

34. Maths Stars

General Description

This program produces various mathematical stars within a circle, starting with three points on the circle and increasing the number. It is possible to stop the demonstration by pressing any key, and to stop the program using the ESC key. The program runs in Mode 5 on a Model A, but could be enhanced for the Model B.

Detailed Description

Lines 10-300 This is the main structure of the program. See the user manual (page 77) for the disabling of the cursor in line 160. Colours are activated here.

310-390 This procedure saves the points on the edge of the circle for the current number of points (N).

410-520 Draws the lines to the plotted points, calling a routine to allow you to freeze the display.

530-end This stops the display for a short while, calling the start/stop procedure.

Educational Note

Drawing these 'roses' is a favourite end of term pastime, and as such it is now possible to add a little spice to this. Many children can cope with drawing the simple roses but find the ones with several points very difficult to master. Usually their patience runs out before the pencil lead does. This will at least show them quickly what it was intended that they achieve.

Program Listing

```
>;LIST
10 REM *****
20 REM **          STARS          **
30 REM **          PROGRAM WRITTEN BY          **
40 REM **          BY Ian Clarke          **
50 REM **          Jan 83          **
60 REM *****
70 ON ERROR GOTO 710
80 MODE 5
90 CLS
100 DIM X(20),Y(20)
110 X1=640:Y1=512
120 ENVELOPE 1,1,2,-2,0,10,20,1,1,0,0,-2,90,90
130 N=3
140 GCOL 0,3
150 VDU 19,0,2,0,0,0
160 VDU 23;8202;0;0;0;
170 PRINT
180 VDU 19,1,7,0,0,0
190 PRINT TAB(8,4);"STARS."
200 PRINT TAB(1);"You can start/"
210 PRINT TAB(1);"stop this program"
220 PRINT TAB(1);"by pressing any"
230 PRINT TAB(1);"of the keys."
240 COLOUR 2
250 Q=INKEY(800)
260 PROCposition
270 PROCdrawlines
280 N=N+1
290 IF N=21 THEN GOTO710
300 GOTO 260
310 REM -----
320 DEF PROCposition
330 REM SAVES THE POSITIONS OF THE CIRCLE.
340 CLG
350 FOR I=1 TO N
360   X(I)=480*COS(ATN(1)*8*I/N)
370   Y(I)=506*SIN(ATN(1)*8*I/N)
380 NEXT
390 ENDPROC
400 REM -----
410 DEF PROCdrawlines
420 REM DRAWS LINES TO EACH POINT OF THE CIRCLE
430 PRINT TAB(2,28);N
440 PRINT TAB(0,30);"POINTS"
450 FOR I=1 TO N-1
460   FOR C=1 TO N-I
470     MOVE X(C)+X1,Y(C)+Y1
480     DRAW X(C+I)+X1,Y(C+I)+Y1
490     PROCstartstop
500   NEXT C
510 NEXT I
520 REM .....
530 REM START/STOP THE PROGRAM
540 Q=0
550 REPEAT
560   Q=Q+1
570   PROCstartstop
580 UNTIL Q=150
590 ENDPROC
600 REM -----
610 DEFPROCstartstop
620 F$=INKEY$(1)
630 IF F$="" THEN ENDPROC
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```

640  SOUND 1,1,120,255
650  F=GET
660  Q=149
670  SOUND &1011,0,0,0
680  FORX=1TO1000:NEXT
690  ENDPROC
700  REM .....
710  CLS
720  PRINTTAB(8,15);"BYE !!!"
730  FORX=1TO5000:NEXT
740  CLS
750  END

```

