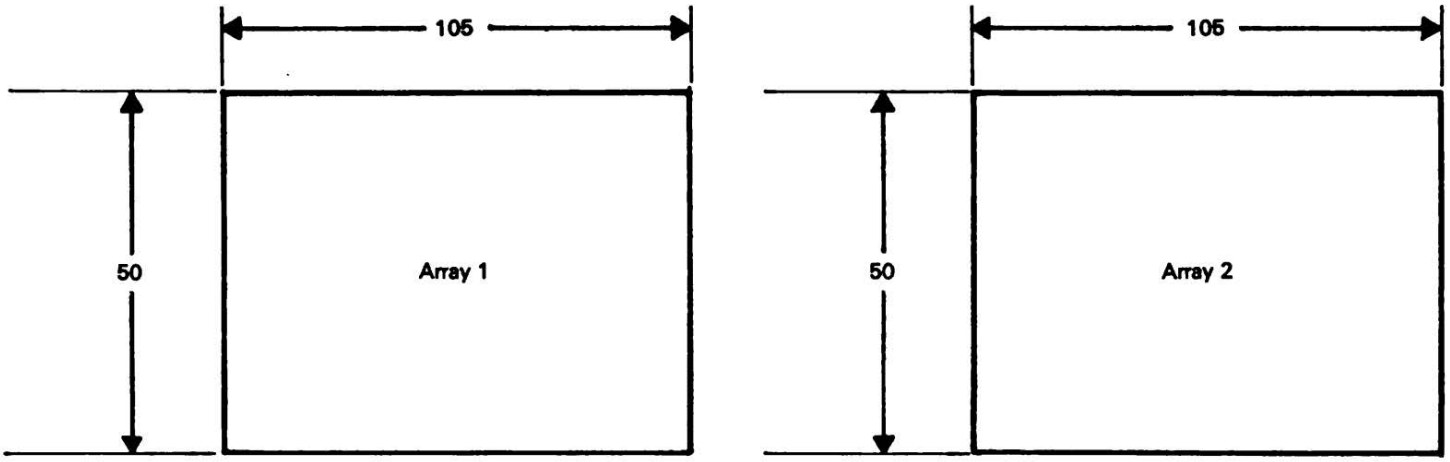
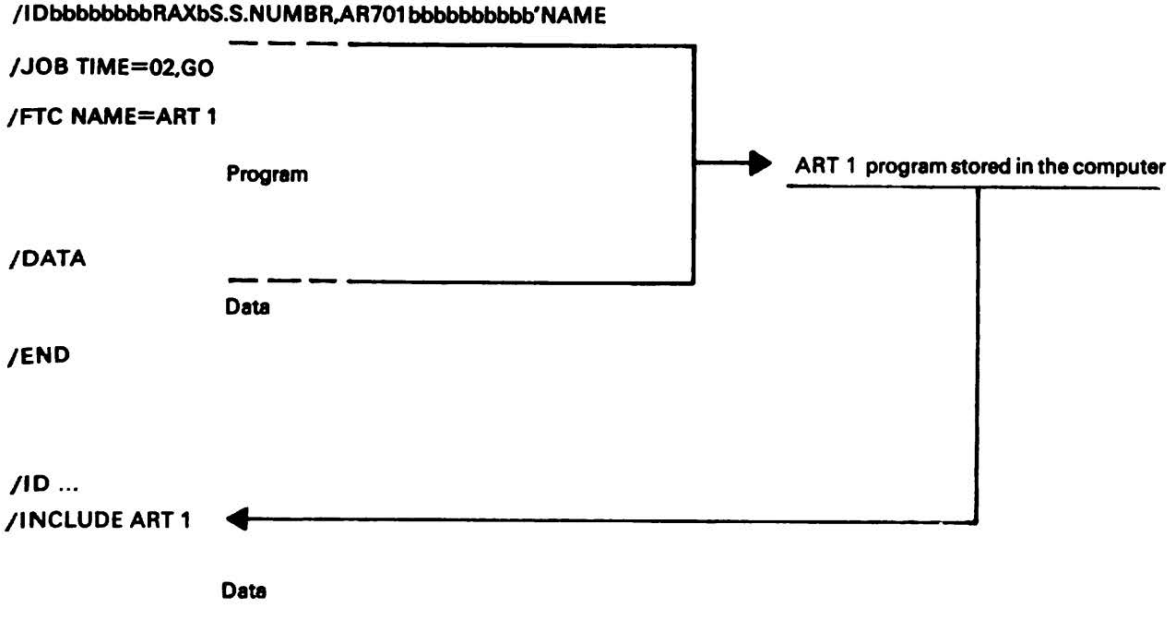
ART 1, briefly, is a computer program that permits a person to assemble designs in each of two arrays. Each array is 105 columns by 50 rows. The designs as finally assembled in the arrays are printed one over the other using the computer's off-line printer.



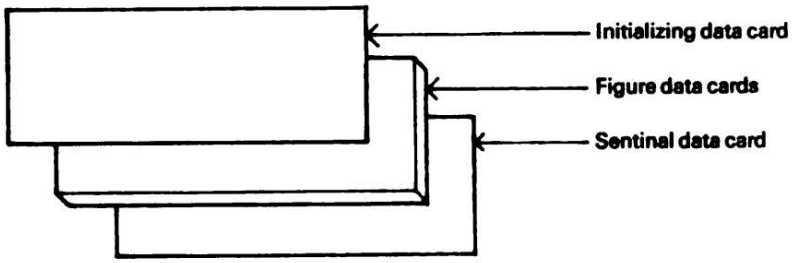
In general a program is made of three parts:

1. The program itself.
2. Data to which a program may refer.
3. Program management cards; they begin with a slash (/).



The data cards for ART 1

There are three types of data cards used with ART 1:



In general there will be several figure data cards used to make a drawing. Only one initializing data card is used and it is always first. Only one sentinal data card is used. It is always last, and it is used to 'tell' the ART 1 program that all other data cards have been read and that the computer drawing is to be printed.

The sentinal data card

columns

1–2	01 should be entered in columns 1 and 2.
3–80	All remaining columns should be left blank.

The figure data cards

The figure data cards will be described in detail on the following pages. In brief, however, each figure data card begins with a number to specify what type of figure is desired:

02 Line
03 Solid rectangle
04 Open rectangle
05 Triangle
06 Ellipse
07 Quadrants
08 Exponential

The initializing data card

The initializing data card is used to:

1. Set up the arrays in some desired initial state.
2. Print a title below the drawing.
3. Specify the number of drawings to be printed.

columns	type	purpose	example
1	symbol	The symbol goes into array 1	L
2	number, n	in every nth column	2
3	symbol	The symbol goes into array 2	/
4	number, m	in every mth column	5
5	number	The number of drawings to be printed, 1 to 6	1
6–10		Not used	
11–70	symbols	Reproduced exactly below the drawing as a title, etc.	(Make any 60 symbols)
71–80		Not used	

Notes a) If the columns 2, 4, or 5 are left blank then the ART 1 program will change the numbers to one (1). If the number in column 5 is greater than 6 the ART 1 program will change the number to 6.

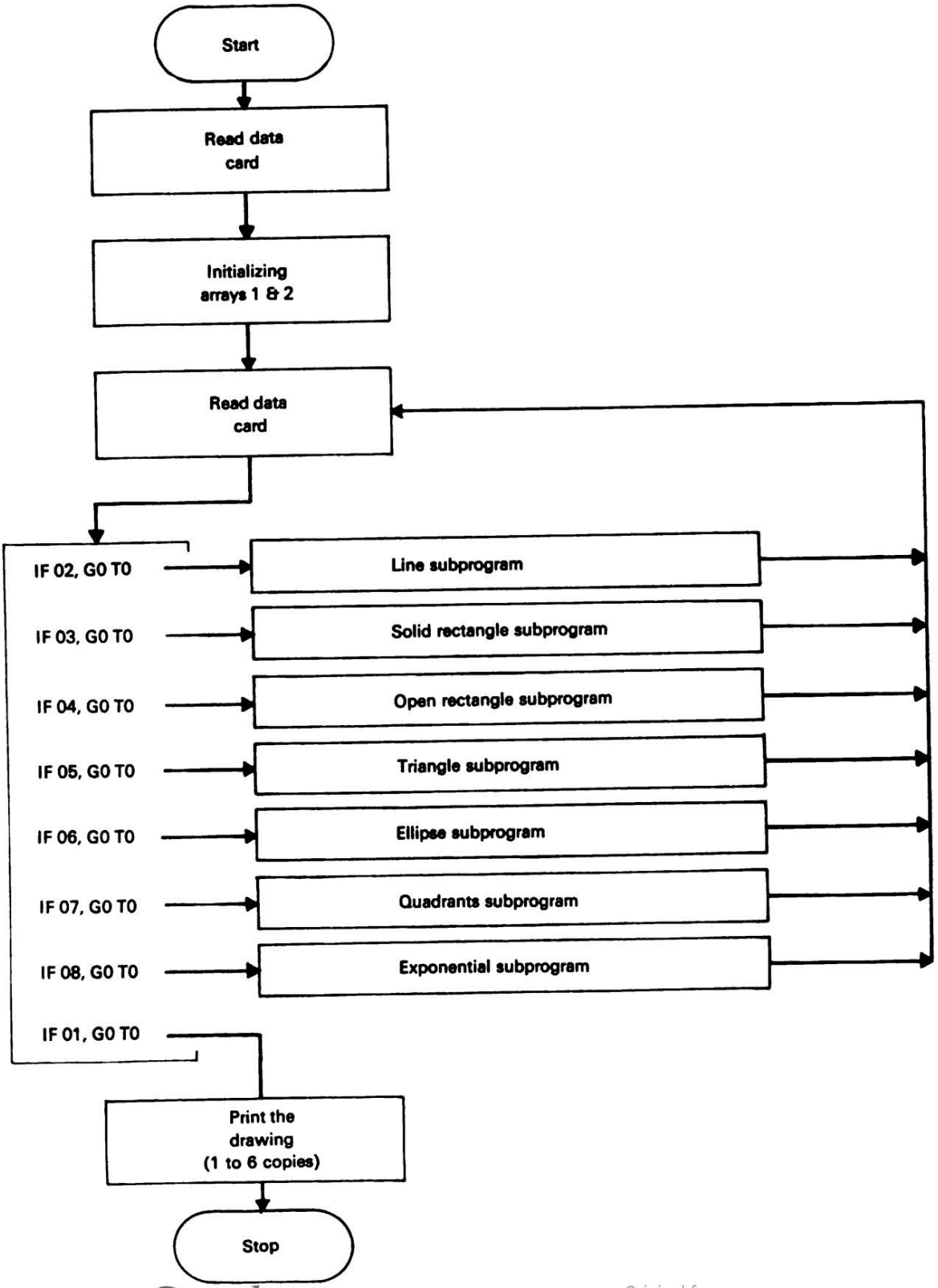
b) Normally, if the symbols in columns 1 and 3 are blank the ART 1 program would erase (make into blanks) the arrays 1 and 2. A local UNM printer difficulty requires a non-printable character instead of a blank. Here, use a (") for a blank. (" = 7 and 8 overprinted.)

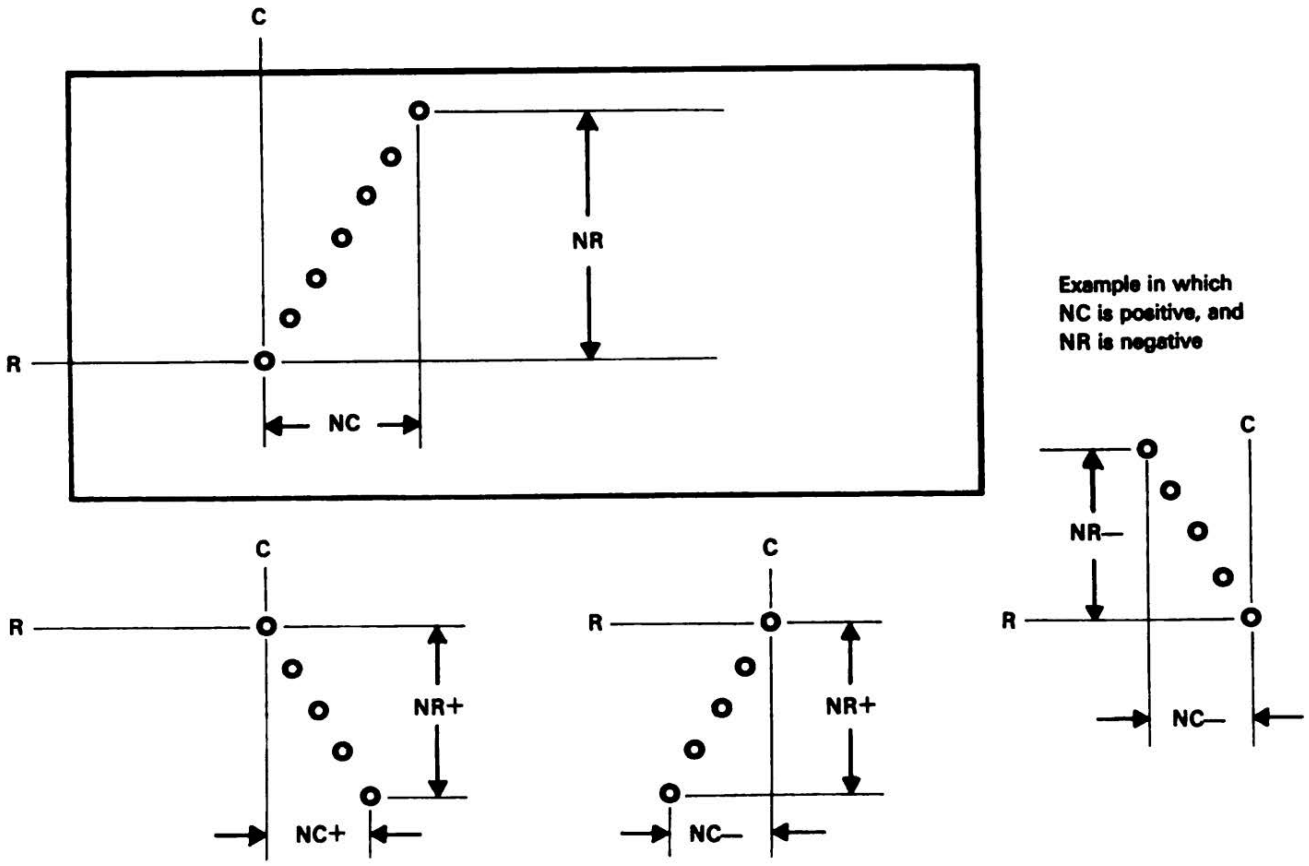
The user may be interested in running the following program:

```
/ID ... /INCLUDE ART 1
.2"16     ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789+-*/=.,'()$
01
/END
```

The six figures thus produced may be used in sketching design ideas before any figure data cards are punched.

A simplified flowchart of the ART 1 program

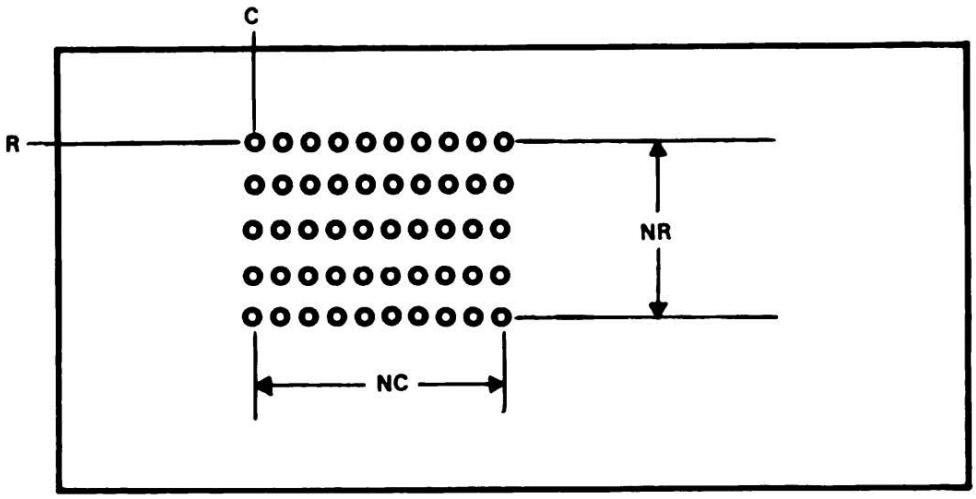




columns

1–2	02	02 in the first two columns calls LINE
3	symbol	Symbol out of which LINE is assembled
4	array	Array 1 or 2
5–6	R	Row at which LINE starts
7–9	C	Column at which LINE starts
10–12	NR	Number of rows in LINE, + is downward and — is upward
13–16	NC	Number of columns in LINE, + is right and — is left
17–20		Not used
21–25		Row/column (2/3) for the first repeated LINE
26–30		" 2nd "
31–35		" 3rd "
36–40		" 4th "
41–45		" 5th "
46–50		" 6th "
51–55		" 7th "
56–60		" 8th "
61–65		" 9th "
66–70		" 10th "

03 SOLID RECTANGLE



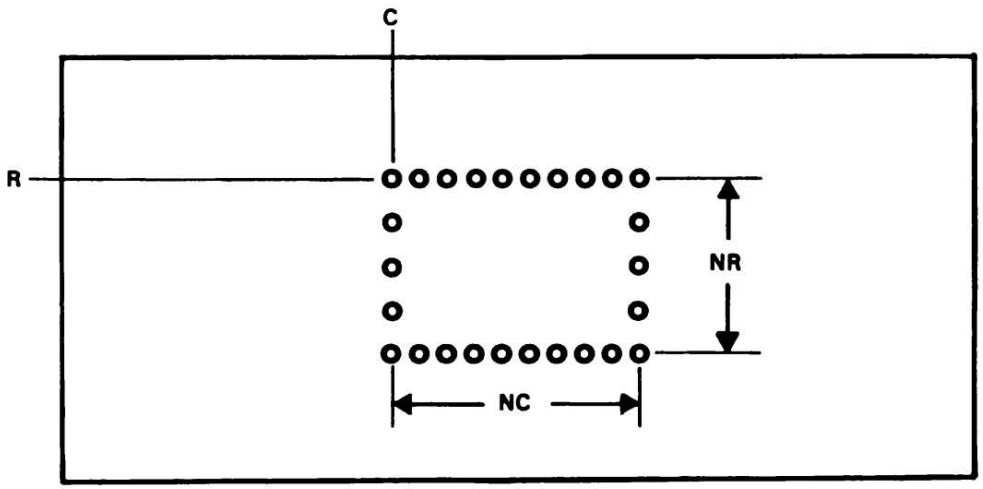
03×120200050010 3004040050

columns

1–2	03	03 in the first two columns calls SOLID RECTANGLE
3	symbol	Symbol out of which SOLID RECTANGLE is assembled
4	array	Array 1 or 2
5–6	R	Row of the upper-left starting point
7–9	C	Column of the upper-left starting point
10–12	NR	Number of rows in SOLID RECTANGLE
13–16	NC	Number of columns in SOLID RECTANGLE
17–20		Not used
21–25		Row/column (2/3) for the first repeated SOLID RECTANGLE
26–30		" 2nd "
31–35		" 3rd "
36–40		" 4th "
41–45		" 5th "
46–50		" 6th "
51–55		" 7th "
56–60		" 8th "
61–65		" 9th "
66–70		" 10th "

Note If NR is 'blank', ART 1 automatically changes the 'blank' to 1
If NC is 'blank', ART 1 automatically changes the 'blank' to 1.

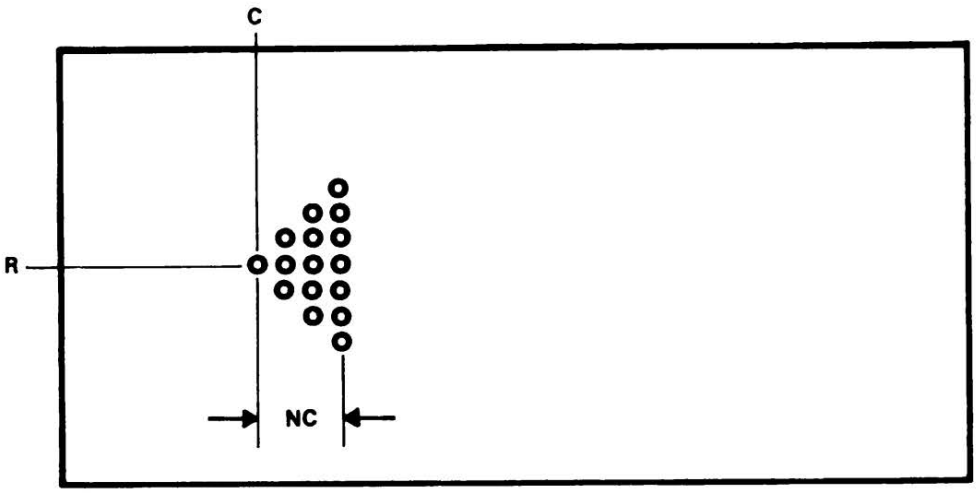
04 OPEN RECTANGLE

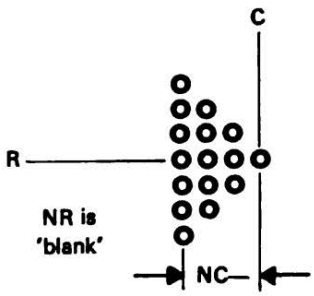


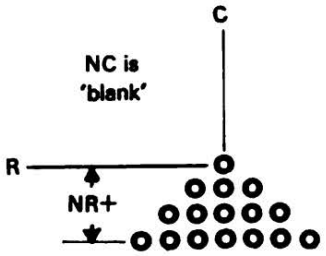
columns

1–2	04	04 in the first two columns calls OPEN RECTANGLE
3	symbol	Symbol out of which OPEN RECTANGLE is assembled
4	array	Array 1 or 2
5–6	R	Row of the upper-left starting point
7–9	C	Column of the upper-left starting point
10–12	NR	Number of rows in OPEN RECTANGLE
13–16	NC	Number of columns in OPEN RECTANGLE
17–20		Not used
21–25		Row/column (2/3) for the first repeated OPEN RECTANGLE
26–30		" 2nd "
31–35		" 3rd "
36–40		" 4th "
41–50		" 5th "
46–50		" 6th "
51–55		" 7th "
56–60		" 8th "
61–65		" 9th "
66–70		" 10th "

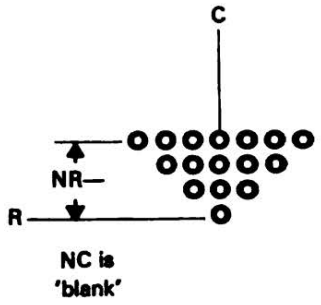
Note If NR is 'blank', ART 1 automatically changes the 'blank' to 1.
If NC is 'blank', ART 1 automatically changes the 'blank' to 1.





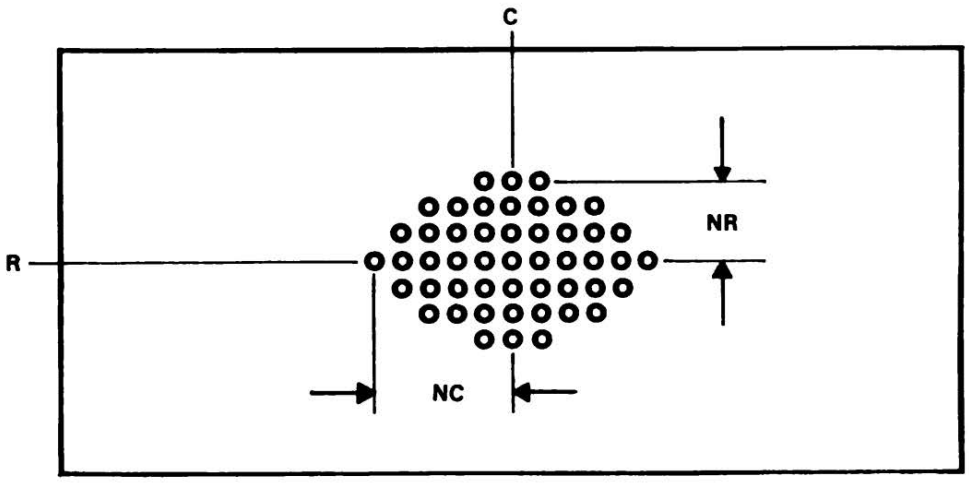


Example in which NC is positive, and NR is 'blank'



columns

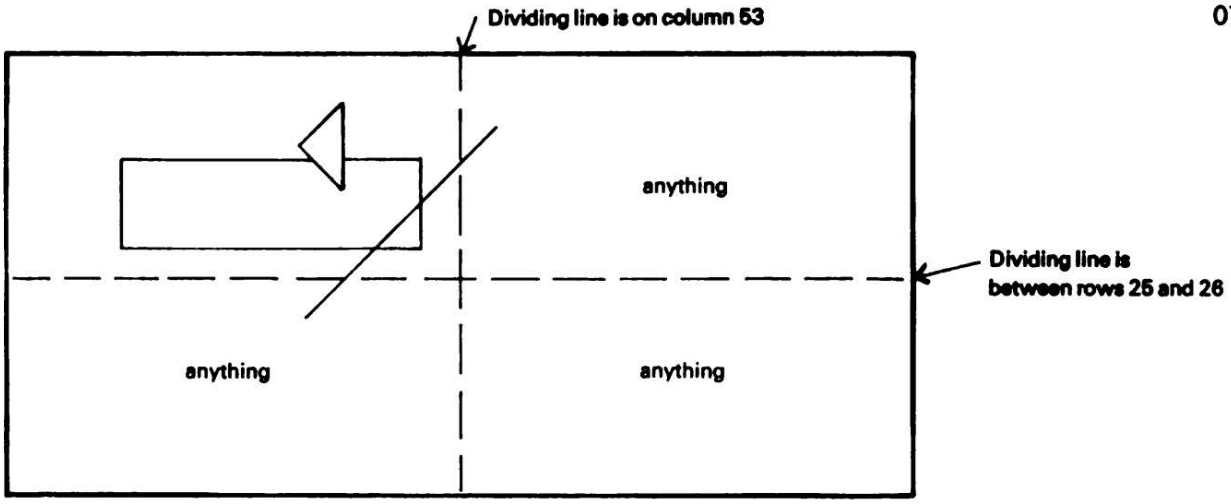
1–2	05	05 in the first two columns calls TRIANGLE
3	symbol	Symbol out of which TRIANGLE is assembled
4	array	Array 1 or 2
5–6	R	Apex of TRIANGLE is at row R
7–9	C	Apex of TRIANGLE is at column C
10–12	NR	Number of rows in TRIANGLE, + is downward and — is upward Or 'blank'
13–16	NC	Number of columns in TRIANGLE, + is right and — is left Or 'blank'
17–20		Not used
21–25		Row/column (2/3) for the first repeated TRIANGLE
26–30		" 2nd "
31–35		" 3rd "
36–40		" 4th "
41–45		" 5th "
46–50		" 6th "
51–55		" 7th "
56–60		" 8th "
61–65		" 9th "
66–70		" 10th "

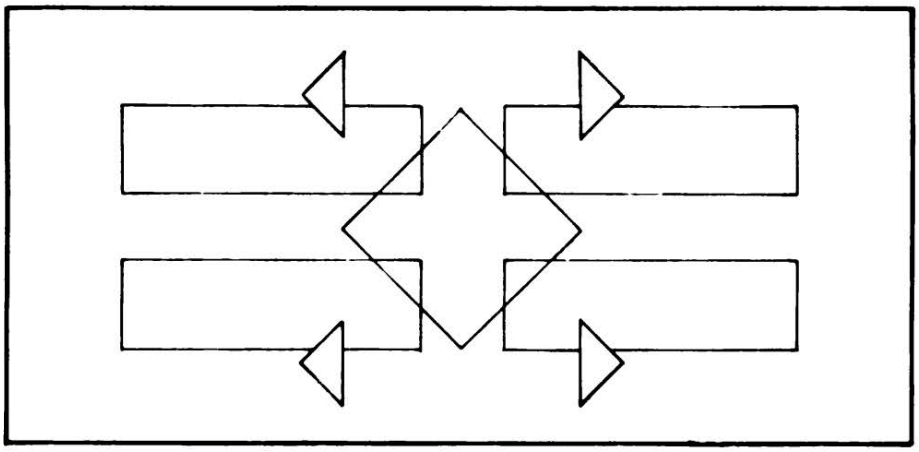


columns		
1–2	06	06 in the first two columns calls ELLIPSE
3	symbol	Symbol out of which ELLIPSE is assembled
4	array	Array 1 or 2
5–6	R	The centre of ELLIPSE is on row R
7–9	C	The centre of ELLIPSE is on column C
10–12	NR	Number of rows on one-half vertical axis
13–16	NC	Number of columns on one-half horizontal axis
17–20		Not used
21–25		Row/column (2/3) for the first repeated ELLIPSE
26–30		" 2nd "
31–35		" 3rd "
36–40		" 4th "
41–45		" 5th "
46–50		" 6th "
51–55		" 7th "
56–60		" 8th "
61–65		" 9th "
66–70		" 10th "

Note NR may be greater than, equal to, or less than NC as desired.

If NC is 'blank', ART 1 automatically computes NC so as to make the ELLIPSE look as much as possible like a CIRCLE.

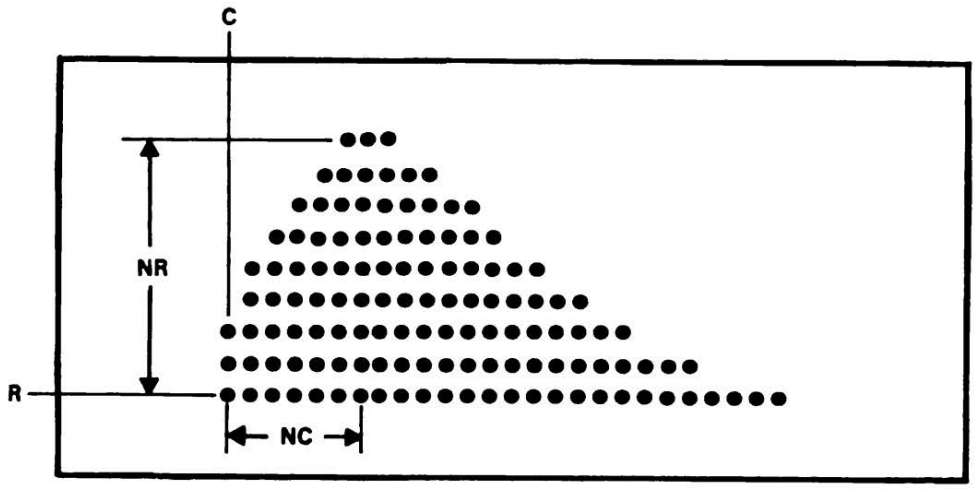




In QUADRANT, all designs assembled in the three quadrants other than the upper-left are replaced by the design in the upper-left quadrant rotated about the vertical and horizontal axes.

columns

1–2	07	07 in the first two columns calls QUADRANT
3–80		All remaining columns should be left 'blank'.



columns

1–2	08	08 in the first two columns calls EXPONENTIAL
3	symbol	Symbol out of which EXPONENTIAL is assembled
4	array	Array 1 or 2
5–6	R	The base row of EXPONENTIAL is row R
7–9	C	The left-most column in EXPONENTIAL is column C
10–12	NR	Height of EXPONENTIAL – If NR is negative EXPONENTIAL will appear rotated about row R
13–16	NC	Number of columns between the column C and the maximum height of EXPONENTIAL
17–80		All remaining columns should be left 'blank'