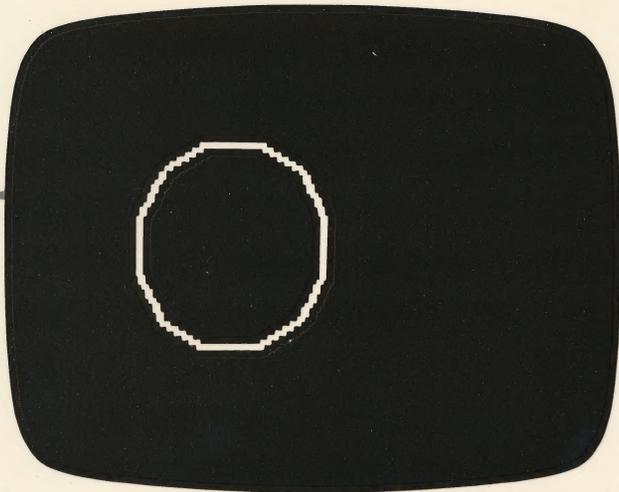
To erase the circle

Press **CTRL** **E***

New Delta Drawing Commands

Command	Key(s)
LEFT TURN	L
ERASE PICTURE	CTRL E *

*Press CTRL and hold it down, then press E



See Basic Drawing, page 13, DELTA
DRAWING USER'S GUIDE.

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DELTA DRAWING FAST START CARDS

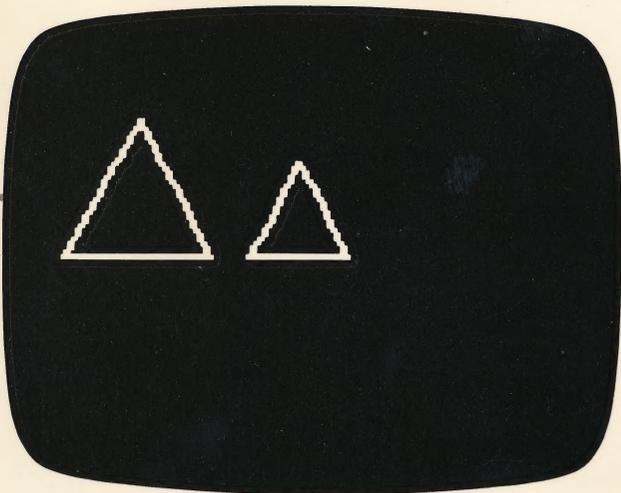
DRAWING TRIANGLES

To draw triangles

L ... 2**D** ... 4**L** ... 2**D**
... 4**L**
2**D** ... **U** ... 4**M** ... 2**R**
... 3**D**
4**L** ... 3**D** ... 4**L** ... 3**D**

To erase the triangles

Press **CTRL** **E**

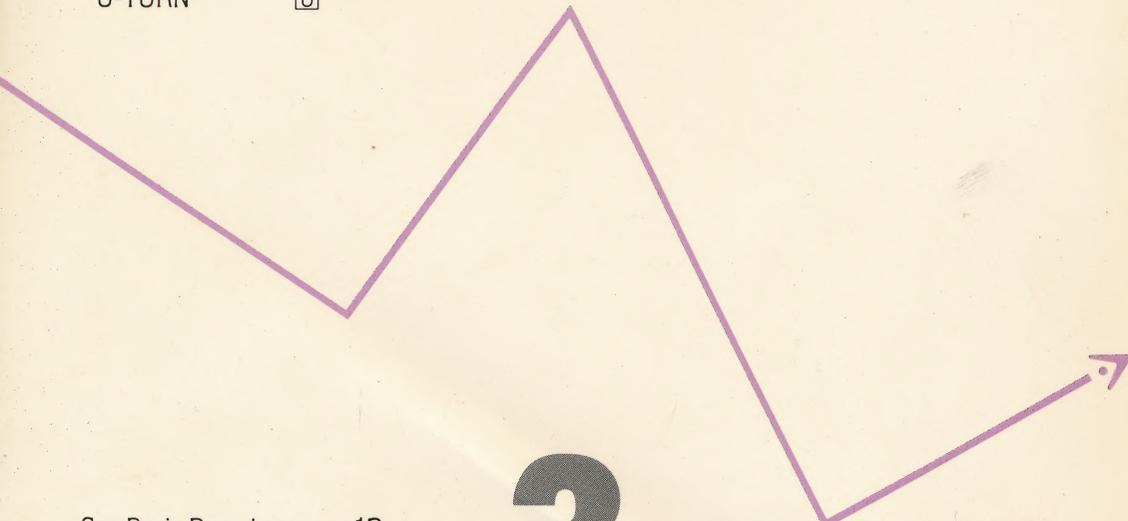


New Delta Drawing Commands

Command	Key(s)
MOVE	M
U-TURN	U

See Basic Drawing, page 13,
DELTA DRAWING USER'S GUIDE.

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DELTA DRAWING FAST START CARDS

CREATING A DRAWING PROGRAM

To create a square program

3[D] ... 3[R] ... 1

4[1] ... 2

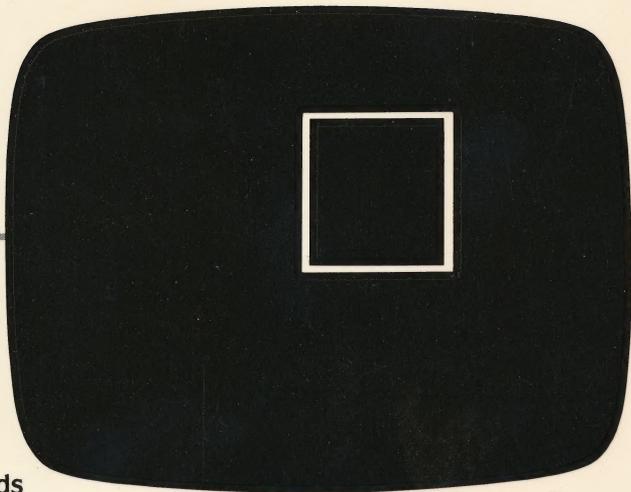
2

To erase the square program

Press [CTRL] [Z]

New Delta Drawing Commands

Command	Key(s)
FIRST PROGRAM	1
SECOND PROGRAM	2
ZAP	[CTRL] [Z]



See Drawing Programs, page 16.
DELTA DRAWING USER'S GUIDE.

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DELTA DRAWING FAST START CARDS

REPEATING A DRAWING PROGRAM

To create a circle program

`D` ... `R` ... `1`
12 `1` ... `2`
`2` ... `R` ... `3`

To repeat program #3

Press `A`

To stop repeating program #3

Press `ESC`

To make the drawing a program

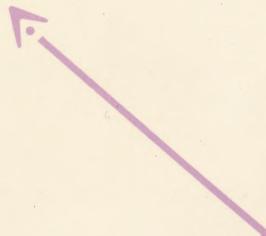
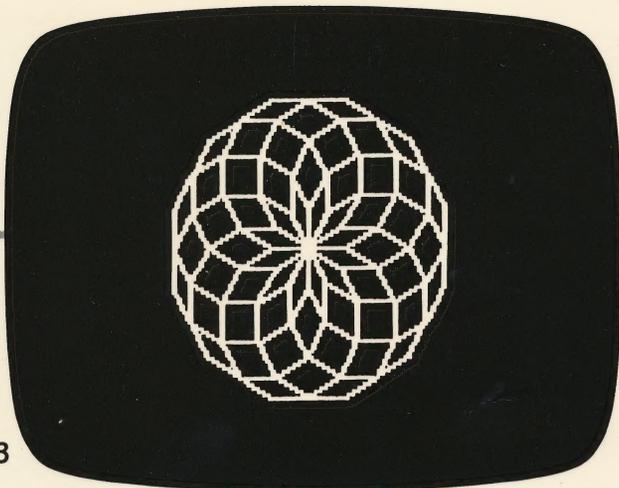
Press `4`

To erase all of your drawing
programs

Press `CTRL` `Z`

New Delta Drawing Commands

Command	Key(s)
THIRD PROGRAM	<code>3</code>
FOURTH PROGRAM	<code>4</code>
AUTOMATIC	<code>A</code>
ESCAPE	<code>ESC</code>



See Drawing Programs, page 16.
DELTA DRAWING USER'S GUIDE.

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DELTA DRAWING FAST START CARDS

EDITING A DRAWING PROGRAM

To create a square program

D ... **3R** ... **1**
41 ... **2**

Edit to make a bigger square

Press **CTRL O***

Press **1**

Press **E** Three Times

Press **D** Six Times

Press **R** Three Times

Press **1**

Press **G**

Press **2**

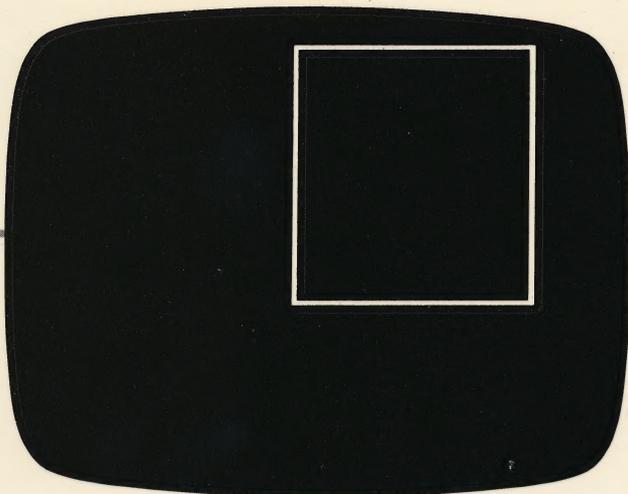
To erase all of your drawing
programs

Press **CTRL Z**

New Delta Drawing Commands

Command	Key(s)
OPEN PROGRAM	CTRL O *

*OPEN PROGRAM requires that you press a number key to select the program to be opened.



See Drawing Programs, page 16.
DELTA DRAWING USER'S GUIDE.

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DELTA DRAWING FAST START CARDS

DRAWING WITH A COLORED LINE

To create a triangle side
program

3[R] ... 8[D] ... [R] ... [I]

To draw a multi-colored
triangle

[C]2 ... [I] ... [C]3 ... [I]

... [C]4

[I] ... [C]1 ... [2]

Press [2]

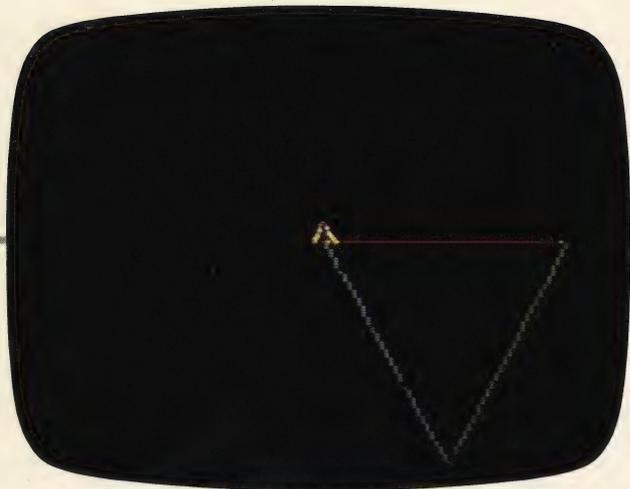
To erase all of your drawing
programs

Press [CTRL] [Z]

New Delta Drawing Commands-

Command	Key(s)
SELECT COLOR	[C]-*

*SELECT COLOR requires that you press a number
key to select a color from a color menu.



See Drawing with Color, page 24.
DELTA DRAWING USER'S GUIDE.

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DELTA DRAWING FAST START CARDS

FILLING A SHAPE WITH COLOR

To create a circle program

`D` ... `R` ... `1`
12`1` ... `2`

To color the shape violet

Press `2`

Press `R`

Press `M`

Press `C`

Press `5`

Press `CTRL` `F`

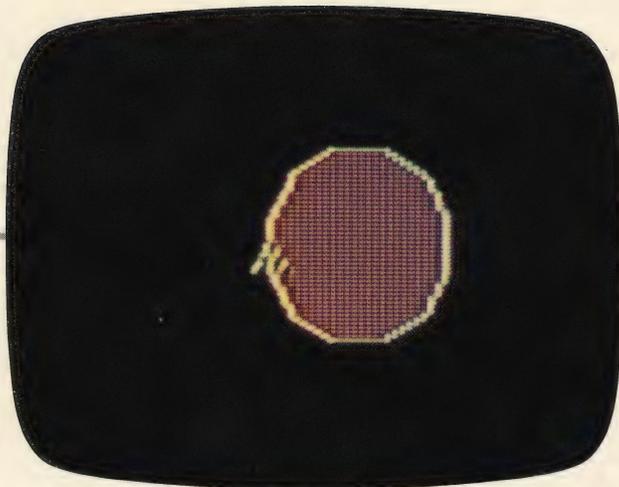
Press `3`

To erase all of your drawing
programs

Press `CTRL` `Z`

New Delta Drawing Commands

Command	Key(s)
FILL SHAPE	<code>CTRL</code> <code>F</code>



See Drawing with Color, page 24,
DELTA DRAWING USER'S GUIDE.

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DELTA DRAWING FAST START CARDS

DRAWING A GEOMETRIC FIGURE

You can produce a wide variety of complex geometric figures with DELTA DRAWING by repeating simple drawing programs.

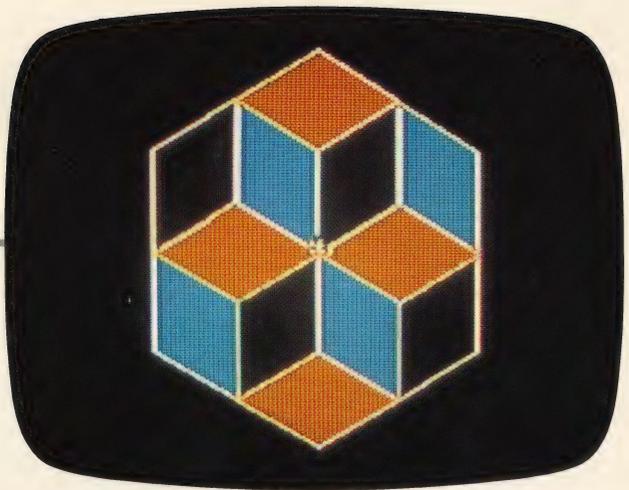
To draw the cubes

```
1< ... 3D .. 2R ..... >1  
2< ... 6<1> .. 2L ..... >2  
3< ... 6<2> ..... >3
```

To color the cubes

```
4< ... 3M .. ^M ..... >4  
5< ... U .. 3M .. ^M .. 3L ..  
... >5  
6< ... <3> .. <4> .. C:2 .. ^F ..  
<5> .. <4> .. ^F .. <5> .. <4> ..  
^F .. <5> .. <4> .. ^F .. <5> ..  
2R .. C:4 .. <4> .. ^F .. <5> ..  
<4> .. ^F .. <5> .. <4> .. ^F ..  
<5> .. <4> .. ^F .. <5> ..... >6
```

**M is the text abbreviation for CTRL M, ^F is the text abbreviation for CTRL F



For further information on reading these command lists, see Text Display, Page 48, DELTA DRAWING USER'S GUIDE.

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DELTA DRAWING FAST START CARDS

DRAWING A HOUSE

With a box of crayons and a pad of paper a child might draw a picture like the one on this DELTA DRAWING CARD. Drawing this same picture with a computer, however, requires some new ways of thinking about drawing. The following command lists describe one way to draw the picture. You may want to try a different way. There are, in fact, many different ways to draw this picture.

To draw a house

Walls and roof line Program

```
1< ... 5D ..... >1
```

Windows and door Program

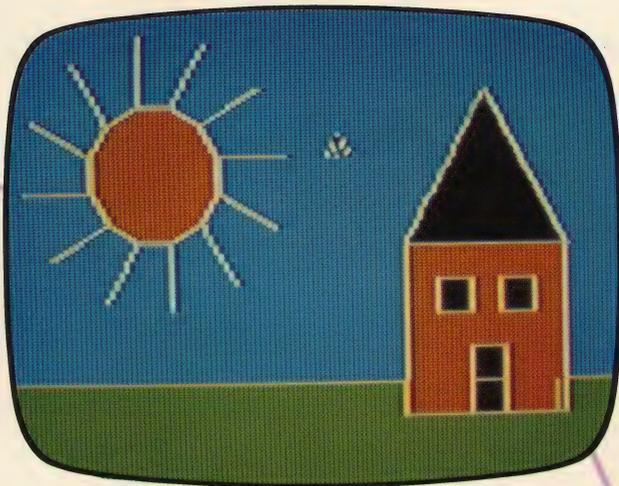
```
2< ... D .. 3R .. D ..  
3R .. D .. 3R .. D ..... >2
```

The House Program

```
3< ... 3R .. 2M .. 2L ..  
<1> .. 4R .. <1> .. R ..  
<1> .. 3R .. <1> .. 3R ..  
<1> .. 3R .. <1> .. 3R ..  
2M .. 3R .. 2M .. 3R ..  
<2> .. 2M .. 3R .. <2> ..  
3L .. 3M .. 3L .. M ..  
3L .. <2> .. 3R .. M ..  
<2> ..... >3
```

Sun Ray Program

```
4< ... 3L .. 2D ..  
U .. 2M ..
```



```
3L .. D .. R ..... >4
```

The Sun Program

```
5< ... 12<4> ..... >5
```

To compose the picture

```
6< ... <3> .. 2M .. 15D ..  
5M.. R .. 11M .. 2R .. <5> ..... >6
```

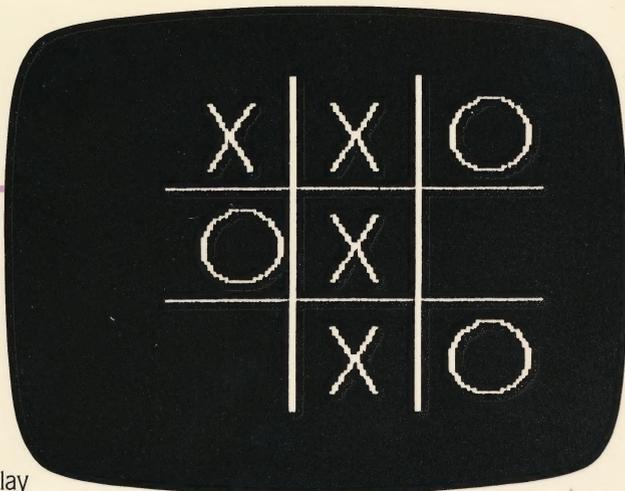
To color the picture

```
7< ... <6> .. 3R .. M .. C:2 ..  
^F .. 7M .. C:4 .. ^F .. 4M ..  
3R .. 4M .. C:2 .. ^F ..  
3M .. C:3 .. ^F ..... >7
```

DELTA DRAWING FAST START CARDS

CREATING A GAME

You can create your own games with DELTA DRAWING. This DELTA DRAWING CARD will show you how to construct the playing board, the markers, and the moves for a TIC-TAC-TOE game. You construct the elements of the game with eight drawing programs. Two people can then play the game. To clear the screen and play again, press CTRL E. A sample of play is illustrated in the picture and is shown as the ninth program.



To make the Tic-Tac-Toe board

```
1<...   U  .. 3D  ..  U  .. 3M  ..
   6D  .. 3R  .. 3M  .. 3R  .. 9D  ..
   U  .. 3M  .. 3L  ..... >1
```

```
2<...   2<1> .. 3M  .. 3R  ..  M  ..
 ^M  .. 3R  .. ^M  ..... >2
```

To make the X

```
3<...   3L  .. ^M  .. 4R  .. 2D  ..
   4L  ..  M  .. 4L  .. 2D  .. 4R  ..
   ^M  .. 3R  ..... >3
```

To make the O

```
4<...   2L  .. ^D  ..  R  .. ^D  ..
   R  .. ^D  ..  R  .. ^D  ..  R  ..
   ^D  ..  R  .. ^D  ..  R  .. ^D  ..
   R  .. ^D  ..  R  .. ^D  ..  R  ..
   ^D  ..  R  .. ^D  ..  R  .. ^D  ..
   3R  ..... >4
```

To move left one square

```
5<...   3L  .. 3M  ..
   3R  .. >5  ..
```

To move right one square

```
6<...   3R  .. 3M  .. 3L  ..... >6
```

To move up one square

```
7<...   3M  ..... >7
```

To move down one square

```
8<...   U  .. 3M  ..  U  ..... >8
```

A play of the game

```
9<...   <2> .. <7> .. <5> .. <3> ..
   <8> .. <4> .. <6> .. <3> .. <6> ..
   <8> .. <4> .. 2<7> .. <5> .. <3> ..
   <6> .. <4> .. 2<8> .. <5> .. <3> ..
   ... >9
```

Tic-Tac-Toe game elements

- 2 To make the Tic-Tac-Toe board
- 3 To make the X
- 4 To make the O
- 5 To move left one square
- 6 To move right one square
- 7 To move up one square
- 8 To move down one square

DELTA DRAWING FAST START CARDS

CREATING A RANDOM DRAWING

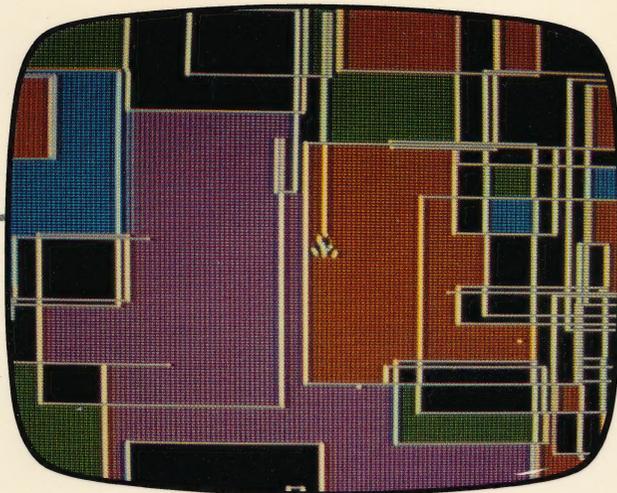
It is possible, but highly unlikely that you can reproduce the picture on this DELTA DRAWING CARD. It is a random drawing. It uses the RANDOM command in the first program. Every time the first program is repeated, the DELTA cursor draws a line segment that is one of 49 different lengths. The computer randomly selects which of the 49 possible line lengths to draw. The Automatic command (A) is then used to repeat the FIRST PROGRAM command. This produces the grid pattern on the screen. The RANDOM command is used again in the third program to randomize the number of degrees the DELTA cursor turns. And the third program is used in the fourth program to move the DELTA cursor to randomly selected areas of the drawing and fill them with color. The fifth program was used to create the picture on this card. Try it!

To create a random drawing

```
1< ... ? .. D .. 3R ..... >1
```

Press A

Stop it by pressing ESC when you like the drawing.



Press 2

To randomly color the drawing

```
3< ... ? .. R .. 10M..... >3  
4< ... C:2 .. <3> .. ^F .. C:3 ..  
  <3>.. ^F .. C:4 .. <3> .. ^F ..  
  C:5 .. <3> .. ^F ..... >4
```

Press 2

Press A

Stop it with ESC when you like the drawing.

Press 5

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For further information on the RANDOM command, see Random SHIFT ?, page 32, DELTA DRAWING USER'S GUIDE.

DELTA DRAWING FAST START CARDS

INITIALIZING A DELTA DRAWING FILE DISK

Warning: this procedure erases all information on the disk.

1. Turn the computer off.
2. Insert the Apple DOS 3.3 System Master disk into disk drive #1 and leave the disk drive door open.
3. Turn the computer on.
4. Shut the disk drive door.

When the disk drive stops whirring and the red IN USE light goes out remove the System Master disk.

5. Type NEW
Press RETURN
6. Type 100 REM DELTA DRAWING
FILE DISK
Press RETURN
7. Type 200 REM **your name**
Press RETURN
8. Type 300 REM **today's date**
Press RETURN
9. Type HOME
Press RETURN

10. Type LIST
Press RETURN

You should see a listing of what has been entered in steps 6-8. If other information appears as well, return to step 5 and repeat steps 5-10.

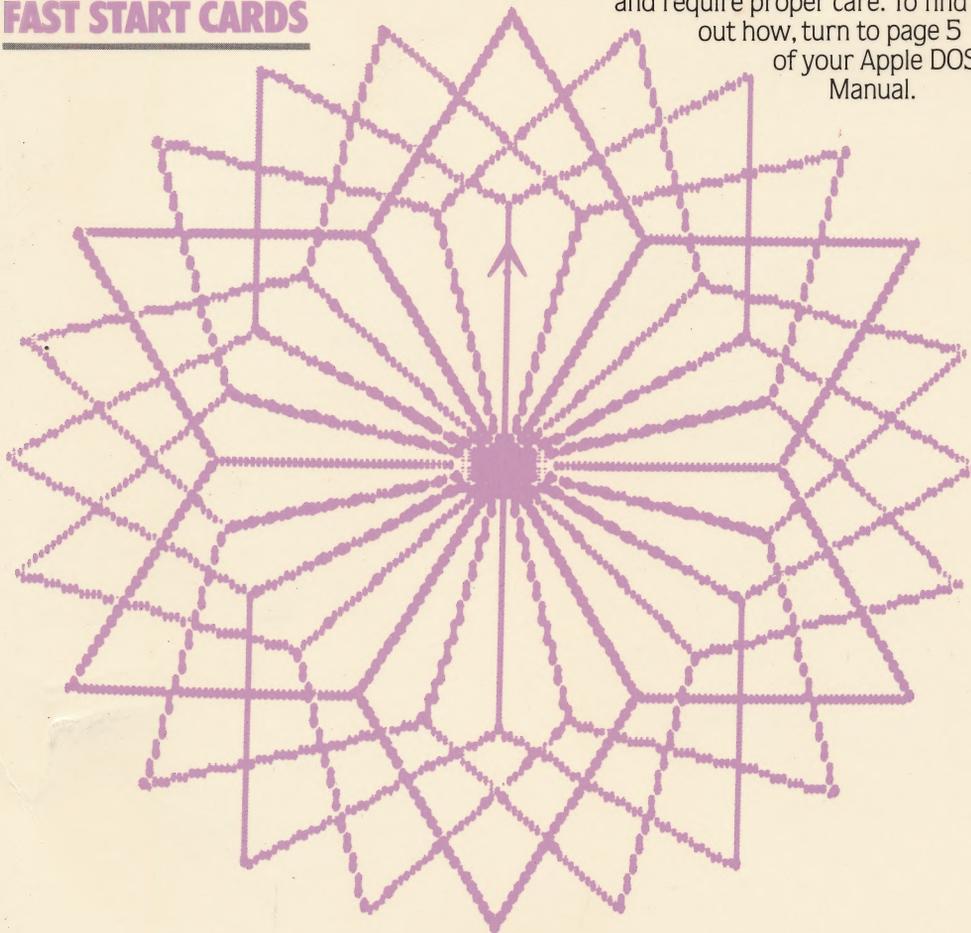
11. Insert the disk to be initialized into disk drive #1 and close the disk drive door.
12. Type INIT HELLO
Press RETURN

When the disk drive stops whirring and the red IN USE light goes out the disk has been initialized by Apple DOS 3.3. This disk can be used to store DELTA DRAWING files, LOGO files, or APPLESOFT files in any combination.

13. Remove the disk from the disk drive. Repeat steps 11-12 to create additional file disks. Label the file disks (write on the labels before sticking them onto the file disks).
14. Turn the computer off.

DELTA DRAWING FAST START CARDS

Program disks and file disks are valuable and require proper care. To find out how, turn to page 5 of your Apple DOS Manual.



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