

**PC-COMPATIBLE REVIEW
THE AMSTRAD PC1512**

FAMILY COMPUTING

The Tandy Man

Computer Giant Gives You Two New 1000's



**Corporate Dropouts
Go Into Business at Home**

**Learning With Computers:
What Parents
Should Know**

**Meet Our Computing
Families of the Year**

**Add a Mouse or
Trackball To Your
Computer**

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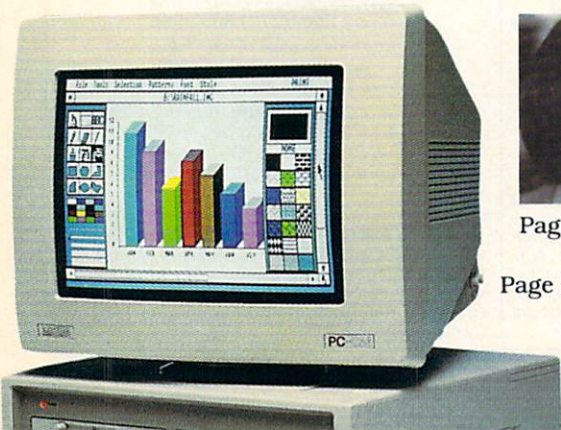
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the PROGRAMMER

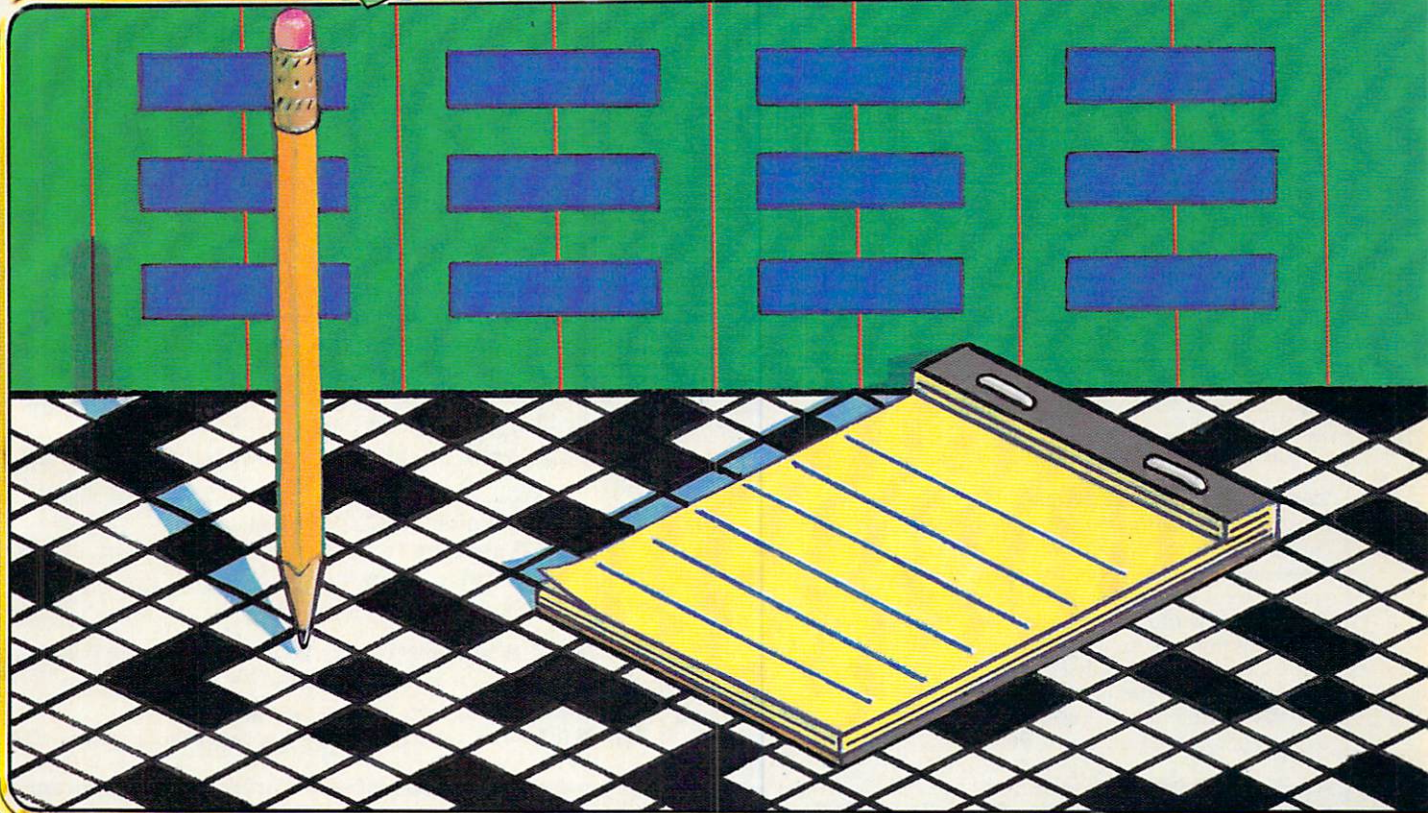


ILLUSTRATION BY BARTON STABLER



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Information about our programs, program coverage and "Programming P.S." PLUS: The solution to last month's puzzle.

GRAPHICS PROGRAM

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The keyboard is your control panel for creating *Fun Graphics* images.

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PUZZLE

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MICROTONES

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Be-bop-ba-doo-bop. *Raz-Ma-Jazz!*

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How to type in *FAMILY COMPUTING* programs.

ILLUSTRATION BY JAMES CHERRY III

Cherry

THIS MONTH'S PROGRAM COVERAGE

Computers†	Fun Graphics (pg 77)	Memory Madness (pg 82)	Puzzle Clues (pg 89)	Raz-Ma-Jazz (pg 89)
Adam	★		★	
Apple IIcs	★	★	★	
Apple II series	★	★	★	
Atari 800/XL/XE	★ G		★	★
Commodore 64/128		★	★	★
Commodore 128 only	★			
IBM PC FAMILY				
IBM PC	★ C	★	★	
IBM PCjr	★ C	★	★	★ T
IBM PS/2 Model 30	★ C	★	★	
IBM PC COMPATIBLES				
Amstrad PC1512DD	★ C	★	★	
Blue Chip	★ C	★	★	
Commodore PC-10	★ C	★	★	
Epson Equity I	★ C	★	★	
Kaypro PC-10	★ C	★	★	
Leading Edge Model D	★ C	★	★	
Panasonic FX-600	★ C	★	★	
Tandy 1000/EX/SX	★ C	★	★	★ P T
Vendex Turbo 888-XT	★ C	★	★	
Zenith Z148PC	★ C	★	★	
Macintosh			★	★
Tandy Color Computer	★		★	
TI-99/4A				★

KEY ★ Program in this issue for this computer, C Color monitor required, G GTIA chip required, P Patch required (see Tandy "Machine Specifics" in this issue), T Television or monitor with speaker required, † see below for specific models.

THE SYSTEMS WE TEST ON

Every FAMILY COMPUTING program is thoroughly tested before publication. The exact systems we use during the testing process are listed here. While you can be sure that a program will work if your system matches ours, a comparable system configuration should also work. For example, even though we do not test on the Franklin Ace, Apple programs should work on this system. Any exception to the following hardware/software configurations will be listed in the chart above. Systems that do not have a specific printer listed were tested with Epson FX-80 printers when a printer option was available.

Adam w/80K RAM, Coleco SmartBASIC V1.0, disk enhanced by MMSG, Coleco disk drive, AdamDOS, and color monitor. **Apple IIe** in 40-column mode w/64K RAM, DOS 3.3, two disk drives, MPC parallel printer interface, monochrome and color monitor. Apple programs should also work on Apple IIe/II Plus. **Apple IIcs** w/1MB RAM, one 3.5-inch and one 5.25-inch disk drive, ProDOS 3.3, and Apple RGB monitor. **Atari 800XL** w/two disk drives, DOS II version 2.05, Atari 850 interface, and color monitor. Atari programs should also work on Atari 800 (w/48K), 1200XL, 65/130XE. Smaller programs should work on Atari 400 & 600XL. **Commodore 128** in C-64 mode with two 1571 disk drives, color monitor, and Micrografix parallel graphics interface. Programs should also work on Commodore 64/64C/128D. **IBM PC** w/640K RAM, Disk BASIC D2.00, IBM Monochrome Display and Printer Adapter, monochrome monitor, IBM Color/Graphics Monitor Adapter, RGB monitor, AST Sixpack Plus, and IBM PC DOS 3.10. **IBM PCjr** w/128K RAM, one disk drive, IBM PC DOS 2.10, cartridge BASIC J1.00. **IBM PS/2 Model 30** w/640K RAM, one floppy and one hard-disk drive, RGB monitor, IBM PC DOS 3.30, and IBM PC BASIC A3.30. **Macintosh** w/512K RAM, two disk drives, Microsoft BASIC 2.1, and ImageWriter printer. Macintosh programs should also work on 128K Mac/Mac Plus/SE/II, and under Microsoft BASIC 2.0. **Tandy Color Computer 2** w/64K RAM, Disk Extended Color BASIC 1.1, two disk drives, Botek serial-to-parallel printer interface, color monitor. Programs should also work on Color Computer 1 (w/64K) and 3. **TI-99/4A** w/8K RAM, peripheral expansion system, disk drive, RS232 Interface Card, and TI-99/4 Impact Printer.

The following PC compatibles have been added to our testing list. IBM PC programs should also work on other PC compatibles with at least 128K.

Amstrad w/640K RAM, two disk drives, MS-DOS 3.20, Locomotive BASIC, RGB monitor. **Blue Chip** w/512K RAM, two disk drives, monochrome monitor, MS-DOS 3.20, GW-BASIC 3.20. **Commodore PC-10** w/640K RAM, two disk drives, monochrome monitor, MS-DOS 3.20, GW-BASIC

3.20. **Epson Equity I** w/256K RAM, two disk drives, monochrome display adapter, monochrome monitor, MS-DOS 3.10, GW-BASIC 3.10. **Kaypro PC 10** w/640K RAM, two disk drives, RGB monitor, MS-DOS 2.11, GW-BASIC 2.02. **Leading Edge Model D** w/640K RAM, two disk drives, monochrome and RGB monitors, MS-DOS 3.10, GW-BASIC 3.11. **Panasonic FX-600** w/640K RAM, two disk drives, MS-DOS 3.10, GW-BASIC 3.10, enhanced graphics adapter, RGB monitor. **Tandy 1000** w/256K RAM, two disk drives, MS-DOS 2.11 version 02.11.22, GW-BASIC 2.02 version 01.01.00, RGB monitor. **Tandy 1000 EX** w/256K RAM, two disk drives, MS-DOS 2.11 version 02.11.24, GW-BASIC 2.02 version 01.02.00, RGB monitor. **Tandy 1000 SX** w/384K RAM, two disk drives, MS-DOS 3.20 version 03.20.00, GW-BASIC 3.20 version 03.20.00, RGB monitor. **Vendex Turbo 888-XT** w/640K RAM, two disk drives, MS-DOS 3.20, GW-BASIC 3.20, RGB monitor. **Zenith Z148PC** w/640K RAM, two disk drives, MS-DOS 3.10, GW-BASIC 3.20, RGB monitor.

(212) 505-3703

A HELP LINE FOR PROGRAM PROBLEMS

Call our Program Status Line any time of day or night to receive an up-to-date summary of our latest programs, the machines on which they run, and any corrections or enhancements to the programs.

PROGRAMMING P.S.

Corrections to Previous Months' Programs

Crossword Puzzler (July 1987, page 69)

Commodore 64 & 128 (C-64 mode): The program gives an error message if you hit RETURN instead of typing a file name to save under when in menu option 3 (Create a puzzle using FC DATA). To correct the error, change line 1410 to read as follows:

```
1410 GOSUB 7000:IF F$="" THEN DL=100:GOSUB 3000:GOTO 1410
```

Crisscross (August 1987, page 61)

Apple II series: To correct scoring problem, change line 560 to read as follows:

```
560 IF SC <= PS THEN PRINT:GOTO 610
```

IBM PC & compatibles: To correct scoring problem, change lines 220 and 260 to read as follows:

```
220 H1=C0:H2=R0:S=10:SC=0:FL=0:PS=HS
260 PRINT "Use the cursor keys to move your player.";
```

Tandy Color Computer: In order for the program to run correctly, change line 230 to read as follows:

```
230 PRINT@65,TB$;:PRINT@417,TB$;
```

SOLUTION TO LAST MONTH'S PUZZLE

S	H	E	E	T	H	O	M	E	F	O	N	T		
T	E	L	E	C	A	P	O	L	I	N	E	N		
E	X	I	L	E	S	U	D	D	E	N	E	T		
V	A	S	R	A	S	E	C	T	O	R				
E	F	C	S						E	B	B			
S	I	L	I	C	O	N	V	A	L	L	E	Y		
C	O	P	R	I	N	T	L	E	A	S	T			
L	O	T	U	N	D	O	A	E	T	T	E			
I	N	U	N	E	V	I	L	R	I	O				
S	S	E			E	S	T		O	W	N			
T	C		K	O	A	L	A	S	N	Y				
S	L	Y	I	B	M	S	E	P	T	I	N			
O	E		C	O	D	E	P	A	R	I	T	Y		
A	N	N	K	E	Y	B	A	S	I	C				
T	E	S	T							M	O	U	S	E

KOLORFUL KEYS

Create Colorful Patterns with this Hi-Res Graphics Program

BY JOEY LATIMER

I still remember how excited I was on that day back in 1979 when I walked into the first computer store in my neighborhood. The showroom was almost bare, except for a few calculators, an Ohio Scientific computer system, and a popular video game system. But, in an alcove in the middle of the store, something caught my eye that I will never forget. It was there that a teenage boy was rapidly pressing the keys of an Apple II computer, while the video monitor produced the most amazing display of color graphics I had ever seen. "This is incredible!" I mumbled, as the screen burst into spiraling star-burst patterns. "What do you call that?"

"Oh, those are high-resolution graphics," he replied matter-of-factly. "It's easy. Just press this key to rotate and this one to change colors." I tried it and, sure enough, it was easy.

"How does it do that?" I asked.

"It's all in the program I wrote," he replied as he listed the program (which looked like Greek to me).

The next thing I remember about that day in 1979 is the store clerk trying to get me to leave so he could close for the night.

Back to 1987: It's two in the morning on a Tuesday, and what do you suppose I did all day long? I came to the office to finish the inventory, but I never got started. I sat down at the computer and started doodling with some graphics commands, then I doodled some more, and pretty soon I found myself saying, "This is incredible!" It's a new program!



After a few more days of not finishing the inventory, I sent the program to my pals at the FAMILY COMPUTING lab in New York. They played with it, edited it, and Pasquale Cirullo, a technical editor, called me back and said, "We want to put it in. What do you want to call it?"

"Fun Graphics," I said as my eyes transcended the two-dimensionality of the screen. And here it is, folks . . . a fun, high-resolution graphics program, with its roots dating back to my first visit to that computer store in 1979.

USING FUN GRAPHICS

Fun Graphics lets you make colorful, futuristic graphic designs by pressing different keys. You can take your time, and pause while you ponder your next step, or you can improvise animated graphics "on the fly"—or watch the computer randomly create its own patterns.

Central to Fun Graphics are eight preprogrammed high-resolution graphic patterns activated by pressing keys one through eight or P if you want the computer to pick the pat-

tern. The key assignments for these patterns are as follows:

Key

- 1 Rays emanating from the center of the screen
- 2 Frames drawn from the outer edge of the screen toward the center
- 3 Rays starting at both sides of the screen drawn toward the center
- 4 Vertical bars moving across the screen from right to left
- 5 Peacock feathers spreading out across the top of the screen
- 6 Solid frames filling the center of the screen, then moving toward the edges
- 7 Horizontal bars running from top to bottom
- 8 Diagonal lines going from lower left to upper right

COLORING YOUR FUN GRAPHICS

When Fun Graphics starts, it randomly picks a set of colors to cycle

through. You can pick specific colors by pressing letter keys, or you can press R if you want to go back to random colors. Some computers will display as many as sixteen colors, while others display as few as four. See the chart below for the color and command keys that your computer has available for use in the Fun Graphics program.

GUEST LEFTOVERS

When you decide that you like what you see on the screen, you can "pause" the program by pressing the space bar. When you press the space bar again, the program will continue where it left off. If, instead, the screen has become too cluttered, you can clear it by pressing the RETURN or ENTER key. (NOTE: You can also change colors or patterns while the screen is paused or after it has been cleared.)

KEYS USED IN FUN GRAPHICS

ACTION					PC & COMPATIBLES	TANDY COLOR COMPUTER
	ADAM	APPLE	ATARI	C 128		
Change pattern	1-8	1-8	1-8	1-8	1-8	1-8
Change luminance	—	—	9,0	—	—	—
Change palette	—	—	—	—	9	9
Change color	A-0	A-F	A-0	A-0	A-C	A-D
Random pattern	P	P	P	P	P	P
Random color	R	R	R	R	R	R
Pause drawing	SPACE	SPACE	SPACE	SPACE	SPACE	SPACE
Clear screen	RETURN	RETURN	RETURN	RETURN	ENTER	ENTER

SPECIAL INSTRUCTIONS FOR CERTAIN MACHINES

Adam & Apple

The Adam and Apple versions of Fun Graphics use a high-resolution graphics screen that cannot display text. If you made an error while typing the program, the computer will appear to freeze. If this happens to you, press CTRL-C and RETURN to stop the program and then type TEXT and press RETURN to return to the text screen.

Atari 800/XL/XE

The Atari 800/XL/XE series of computers allow you to pick the luminance, or brightness, of colors. Press 9 to lower, or 0 to raise, the luminance.

IBM PC & compatibles & Tandy Color Computer

The IBM PC & compatibles and the Tandy Color Computer allow you to choose between two palettes, or groups of colors, when drawing on the graphics screen. To switch back and forth between palettes, press 9.

GRAPHICS PROGRAM

Adam/Fun Graphics

```
10 LOMEM: 29000:HGR2:cf = 0:f = 0:np = 1:st = 0
20 mf = INT(RND(1)*15)+1:sc = INT(RND(1)*15)+1
30 m = INT(RND(1)*8)+1
40 FOR x = 28000 TO 28005:READ y:POKE x,y:NEXT x
50 CALL 28000
60 k = PEEK(64885):IF k = 0 THEN 140
70 CALL 28000:k = k-32*(k > 96)*(k < 123)
80 IF k > 48 AND k < 57 THEN np = 1:m = k-48:st = 0:GOTO 140
90 IF k > 64 AND k < 80 THEN cf = 1:sc = k-64+(k = 68):HCOLOR= sc:GOTO 190
100 IF k = 13 THEN st = 1:HGR2:GOTO 60
110 IF k = 80 THEN np = 1:m = INT(RND(1)*8)+1:GOTO 140
120 IF k = 82 THEN cf = 0:sc = INT(RND(1)*15)+1:mf = INT(RND(1)*15)+1:f = 0:GOTO 160
130 IF k = 32 THEN st = NOT st:IF st THEN 60
140 IF cf THEN 190
150 IF sc+f > 15 THEN HCOLOR= sc+f-15:GOTO 180
160 IF (sc+f = 0) OR (sc+f = 4) THEN sc = sc+1
170 HCOLOR= sc+f
180 f = f+1:IF f = mf THEN f = 0
190 IF st THEN 60
200 IF NOT np THEN ON m GOTO 220,250,300,340,390,420,480,520
210 np = 0:ON m GOTO 220,240,300,330,380,410,470,510
219 REM --CENTER RAYS--
220 a = INT(RND(1)*255):b = INT(RND(1)*191)
230 HPLLOT 140,96 TO a,b:GOTO 60
239 REM --STEP FRAMES--
240 a = 0:b = 191:c = 254:d = 0
250 HPLLOT d,a TO c,a TO c,b TO d,b TO d,a
260 HPLLOT c+1,a TO c+1,b:HPLLOT d+1,b TO d+1,a
270 a = a+3:b = b-3:c = c-3:d = d+3
280 IF a > 92 THEN a = 0:b = 191:c = 254:d = 0
290 GOTO 60
299 REM --SIDE RAYS--
300 HPLLOT 0,96 TO INT(RND(1)*255),INT(RND(1)*191)
310 HPLLOT 255,96 TO INT(RND(1)*255),INT(RND(1)*191)
320 GOTO 60
329 REM --VERTICAL BARS--
330 a = 253
340 HPLLOT a,0 TO a,191:HPLLOT a+1,0 TO a+1,191
350 HPLLOT a+2,0 TO a+2,191
360 a = a-12:IF a < 10 THEN a = 253
370 GOTO 60
379 REM --PEACOCK FEATHERS--
380 a = 70
390 IF a > 210 THEN a = 70
400 HPLLOT 140,191 TO a,0:a = a+3:GOTO 60
409 REM --SOLID FRAMES--
410 a = 0:b = 210:c = 191:d = 70
420 HPLLOT d,a TO d,c TO b,c TO b,a TO d,a
430 HPLLOT d+1,a TO d+1,c:HPLLOT b+1,c TO b+1,a
440 a = a+1:b = b-1:c = c-1:d = d+1
450 IF b < 40 THEN a = 0:b = 210:c = 191:d = 70
460 GOTO 60
469 REM --HORIZONTAL BARS--
470 a = 0
480 HPLLOT 0,a TO 255,a:HPLLOT 0,a+1 TO 255,a+1:a = a+8
490 IF a > 185 THEN a = 0
500 GOTO 60
509 REM --DIAGONALS--
510 a = 0:b = 181:c = 10:d = 191
520 HPLLOT a,b TO c,d:b = b-5:c = c+5
530 IF b < 0 THEN b = 0:a = a+4
540 IF c > 255 THEN c = 255:d = d-4
550 IF d < 0 THEN a = 0:b = 181:c = 10:d = 191
560 GOTO 60
1000 DATA 62,0,50,117,253,201
```

Apple II series/Fun Graphics

```
10 HGR2:CF = 0:F = 0:NP = 1:ST = 0
20 MF = INT(RND(1)*6)+1:SC = INT(RND(1)*6)+1
30 M = INT(RND(1)*8)+1
40 IF PEEK(-16384) < 128 THEN 120
50 GET K$:K = ASC(K$):K = (K-32*(K > 96))*(K < 123))
60 IF K > 48 AND K < 57 THEN NP = 1:M = K-48:ST = 0:GOTO 120
70 IF K > 64 AND K < 71 THEN CF = 1:SC = K-64:SC = SC+(SC = 4)+(SC = 6)+(SC = 5):HCOLOR= SC:GOTO 170
80 IF K = 13 THEN ST = 1:HGR2:GOTO 50
90 IF K = 80 THEN NP = 1:M = INT(RND(1)*8)+1:GOTO 120
100 IF K = 82 THEN CF = 0:SC = INT(RND(1)*6)+1:MF = INT(RND(1)*6)+1:F = 0:GOTO 140
110 IF K = 32 THEN ST = NOT ST:IF ST THEN 50
120 IF CF THEN 170
130 IF SC+F > 7 THEN HCOLOR= SC+F-7:GOTO 160
140 IF (SC+F = 0) OR (SC+F = 4) THEN SC = SC+1
150 HCOLOR= SC+F
160 F = F+1:IF F = MF THEN F = 0
170 IF ST THEN 50
180 IF NOT NP THEN ON M GOTO 200,230,280,320,370,400,460,500
190 NP = 0:ON M GOTO 200,220,280,310,360,390,450,490
199 REM --CENTER RAYS--
200 A = INT(RND(1)*279):B = INT(RND(1)*191)
210 HPLLOT 140,96 TO A,B:GOTO 40
219 REM --STEP FRAMES--
220 A = 0:B = 191:C = 278:D = 0
230 HPLLOT D,A TO C,A TO C,B TO D,B TO D,A
240 HPLLOT C+1,A TO C+1,B:HPLLOT D+1,B TO D+1,A
250 A = A+3:B = B-3:C = C-3:D = D+3
260 IF A > 92 THEN A = 0:B = 191:C = 278:D = 0
270 GOTO 40
279 REM --SIDE RAYS--
280 HPLLOT 0,96 TO INT(RND(1)*279),INT(RND(1)*191)
290 HPLLOT 279,96 TO INT(RND(1)*279),INT(RND(1)*191)
300 GOTO 40
309 REM --VERTICAL BARS--
310 A = 277
320 HPLLOT A,0 TO A,191:HPLLOT A+1,0 TO A+1,191
330 HPLLOT A+2,0 TO A+2,191
340 A = A-12:IF A < 1 THEN A = 277
350 GOTO 40
359 REM --PEACOCK FEATHERS--
360 A = 70
370 IF A > 210 THEN A = 70
380 HPLLOT 140,191 TO A,0:A = A+3:GOTO 40
389 REM --SOLID FRAMES--
390 A = 0:B = 210:C = 191:D = 70
400 HPLLOT D,A TO D,C TO B,C TO B,A TO D,A
410 HPLLOT D+1,A TO D+1,C:HPLLOT B+1,C TO B+1,A
420 A = A+1:B = B-1:C = C-1:D = D+1
430 IF B < 40 THEN A = 0:B = 210:C = 191:D = 70
440 GOTO 40
449 REM --HORIZONTAL BARS--
450 A = 0
460 HPLLOT 0,A TO 279,A:HPLLOT 0,A+1 TO 279,A+1
470 A = A+8:IF A > 185 THEN A = 0
480 GOTO 40
489 REM --DIAGONALS--
490 A = 0:B = 181:C = 10:D = 191
500 HPLLOT A,B TO C,D:B = B-5:C = C+5
510 IF B < 0 THEN B = 0:A = A+4
520 IF C > 279 THEN C = 279:D = D-4
530 IF D < 0 THEN A = 0:B = 181:C = 10:D = 191
540 GOTO 40
```

CROSSWORD PUZZLER

BY STEVE C.M. CHEN AND KAREN KANE

This is the third in a series of crossword puzzles. This month, clues and data for a back-to-school puzzle are presented along with the solution to last month's puzzle. The solution to the back-to-school Crossword Puzzler will appear in next month's issue along with data for a new puzzle.

In order to solve or print out the puzzle, you must have the master puzzle program. The Commodore

64/128, IBM PC and compatibles, and Tandy Color Computer versions of the program were presented in the July issue, and the Adam, Apple, Atari, and Macintosh versions appeared in August. Back issues of the July and August issues are available for \$3.95 from Crossword Puzzler, c/o FAMILY COMPUTING, 730 Broadway, New York, NY 10003. Please indicate your specific brand and model of computer.

BACK-TO-SCHOOL PUZZLE DATA

A FAKA,FBKB,ICKC,ADND,1113
B ODAE,BECE,HEEF,GFNF,1121
C GGJG,KGMG,DHLH,CIEI,1151
D FIII,BJII,KJHK,MKNK,1177
E OKAL,BLOL,EMGM,ENJN,1185
F EOJO,ZZZZ,ZZZZ,ZZZZ,6381

BACK-TO-SCHOOL PUZZLE CLUES

Across

- 1A Tries
1G What a thief cracks; secure
1L School subject
2A An established rule or principle
2G Ailments
2L Egg-shaped
3A Tells a story
3L Tears
4B Carousel
5D To be, to Henri
5I Wilbur's brother in flight
6A Designer Picone
6H Study of plant life
7A Past participle of get
7H Beatles member with JL, GH, and PM
7N Manganese, abbr.
8A A phone company
8E Aztec spear throwers
8M Spelling contest
9A Compass direction
9G Three-toed sloth
9J Neck scarves
10C Season when school starts
10L At the end
11A Sodium fluoride union
11I Not dose or dem
12C Basics
13A One who fibs
13H Character in Shakespeare's *Julius Caesar*
14A What God took from Adam (two words)
14F One in *Born Free*
14K At no time
15A Instruments for rowing

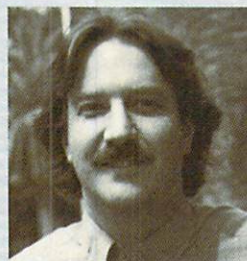
- 15F Impudent speech
15K Actress Garbo

Down

- 1A Treat leather
1B Test
1C Father
1D Rush
1E Intelligent
1G Throne (obs.)
1H Too
1I Florida, abbr.
1J Accompany
1L Time of day
1M Eagerly
1N Spigot
1O Laid in this place, Latin abbr.
3F Oppressive ruler
4I Perch
4K Mr. Jefferson designed this school
5O Actor Borgnine
6A Coaxes (two words)
6B Express an opinion
6C Homonym for eight
6H Organ for thinking
7E Publisher of *Music Construction Set*, abbr.
7N NY baseball team
8G Greek letter with the beta
8J Dormant
8K Nazi secret police
8M Type of snake
9D Residential areas on the outskirts of a city
9L Wally and Beaver's last name
10C Public matter or concern
10E 2,000 pounds
10F Reverses
11I Tens, comb. form
11K Pang
12H Bog
12M To be alive
12N Tallow
13A Thai language
13B Thorn in M. Thatcher's side
13O Mrs., in Madrid
14G French article

RAZ-MA-JAZZ

BY JOEY LATIMER



Type *Raz-Ma-Jazz* into your computer, SAVE it, RUN it, then grab your dancing shoes. Your computer will start playing a finger-snapping boogie-woogie song—complete with horn parts and roll-

ing bass—through the speaker in your TV or video monitor. Get your neighbors to get their neighbors to *Raz-Ma-Jazz* and the whole city will hop!
PROGRAMMING NOTES: If you want to speed up or slow down *Raz-Ma-Jazz*, change the value assigned to SP in the first program line. To play the song faster, set SP equal to a lower number, and to slow it down, assign a higher value to SP. SP must be between 1 and 10.

Atari 800XL/XE/Raz-Ma-Jazz

```
10 SP=5:DIM V1(96,2),V2(36,2),V3(76,2)
20 POKE 710,144:POKE 752,1
30 FOR X=1 TO 48:READ A,B:V1(X,1)=A:V1(X,2)=B
40 V1(48+X,1)=V1(X,1):V1(48+X,2)=2:NEXT X
50 FOR X=1 TO 36:READ A,B:V2(X,1)=A:V2(X,2)=B:NEXT X
60 FOR X=1 TO 76:READ A,B:V3(X,1)=A:V3(X,2)=B:NEXT X
70 PRINT CHR$(125):POSITION 13,9
80 PRINT "* RAZ-MA-JAZZ *"
90 P1=1:P2=1:P3=1:T1=0:T2=0:T3=0
100 SOUND 1,V1(P1,1),10,8
110 SOUND 2,V2(P2,1),10,6:SOUND 3,V3(P3,1),10,8
120 FOR DE=1 TO SP*5:NEXT DE
130 T1=T1+1
140 IF T1=V1(P1,2) THEN T1=0:P1=P1+1:SOUND 1,0,0,0
150 T2=T2+1
160 IF T2=V2(P2,2) THEN T2=0:P2=P2+1:SOUND 2,0,0,0
170 T3=T3+1
180 IF T3=V3(P3,2) THEN T3=0:P3=P3+1:SOUND 3,0,0,0
190 IF P1=97 THEN 90
200 GOTO 100
1000 DATA 243,2,193,2,162,2,144,2,136,2,144,1,162,3
1010 DATA 193,2,243,2,193,2,162,2,144,2,136,2,144,1
1020 DATA 162,3,193,2,182,2,144,2,121,2,108,2,102,2
1030 DATA 108,1,121,3,144,2,243,2,193,2,162,2,144,2
1040 DATA 136,2,144,1,162,3,193,2,162,2,128,2,108,2
1050 DATA 96,2,91,2,96,1,108,3,128,2,243,2,193,2
1060 DATA 162,2,144,2,136,2,144,1,162,3,193,2
2000 DATA 136,6,0,2,136,2,144,1,136,3,0,2,136,6,0,2
2020 DATA 136,2,144,1,136,3,0,2,102,6,0,2,102,2,108
2030 DATA 1,102,3,0,2,136,6,0,2,136,2,144,1,136,3,0,2
2040 DATA 91,6,0,2,91,2,96,1,91,3,0,2,136,6,0,2,136,2
2050 DATA 144,1,136,3,0,98
3000 DATA 108,6,0,2,108,2,114,1,108,3,0,2,108,6,0,2
3010 DATA 108,2,114,1,108,3,0,2,81,6,0,2,81,2,85,1
3030 DATA 81,3,0,2,108,6,0,2,108,2,114,1,108,3,0,2
3040 DATA 72,6,0,2,72,2,76,1,72,3,0,2,108,6,0,2,108
3050 DATA 2,114,1,108,3,0,2
4000 DATA 60,2,60,2,81,1,91,1,102,1,91,1,81,2,81,2
4010 DATA 91,1,102,1,121,2,121,4,102,4,91,4,81,4
4020 DATA 60,2,60,2,81,1,91,1,102,1,91,1,81,2,81,2
4030 DATA 91,1,102,1,121,2,81,4,91,4,121,8,81,2
4040 DATA 81,2,81,4,81,1,72,1,81,1,96,1,81,2,81,2
4050 DATA 121,14,0,4
```

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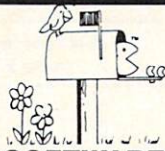
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