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FAMILY COMPUTING

Buyer's Guide to Computers



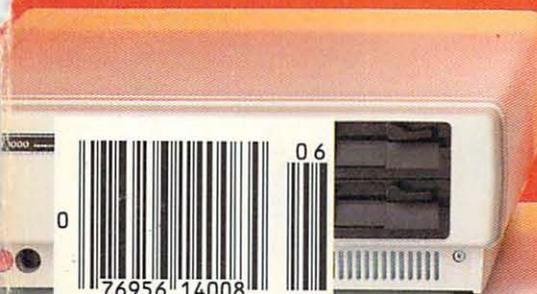
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INSIDE: ORIGINAL PROGRAMS FOR
ADAM, APPLE II SERIES, ATARI,
C 64 & VIC-20, IBM PC & PCjr, TI
TRS-80, COCO & MODULA-2



FAMILY COMPUTING

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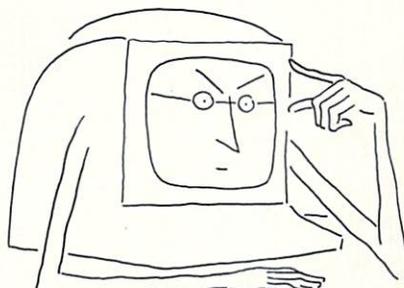
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HOME-SCHOOL CONNECTION

ement. Unless it's a very unusual educational game, parents will have to exert some pressure if they want their kids to sit down and work with these packages.

Barbara Devir, a New York elementary-school teacher, encourages parents to get involved—to work through the programs with their kids, and then discuss them.

Recommendations:

HOMONYMS, SYNONYMS, and ROOTS/AFFIXES (Hartley, for Apple II series; \$39.95). These are multilesson packages that specialize in mastering vocabulary, which is crucial to good writing. In all programs, the word difficulty increases as students proceed through the lessons.

PIK-PEK-PUT (Data Command, for Apple II series, TRS-80 Models III/4; \$29 each in series of eight disks). Playing a modified game of tic-tac-toe, children familiarize themselves with suffixes, prefixes, base words, and contractions.

ARCADEMIC SKILL BUILDERS IN LANGUAGE ARTS (DLM Software, for Apple II series, Atari Home Computers, C 64, IBM PC/PCjr; \$34 each in series of six disks). Not many drill-and-practice packages can be used effectively at home, says Barbara Devir. They just can't hold their own against a host of other, more entertaining diversions, such as *PacMan* and Saturday-morning cartoons. But DLM's packages, crafted after arcade games, let "kids learn with a joystick," Devir says. *Word Invasion* and *Verb Viper* are two highly recommended packages that will help kids become comfortable with different types of speech while getting a good hand-eye coordination workout at the same time.

SENTENCE COMBINING (Milliken, for Apple II series; \$105). Sentence combining is a relatively new method for learning grammar. The names of parts of speech and the rules aren't as important as whether or not sentences are correct and how they are used. In this package, kids improve their command of sentence-writing by combining phrases provided on the screen. HENRY CAN'T PLAY THE PIANO TODAY might be combined with HE HAS A BROKEN FINGER and BECAUSE to create a full sentence. Solomon only recommends this program for use at home with extensive parental involvement. It's an effective package that attacks style problems such as short and choppy or incomplete sen-

tences. But it is rather dry and not likely to hold an unsupervised child.

THE GRAMMAR EXAMINER (DesignWare, for Apple II series, Atari Home Computers, C 64, IBM PC/PCjr; \$44). This is another package that would be good for the whole family. Players begin the game as a cub reporter on the staff of the *Grammar Examiner Newspaper*. Presented with multiple-choice grammar questions to answer, or error-laden paragraphs to correct, players who "edit" properly can work their way up to the level of editor-in-chief. Kids get a chance to practice skills in context, actually revising passages in the process, paying attention to punctuation, capitalization, subject-verb agreement, verb tense, adverb and adjective usage, and more.

A general word of advice about grammar packages: There are a lot out there, but only a few are fun enough to stimulate children at home. Avoid excessive arm-twisting, unless you want your computer to go the route of those hated piano lessons. Solomon says they can be used at home, but only under close parental supervision. Contact your child's instructor for help in determining where extra at-home help is needed. "If you've got kids you know have a writing problem, sit with them and work with them," she advises. "Then, after reinforcement, students should go back and apply the concepts to actual writing."

NO MAGIC SOLUTION

The computer won't transform your child into a master wordsmith, but in word processors and story-generators you have tools that eliminate many barriers to the smooth flow of ideas. And some skill-building software lets you focus on the areas your child needs to work on.

With the control in your hands and the hands of your children, you have the power to practice. And practice makes for, if not perfection, at least improvement. ☐

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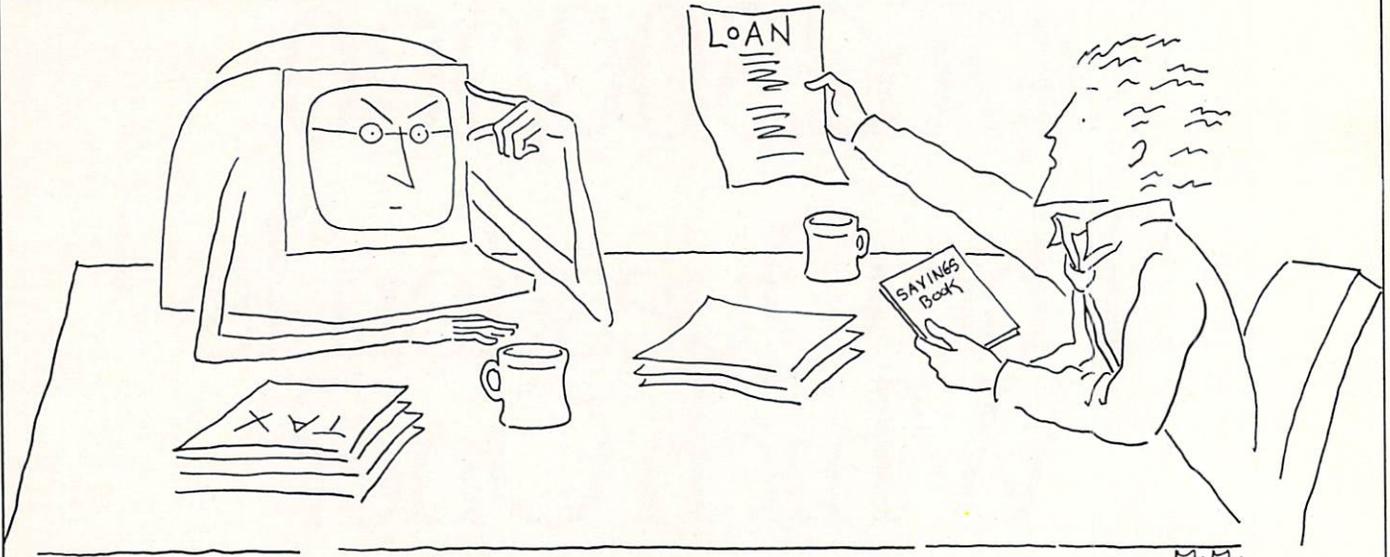
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HOME/MONEY MANAGEMENT

FINANCIAL DECISION-MAKING

Considering a Major Purchase? Should You Borrow or Use Your Savings? Let Your Computer Decide.

BY KIMBALL J. BEASLEY



We've all had cash-flow problems at one time or another. Unfortunately, our funds are usually at their lowest when our needs are the greatest. So, when simultaneously faced with a shortage of cash and a major expense or purchase, we may have to borrow money. But borrowing, it seems, is usually the course of last resort.

Rarely do we consider that borrowing may make good financial sense—even when we have the cash available. Why? Because in some situations, the tax savings produced by your loan's interest may outweigh the interest you lose when you withdraw money from your interest-bearing account (whether it's from your savings, a money market account, or NOW account).

There are quite a few factors to consider before you make a major borrowing decision. Your computer and the accompanying program can help you evaluate the numerical information, whether you're deciding how to pay for college tuition or a new car. Certainly, these calculations can be performed using pencil

and paper, but the computer can save you time and costly mathematical errors.

THE COST ANALYZER

In short, the BASIC program we've provided is a cost analyzer. In this case, we're comparing the cost of lost savings interest vs. the overall cost of borrowing. No matter what you purchase, several key factors will not change: The cost of borrowing money equals the loan origination fee plus the periodic loan payments less the income tax deductions on interest paid.

Note, however, that our program does not allow for tax bracket creep. For instance, if you expect to move from the 30 percent to the 40 percent tax bracket during the life of the loan, you will have to plug in an average (in this case 35 percent). As you can see in the accompanying printouts, your tax bracket will affect your calculations and therefore may influence your decision to borrow. For example, if you expect to move into a higher tax bracket, the cost of borrowing will go down—perhaps enough to tip the balance in favor of the loan. On the other hand, if you plan to retire within the next few years, the tax benefits of taking out a loan may be drastically re-

duced since you will be moving into a lower tax bracket.

Clearly, there are certain monetary concerns that the computer will not be able to measure. For example, if you use your savings as a type of emergency fund, you may not want it depleted—at any cost. Peace of mind can be worth a lot. The value of having money liquid in savings may outweigh the purely numerical computer analysis that favors withdrawing savings.

THE COST OF MONEY

In order to use the program effectively, it's important to understand the "cost of money" concept. Since money in a savings account earns interest, removing the money from the account causes you to lose that interest. To illustrate how this concept works with our program, let's create a hypothetical situation. For example, you've decided to build a garage for your home, and the contractors want \$10,000 up front. If you withdraw \$10,000 from your money-market account, which earns 8 percent interest, you will lose \$800 in interest at the end of one year. If you're in the 50 percent tax bracket, that's a net cost to you of \$400.

Your second option is to borrow \$10,000 from the bank at say, a 15

KIMBALL J. BEASLEY is a senior engineer with a consulting firm in Princeton, New Jersey. He wrote the January Home/Money Management column, "Computing Your Financial Goals."

HOME/MONEY MANAGEMENT

percent interest rate for one year. Of course, that costs you \$1,500 in interest, but your \$1,500 tax deduction reduces your taxes by \$750. In addition, you net \$400 on the \$10,000 you've left in your money-market account. The net cost to you of the loan is \$1,500 minus \$750 minus \$400, or \$350. That's \$50 less than using your own savings.

The *Cost Analyzer* assumes monthly payments and compounding, and reports the cost of the loan in today's dollars. In this example we've assumed simple interest on a one-year loan. The longer the term of the loan, the more tedious the calcu-

lations—and that's when your computer will be especially handy.

Factors such as the length of the loan, interest rates, and your specific tax bracket may drastically affect your decision whether to borrow or use savings. We've provided several sample printouts to illustrate the effect of these variables.

THE PERSONAL ADVISER

Next time you're ready to make a major investment or purchase, let your computer be part of your financial decision-making. First, sit down with your computer and the pro-

gram on the next page, plug in some numbers, and experiment. Once you're comfortable with the machine's number-crunching abilities, you can turn it into a sort of personal accountant. Like an accountant, it will provide you with the right numbers and let you make the final decision. And the best part—you won't have to pay a \$100-an-hour bill at the end of the session.

This article and program are not meant to serve as advice, but rather, as guidelines to aid you in making financial decisions. It's best to consult a tax attorney or accountant before you make any major financial decision. [E]

ORIGINAL ANALYSIS

INTEREST ON SAVINGS = 8 %
 INTEREST AFTER TAX = 8 %
 AMOUNT OF LOAN = \$10000.00
 LOAN INTEREST RATE = 12.5 %
 DEDUCTIBLE LOAN FEE = \$150.00
 NOT HOME LOAN
 LOAN TERM IS 10 YEARS
 YOUR TAX BRACKET = 40 %
 MONTHLY LOAN PAYMENT = \$146.37

YEAR	INTEREST PAYMENT	PRINCIPAL PAYMENT	END-OF-YEAR BALANCE	NET TAX BENEFIT
1	\$1219.94	\$536.56	\$9463.43	\$493.97
2	\$1148.89	\$607.61	\$8855.82	\$465.55
3	\$1068.44	\$688.07	\$8167.74	\$433.37
4	\$977.32	\$779.18	\$7388.56	\$396.93
5	\$874.15	\$882.36	\$6506.20	\$355.66
6	\$757.31	\$999.19	\$5507.00	\$308.92
7	\$625.00	\$1131.50	\$4375.49	\$256.00
8	\$475.17	\$1281.33	\$3094.15	\$196.06
9	\$305.50	\$1451.00	\$1643.14	\$128.20
10	\$113.36	\$1643.14	\$0.00	\$51.34

IN TODAY'S DOLLARS,

USING SAVINGS COSTS YOU \$10000.00
 BORROWING THE MONEY COSTS YOU \$9879.39*

*IBM: \$9888.40 Models III & 4: \$9879.49

EFFECT OF HIGHER INTEREST RATE

INTEREST ON SAVINGS = 8 %
 INTEREST AFTER TAX = 8 %
 AMOUNT OF LOAN = \$10000.00
 LOAN INTEREST RATE = 14 %
 DEDUCTIBLE LOAN FEE = \$150.00
 NOT HOME LOAN
 LOAN TERM IS 10 YEARS
 YOUR TAX BRACKET = 40 %
 MONTHLY LOAN PAYMENT = \$155.26

YEAR	INTEREST PAYMENT	PRINCIPAL PAYMENT	END-OF-YEAR BALANCE	NET TAX BENEFIT
1	\$1369.09	\$494.10	\$9505.89	\$553.63
2	\$1295.30	\$567.89	\$8937.99	\$524.12
3	\$1210.48	\$652.70	\$8285.29	\$490.19
4	\$1113.01	\$750.18	\$7535.10	\$451.20
5	\$1000.97	\$862.21	\$6672.88	\$406.39
6	\$872.21	\$990.98	\$5681.90	\$354.88
7	\$724.21	\$1138.97	\$4542.92	\$295.68
8	\$554.12	\$1309.07	\$3233.84	\$227.64
9	\$358.62	\$1504.57	\$1729.27	\$149.44
10	\$133.92	\$1729.27	\$0.00	\$59.56

IN TODAY'S DOLLARS,

USING SAVINGS COSTS YOU \$10000.00
 BORROWING THE MONEY COSTS YOU \$10295.27*

*IBM: \$10,295.28 Models III & 4: \$10,295.43

EFFECT OF LOWER TAX BRACKET

INTEREST ON SAVINGS = 8 %
 INTEREST AFTER TAX = 8 %
 AMOUNT OF LOAN = \$10000.00
 LOAN INTEREST RATE = 12.5 %
 DEDUCTIBLE LOAN FEE = \$150.00
 NOT HOME LOAN
 LOAN TERM IS 10 YEARS
 YOUR TAX BRACKET = 30 %
 MONTHLY LOAN PAYMENT = \$146.37

YEAR	INTEREST PAYMENT	PRINCIPAL PAYMENT	END-OF-YEAR BALANCE	NET TAX BENEFIT
1	\$1219.94	\$536.56	\$9463.43	\$370.48
2	\$1148.89	\$607.61	\$8855.82	\$349.16
3	\$1068.44	\$688.07	\$8167.74	\$325.03
4	\$977.32	\$779.18	\$7388.56	\$297.69
5	\$874.15	\$882.36	\$6506.20	\$266.74
6	\$757.31	\$999.19	\$5507.00	\$231.69
7	\$625.00	\$1131.50	\$4375.49	\$192.00
8	\$475.17	\$1281.33	\$3094.15	\$147.05
9	\$305.50	\$1451.00	\$1643.14	\$96.15
10	\$113.36	\$1643.14	\$0.00	\$38.51

IN TODAY'S DOLLARS,

USING SAVINGS COSTS YOU \$10000.00
 BORROWING THE MONEY COSTS YOU \$10463.18*

*IBM: \$10,463.18 Models III & 4: \$10,463.27

EFFECT OF SHORTER LOAN TERM

INTEREST ON SAVINGS = 8 %
 INTEREST AFTER TAX = 8 %
 AMOUNT OF LOAN = \$10000.00
 LOAN INTEREST RATE = 12.5 %
 DEDUCTIBLE LOAN FEE = \$150.00
 NOT HOME LOAN
 LOAN TERM IS 3 YEARS
 YOUR TAX BRACKET = 40 %
 MONTHLY LOAN PAYMENT = \$334.53

YEAR	INTEREST PAYMENT	PRINCIPAL PAYMENT	END-OF-YEAR BALANCE	NET TAX BENEFIT
1	\$1085.99	\$2928.44	\$7071.55	\$454.39
2	\$698.21	\$3316.21	\$3755.33	\$299.28
3	\$259.09	\$3755.33	\$0.00	\$123.63

IN TODAY'S DOLLARS,

USING SAVINGS COSTS YOU \$10000.00
 BORROWING THE MONEY COSTS YOU \$10021.74*

*IBM: \$10,021.74 Models III & 4: \$10,021.83

Quite a few variables can affect your decision to borrow money, as the printouts above show. However, there are factors that our program does not take into account. High inflation, for example, can increase the benefits of borrowing.

*Note: Due to minor differences among machines, the IBM and TRS-80 Models III & 4 versions produce slightly different results. So that you can verify that your program is working correctly, we've shown how much BORROWING THE MONEY COSTS YOU for these two computers.

Program Notes: When you run *The Cost Analyzer*, if you're not sure of the loan fees, enter zero or estimate the answer. It's easy to run the program over and over again with different numbers. *The Cost Analyzer* assumes that you will itemize deductions on your federal income-tax return, and treats the purchase as if it were made on the first day of the year. A "home loan" is a loan for the purpose of buying or improving your principal residence. There are three kinds of loan fees or "points": 1. Nondeductible fee (no tax deduction allowed); 2. Deductible fee on a home loan (deduction in first year); 3. Deductible fee on other loans (deduction spread over term of loan). Check the status of the fees on your loan with your accountant or loan officer.

Base Version (Commodore 64 w/printer) The Cost Analyzer

```

10 SP$=CHR$(32):FOR Z=2 TO 11:SP$=SP$+CHR$(32):NEXT Z
20 PRINT CHR$(147);
30 PRINT "THE COST ANALYZER":PRINT
40 INPUT "INTEREST RATE ON SAVINGS (%)";T
50 IRS=T/100:PRINT
60 TS="":PRINT "IS INTEREST ON SAVINGS TAXABLE?";INPUT
TS:PRINT
70 IF TS="" THEN 60
80 TXBL=(LEFT$(TS,1)="Y")
90 INPUT "AMOUNT OF LOAN ($)";LN:PRINT
100 INPUT "LOAN INTEREST RATE (%)";T:LIR=T/100:PRINT
110 INPUT "NONDEDUCTIBLE LOAN FEE ($)";NLF:PRINT
120 INPUT "DEDUCTIBLE LOAN FEE ($)";DLF:PRINT
130 IF DLF=0 THEN 160
140 TS="":PRINT "IS THIS A HOME LOAN?";INPUT TS:IF TS=
"" THEN 140
150 HOM=(LEFT$(TS,1)="Y"):PRINT
160 INPUT "LOAN TERM (NO. OF YEARS)";YRS:PRINT
170 INPUT "YOUR TAX BRACKET (%)";T:TBR=T/100:PRINT
180 FLG=-1:MIR=LIR/12:ADTR=IRS*(1-TBR*(-TXBL))
190 PCST=NLF+DLF
200 MP=LN*MIR*(1+MIR)^(YRS*12)/((1+MIR)^(YRS*12)-1)
210 PRINT "PREPARE PRINTER AND":PRINT "PRESS ANY KEY."
220 GET K$:IF K$="" THEN 220
230 PRINT CHR$(147);:OPEN 4,4
240 PRINT#4,"THE COST ANALYZER":PRINT#4
250 PRINT#4,"INTEREST ON SAVINGS      = ";IRS*100;"%"
260 PRINT#4," INTEREST AFTER TAX      = ";ADTR*100;"%"
270 PRINT#4,"AMOUNT OF LOAN          = ";
280 T=LN:GOSUB 1000
290 PRINT#4,"LOAN INTEREST RATE      = ";LIR*100;"%"
300 IF NLF THEN PRINT#4,"NONDEDUCTIBLE LOAN FEE = ";
310 IF NLF THEN T=NLF:GOSUB 1000
320 IF DLF=0 THEN 370
330 PRINT#4,"DEDUCTIBLE LOAN FEE      = ";
340 T=DLF:GOSUB 1000
350 IF NOT HOM THEN PRINT#4," **NOT HOME LOAN**"
360 IF HOM THEN PRINT#4," **HOME LOAN**"
370 PRINT#4,"LOAN TERM IS";YRS;"YEARS"
380 PRINT#4,"YOUR TAX BRACKET          = ";TBR*100;"%"
390 PRINT#4:PRINT#4,"MONTHLY LOAN PAYMENT = ";
400 T=MP:GOSUB 1000:PRINT#4
410 PRINT#4,LEFT$(SP$,8);"INTEREST      PRINCIPAL      E
ND-OF-YEAR      NET TAX"
420 PRINT#4,"YEAR      PAYMENT      PAYMENT      BALA
NCE      BENEFIT"
430 PRINT#4,"-----
-----
-----"
440 BAL=LN:FLG=0
450 FOR ZY=1 TO YRS:YPP=0:YIP=0:YTB=0
460 FOR ZM=1 TO 12
470 IP=BAL*MIR:PP=MP-IP:BPAL=BAL-PP:NTB=IP*TBR
480 IF ZY=1 AND HOM THEN NTB=NTB+DLF*TBR/12
490 IF DLF AND NOT HOM THEN NTB=NTB+(DLF*TBR)/(12*YRS)
500 PCST=PCST+(MP-NTB)/(1+ADTR/12)^(ZY-1)*12+ZM)
510 YPP=YPP+PP:YIP=YIP+IP:YTB=YTB+NTB
520 NEXT ZM
530 IF ZY<10 THEN PRINT#4," ";
540 PRINT#4,ZY;:T=YIP:GOSUB 1000:T=YPP:GOSUB 1000
550 T=BAL:GOSUB 1000:T=YTB:GOSUB 1000:PRINT#4
560 NEXT ZY:FLG=-1

```

```

570 PRINT#4:PRINT#4,"IN TODAY'S DOLLARS,":PRINT#4
580 PRINT#4," USING SAVINGS COSTS YOU      ";
590 T=LN:GOSUB 1000
600 PRINT#4," BORROWING THE MONEY COSTS YOU ";
610 T=PCST:GOSUB 1000
620 PRINT#4:CLOSE 4
630 TS="":PRINT "DO YOU WANT ANOTHER ANALYSIS?";INPUT
TS
640 IF TS="" THEN 630
650 IF LEFT$(TS,1)="Y" THEN 20
660 END
1000 TS=STR$(INT((ABS(T)+1)*100))
1010 CNS=RIGHT$(TS,2)
1020 TS=STR$(VAL(LEFT$(TS,LEN(TS)-2))-1)
1030 PFS="$"+RIGHT$(TS,LEN(TS)-1)+" "+CNS
1040 IF FLG THEN PRINT#4,PFS:RETURN
1050 PRINT#4,LEFT$(SP$,14-LEN(PFS));PFS;:RETURN

```

MODIFICATIONS FOR OTHER COMPUTERS

ADAM & Apple w/printer

Use the base version, with the following alterations: Change PRINT#4 (or PRINT#4,) to PRINT in lines 240-270, 290-300, 330, 350-360, 380-430, 530, 550, 570-580, 600, and 1040-1050. Also, change lines 20, 180, 220, 230, 370, 540, 560, 620, and 1030 to read as follows:

```

20 HOME
180 FLG=1:MIR=LIR/12:ADTR=IRS*(1-TBR*TXBL)
220 GET K$
230 HOME:PRINT:PRINT CHR$(4);"PR# 1"
370 PRINT "LOAN TERM IS ";YRS;" YEARS"
540 PRINT " ";ZY;" ";:T=YIP:GOSUB 1000:T=YPP:GOSUB 1000
560 NEXT ZY:FLG=1
620 PRINT CHR$(4);"PR# 0"
1030 PFS="$"+TS+" "+CNS

```

IBM PC & PCjr w/printer

Use the base version, with the following alterations: Omit lines 530, 620, and 1030-1050. Change PRINT#4 (or PRINT#4,) to LPRINT in lines 240-270, 290-300, 330, 350-430, 550, 570-580, and 600. Finally, change lines 10-20, 220-230, 540, and 1000-1020 to read as follows:

```

10 DEFDBL A-Y:SP$=STRING$(11,32)
20 CLS
220 IF INKEY$="" THEN 220
230 CLS
540 LPRINT USING "### ";ZY;:T=YIP:GOSUB 1000:T=YPP:GOS
UB 1000
1000 IF FLG THEN ND=LEN(STR$(INT(T)))-2 ELSE ND=9
1010 LPRINT USING "$"+STRING$(ND,"#")+".#";T;
1020 IF FLG THEN LPRINT:RETURN ELSE RETURN

```

TRS-80 Color Computer w/printer

Use the base version, with the following alterations: Omit line 620. Change PRINT#4 to PRINT#-2 in lines 240-270, 290-300, 330, 350-430, 530-550, 570-580, 600, and 1040-1050. Finally, change lines 20 and 220-230 to read as follows:

```

20 CLS
220 IF INKEY$="" THEN 220
230 CLS

```

TRS-80 Models III & 4 w/printer

Use the modifications given above for the IBM PC and PCjr. Note: Use the up-arrow (↑) key (upper left-hand corner of the keyboard) to enter the ^ character in lines 200 and 500. This character will look like a left bracket (⌈) on the screen, but will show up as a ^ on most printers.

Be the Programmer



ILLUSTRATION BY BARTON STABLER



J U N E



TIPS TO THE TYPIST

Page 50

How to type in
FAMILY COMPUTING'S
programs.

BEGINNER PROGRAM

Page 51

Look!
Up in the sky!
It's the
Airplane Message
service!

GRAPHICS PROGRAM

Page 54

Let *Patterns*
embroider your screen
with
brilliant color
and
imaginative forms.

PUZZLE

Page 57

Can you solve
the mystery
of the
Planet of the Eggs?
Figure it out
before midnight, or the
yolk's on you!

PROGRAMMING P.S. Page 62 Corrections to previous months' programs, and to "Helpful Hints."

ILLUSTRATION BY JIM CHERRY III

Cherry

PATTERNS

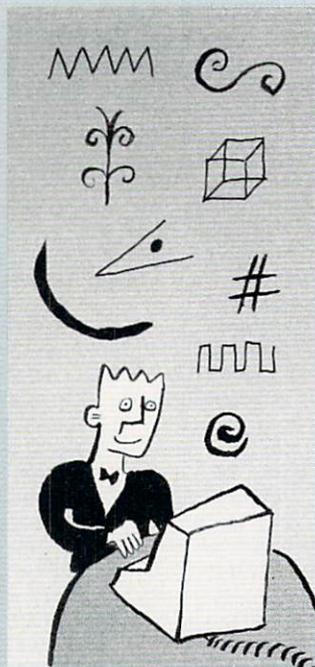
JOEY LATIMER

Have you ever wanted to make an Indian blanket, create op art, or just plain experiment with your computer's graphic capabilities?

Patterns lets you draw a simple block pattern in low-resolution graphics. It then multiplies this pattern dynamically over and over, making it play against itself in fascinating ways. As the process of repetition continues, you can vary the colors and choose whether patterns overprint or erase each other when they collide.

To use *Patterns*, type in the program and SAVE it to disk or tape. Set your computer to all uppercase letters before typing RUN (except ADAM). *Patterns* will begin in (in the TRS-80 Model III version, the "C" key changes the graphics character currently being used to draw the pattern); "E" for Erase, to clear the screen and prepare a new design; and "Q" for Quit, in order to terminate program execution and return to BASIC. Finally, the "O" key toggles the overprint feature on and off. When overprint is turned on (as it is at the beginning of the repetition process), patterns simply print over one another when they collide. By pressing the "O" key, you can change this rule so that the area where two patterns overlap is erased. Pressing the "O" key again turns the overprint feature back on. Use of this feature can create waves of movement within the overall design as patterns interact to create unoccupied space on the screen.

When you're finished designing your pattern, press "P" to start the repetition process. Command keys that control the process include "W" for Wait, which will freeze the screen for



study; "C" for Color, to change the color the machine currently is drawing in (in the TRS-80 Model III version, the "C" key changes the graphics character currently being used to draw the pattern); "E" for Erase, to clear the screen and prepare a new design; and "Q" for Quit, in order to terminate program execution and return to BASIC. Finally, the "O" key toggles the overprint feature on and off. When overprint is turned on (as it is at the beginning of the repetition process), patterns simply print over one another when they collide. By pressing the "O" key, you can change this rule so that the area where two patterns overlap is erased. Pressing the "O" key again turns the overprint feature back on. Use of this feature can create waves of movement within the overall design as patterns interact to create unoccupied space on the screen.

ADAM/Patterns

```

9 REM --MAKE SURE <LOCK> KEY IS UP--
10 LOMEM: 29000
20 DIM c(127),r(127)
30 FOR i = 28000 TO 28005:READ a:POKE i,a:NEXT i
40 p = 0:x = 19:y = 19:ko = 15
50 HOME:GR
60 VTAB 21
70 PRINT " Direction keys:";TAB(21);"u i o"
80 PRINT " <e>=erase";TAB(21);"j l"
    
```

```

90 PRINT " <p>=patterns";TAB(21);"m , ."
100 COLOR= 15:PLOT x,y
110 GET k$
120 IF p > 0 AND k$ = "p" THEN p = p-1:GOTO 190
130 IF k$ = "e" THEN 40
140 cx = (k$ = "o" OR k$ = "l" OR k$ = ".")-(k$ = "u"
OR k$ = "j" OR k$ = "m")
150 cy = (k$ = "m" OR k$ = ", OR k$ = ".")-(k$ = "u"
OR k$ = "i" OR k$ = "o")
160 IF cx = 0 AND cy = 0 THEN 110
170 c(p) = cx:r(p) = cy:x = x+cx:y = y+cy:GOSUB 1000
180 PLOT x,y:IF p < 127 THEN p = p+1:GOTO 110
190 i = 0:f = 0
200 HOME:VTAB 21
210 PRINT "<w>=wait";TAB(22);"<e>=erase"
220 PRINT "<c>=change color";TAB(22);"<q>=quit"
230 PRINT TAB(7);"<o>=overprint mode"
239 REM --"CALL 28000" CLEARS KEYPRESS REGISTER--
240 CALL 28000
250 k = PEEK(64885):IF k > 0 THEN CALL 28000
260 IF k = 113 THEN TEXT:HOME:END
270 IF k = 101 THEN 40
280 IF k = 99 THEN ko = ko+1-15*(ko = 15):COLOR= ko
290 IF k = 111 THEN f = NOT f
300 IF k <> 119 THEN 340
310 HOME:VTAB 22
320 PRINT TAB(4);"Press any key to continue."
330 GET k$:GOTO 200
340 x = x+c(i):y = y+r(i):GOSUB 1000
350 IF SCRN(x,y) = 0 OR NOT f THEN PLOT x,y:GOTO 370
360 COLOR= 0:PLOT x,y:COLOR= ko
370 i = i+1:IF i = p+1 THEN i = 0
380 GOTO 250
1000 x = x+40*((x = -1)-(x = 40))
1010 y = y+40*((y = -1)-(y = 40)):RETURN
2000 DATA 62,0,50,117,253,201
    
```

Apple/Patterns

```

10 DIM C(127),R(127)
20 P = 0:X = 19:Y = 19:K0 = 15
30 HOME:GR
40 VTAB 21:PRINT TAB(18);"U I O <E>=ERASE"
50 PRINT "DIRECTION KEYS: J L"
60 PRINT TAB(18);"M , <P>=PATTERNS";
70 COLOR= 15:PLOT X,Y
80 GOSUB 1000
90 IF P > 0 AND K = 80 THEN P = P-1:GOTO 160
100 IF K = 69 THEN 20
110 CX = (K = 79 OR K = 76 OR K = 46)-(K = 85 OR K = 7
4 OR K = 77)
120 CY = (K = 77 OR K = 44 OR K = 46)-(K = 85 OR K = 7
3 OR K = 79)
130 IF CX = 0 AND CY = 0 THEN 80
140 C(P) = CX:R(P) = CY:X = X+CX:Y = Y+CY:GOSUB 2000
150 PLOT X,Y:IF P < 127 THEN P = P+1:GOTO 80
160 I = 0:F = 0
170 HOME:VTAB 21
180 PRINT "<C>=CHANGE COLOR";TAB(31);"<E>=ERASE"
190 PRINT "<W>=WAIT";TAB(31);"<Q>=QUIT"
200 PRINT TAB(12);"<O>=OVERPRINT MODE"
210 POKE -16368,0
220 K = PEEK(-16384)-128:IF K >= 0 THEN POKE -16368,0
230 IF K = 81 THEN TEXT:HOME:END
240 IF K = 69 THEN 20
250 IF K = 67 THEN K0 = K0+1-15*(K0 = 15):COLOR= K0
260 IF K = 79 THEN F = NOT F
270 IF K <> 87 THEN 310
280 HOME:VTAB 22
290 PRINT TAB(8);"PRESS ANY KEY TO CONTINUE."
300 GOSUB 1000:GOTO 170
310 X = X+C(I):Y = Y+R(I):GOSUB 2000
320 IF SCRN(X,Y) = 0 OR NOT F THEN PLOT X,Y:GOTO 340
330 COLOR= 0:PLOT X,Y:COLOR= K0
340 I = I+1:IF I = P+1 THEN I = 0
350 GOTO 220
1000 POKE -16368,0
1010 K = PEEK(-16384)-128:IF K < 0 THEN 1010
    
```

PLANET OF THE EGGS

A Hard-Boiled Tale of Sabotage and Suspense

PUZZLE BY PETER FAVARO AND SARAH KORTUM

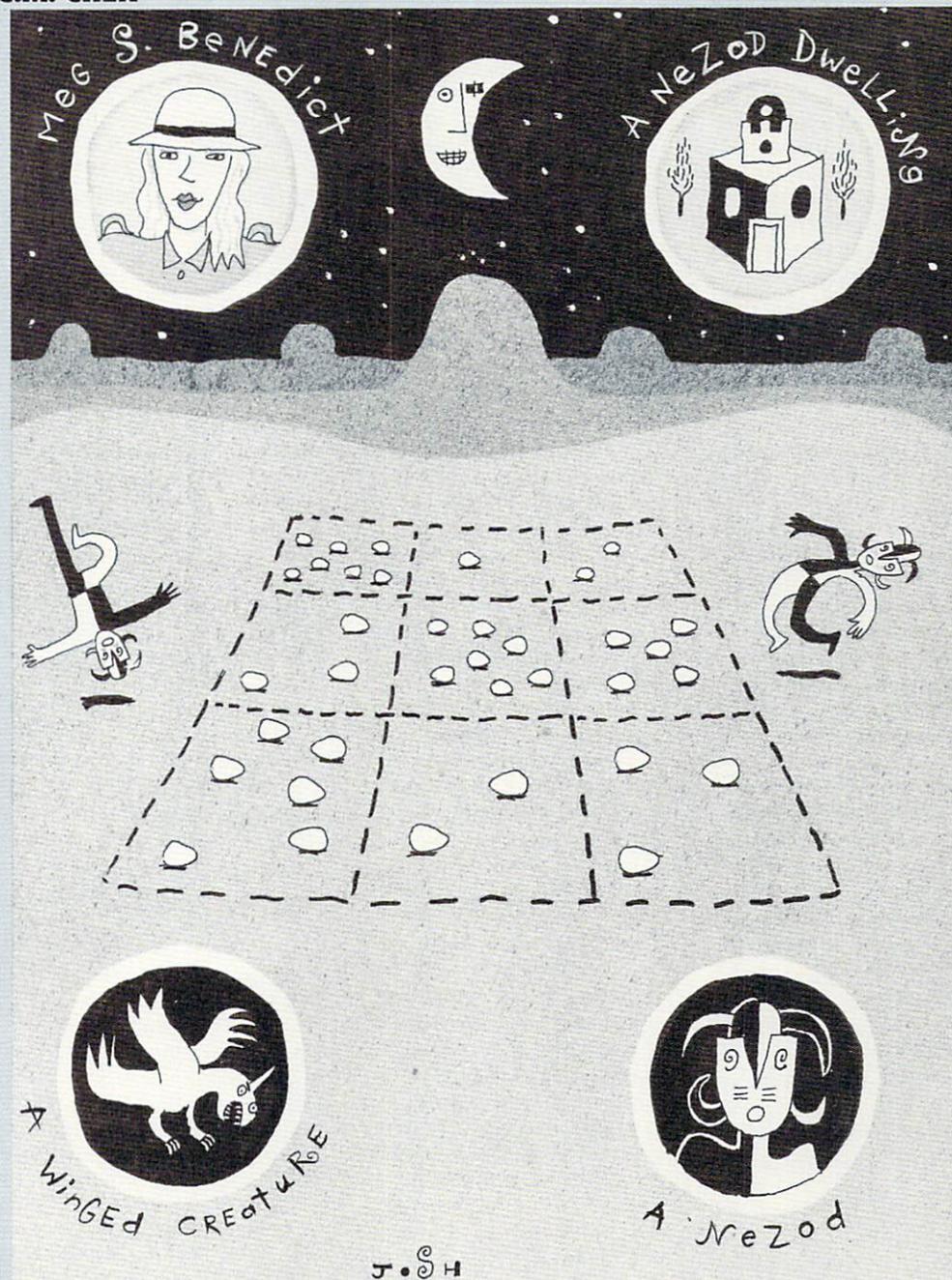
PROGRAM BY STEVEN C.M. CHEN

If you're not a puzzle fan, you can still have fun with this program. See "Bonus Program" in the Solution to Scrambled Eggs, page 53. But don't read it unless you're sure you don't want to try the puzzle.

Exactly three minutes after the landing pod touched the surface of planet OVR-EZ, explorer Meg S. Benedict stepped off the ladder and listened to the air lock close with a soft whoooooosh. She shut her eyes and inhaled a long, deep breath, exhausted from a week of strenuous exploratory work, which had included visits to three moons (two natural, one artificial), six asteroids, and a self-sufficient space colony. This was her last stop before a much-needed vacation.

As Meg surveyed the landscape, she realized that everything was orderly and uniform. The trees were identical—Meg knew, without counting, that each contained the same number of leaves. Nothing was out of balance. If there was a black circular design on the left side of a dwelling, it was complemented on the right side by a white circle. When a light was turned on in one window, a light was turned off in another. Even the nine plots of land in the middle of the landscape were arranged in a perfectly symmetrical, three-by-three grid.

This community was a refreshing change from the



Karmian society Meg had just visited, where the greeting ritual consisted of dipping new arrivals head-first into pools of green mud as a sign of hospital-

ity. Only one thing seemed out of order on OVR-EZ: some eggs were scattered about the nine plots in apparent disarray.

Meg headed toward a

nearby foodstation and was taken aback by her first sight of the inhabitants. One creature was pouring large amounts of the planet's food products

into a huge vat and then jumping in and spinning around wildly. Another creature took out a long bugle in the middle of what appeared to be a friendly conversation and played it rudely in his partner's face. Meg wondered how these inhabitants could maintain such an orderly looking community with such odd standards of behavior.

Curious, she turned on her universal translator, introduced herself to a passerby, and requested an interview. The inhabitant spoke quickly, almost frenetically; and the translation that appeared on the handheld machine read: "Think? I can't even scrambled my brains are so talk." Was something wrong with the translator? A quick diagnostic check revealed that everything was in perfect working order. Meg approached another inhabitant with the same confusing results.

Perhaps a visit to the planet's archives would crack through the shell of apparent mystery. When Meg started reading the inhabitants' history, she discovered that they call themselves the Nezods, and that they develop in reverse. Born physically mature, they revert to egg form during their twilight years. As eggs, they exist forever, living on as keepers of all the knowledge and wisdom necessary for the continued advancement of the society. But the distribution of knowledge, as reflected in the arrangement of the eggs among the nine plots she'd seen upon landing, has to be balanced, just like everything else in the Nezod society. If this balance is disturbed, the Nezods are sent into the state of confusion that Meg was obviously witnessing.

Legends told of monstrous winged creatures who periodically invaded the community and disrupted the arrangement of the eggs, in an attempt to

render the Nezods helpless. Meg read that if balance is not restored by midnight on the day of the disturbance, the Nezods will be destroyed forever. In horror, she looked at her watch. It was nearly midnight! She quickly searched the archives for a diagram of the proper arrangement of the eggs. All she could find was a badly damaged map revealing how many eggs belonged in just one of the plots. Upon returning to the nine plots, she noted that those eggs were still undisturbed. But there was no way of knowing how many of the others had been tampered with. Frantic, Meg began to rearrange the eggs from plot to plot, hoping to find the proper balance that would restore the society to harmony.

HOW TO PLAY

Type each line of the program into your computer exactly as shown, carefully making the appropriate modifications (if needed). (See "Tips to the Typist," page 50, for help in typing programs.) Then SAVE it to disk or cassette.

When you RUN the program, you'll see the nine plots, each containing a number representing how many eggs are in that plot. You can move the cursor, which represents which plot you're standing in, from plot to plot by using your computer's cursor keys. (Notes to Apple and Atari owners: Since not all Apples have up- and down-arrow keys, use the I, J, K, and L keys to move the cursor up, left, down, and right, respectively. And on the Atari, don't hold down the CONTROL key when using the cursor keys to play.)

To move eggs from one plot to another, move the cursor to the first plot and press RETURN or ENTER. You'll see the question, PICK UP HOW MANY EGGS? Enter how many eggs you want to pick up from that plot (from one to all) and

press RETURN or ENTER again.

You're now carrying those eggs. (You'll notice that they disappear from the plot you're standing in.) Next, walk to the second plot (by moving the cursor) and press RETURN or ENTER again. This will cause you to "drop" the eggs you're carrying, adding them to the eggs already in the second plot, if any.

You may find that you can't pick up eggs from, or add any to, one of the plots. If that happens, it means you've discovered the one plot that already has the correct number of eggs.

Watch the clock on your screen closely. If you move the eggs into their correct arrangement before midnight, the computer will congratulate you and move into a surprise second program. (When you've solved the puzzle, see the solution on page 53 for instructions on using the second program.)

If you fail, the society will be destroyed on screen at midnight before your very eyes. You'll have to RUN the program again if you want to start over.

At any time, you can press the "Q" key to exit the program and the screen will clear. Type RUN and press RETURN or ENTER to play again.

PROGRAM NOTES

The way this program allows you to move the cursor about the grid and change the number under the cursor is very similar to the way a spreadsheet program works.

The lines of the program that handle the cursor movement begin in the low 500s. Keep in mind that H

and V are the horizontal and vertical positions of the cursor in the grid, each ranging from 1 to 3. For example, (1, 1) represents the upper left-hand corner plot.

If a cursor key is pressed, the program first reprints the value in the current plot—that is, square (H, V)—without the cursor. (The cursor is represented by a different color, an inverse bar, a pair of >pointers<, or an underline depending on the computer.)

Then the program adds 1 to (or subtracts 1 from) the value of V if a down (or up) arrow is pressed. Similarly, it adds 1 to, or subtracts 1 from, the value of H if a right or left arrow is pressed.

Finally, there is a "wrap-around" feature. If, for example, H=3 (meaning your cursor is in the bottom row) and you press the down-arrow key, 1 is added to H to get 4. But 4 is too big, so H is reset to 1. The result on the screen is that the cursor "wraps around" to the top row again.

The same programming principles also could be used to move an object around the screen, depending on the position of a joystick.

Note: For this program, the "cursor" keys are I, J, K, and L for Apple computers. If you have an Apple IIe or IIc, which have all four arrow keys, all you have to do is make a change in line 40 to make the program work with the true cursor keys instead of with I, J, K, and L. And owners of other computer brands may find it easier to make the program work with other keys of their choice instead of the cursor keys. Try it!

Apple/Scrambled Eggs

```
20 DIM HP(4),VP(4),M(3,3),SUM(8)
30 DL = 800:MAX = 7:MD = 10:SD = 50
40 UP = 73:DWN = 75:LF = 74:RT = 76
50 PICK = 0:SF = 1:MIN = 45:SEC = 0:CM = (MD*3-8)/2
60 $$ = CHR$(32):QS = $$:FOR X = 1 TO MD*3
```

```

70 QS = QS+SS:NEXT X:BS = LEFT$(QS,MAX+2)
80 FOR X = 0 TO 4:VP(X) = X*4+1:NEXT X
90 FOR X = 1 TO 4:HP(X) = (X-1)*MD+3:NEXT X
110 REM GOTO 340
120 FOR X = 1 TO 3:FOR Y = 1 TO 3:READ M(X,Y):NEXT Y,X
130 HOME:GOSUB 1020
140 VTAB 3:FOR X = 1 TO 3:INVERSE:PRINT QS
150 FOR Y = 1 TO 3:INVERSE:PRINT SS;:FOR Z = 1 TO 3
160 NORMAL:PRINT BS;:INVERSE:PRINT SS;:NEXT Z
170 PRINT:NEXT Y,X:INVERSE:PRINT QS:NORMAL
180 FOR V = 1 TO 3:FOR H = 1 TO 3:GOSUB 2010:NEXT H,V
190 H = 2:V = 2:GOSUB 2000
200 K = PEEK(-16384)-128
210 IF K > 0 THEN POKE -16368,0:GOTO 240
220 IF SF = 2 THEN 200
230 GOSUB 1000:ON MIN = 60 GOTO 600:GOTO 200
240 IF K = 81 OR K = 113 THEN HOME:END
250 ON K <> 13 GOTO 520:IF SF = 2 THEN 420
260 IF H = 1 AND V = 1 THEN 200
270 IF PICK = 0 THEN 360
280 PICK = 0:M(V,H) = M(V,H)+EGG:GOSUB 2000
290 C = 0:GOSUB 3000:FOR X = 1 TO 8
300 C = C+(SUM(X) = 12):NEXT X:IF C < 8 THEN 590
310 VTAB 18:HTAB 1:PRINT "CORRECT ARRANGEMENT!"
320 FLASH:PRINT "YOU SAVED THE NEZODS.":NORMAL
330 FOR D = 1 TO DL+2:NEXT D
340 SF = 2:FOR X = 1 TO 3:FOR Y = 1 TO 3
350 M(X,Y) = 0:NEXT Y:NEXT X:HOME:GOTO 140
360 VTAB 20:HTAB 1:INPUT "PICK UP HOW MANY EGGS? ";VS
370 VTAB 20:HTAB 1:PRINT QS;QS
380 EGG = VAL(V$):IF EGG < 1 THEN 410
390 IF EGG > M(V,H) THEN EGG = M(V,H)
400 PICK = 1:M(V,H) = M(V,H)-EGG:GOSUB 2000
410 SEC = SEC+4:GOSUB 1010:GOTO 200
420 VTAB 20:HTAB 1:INPUT "VALUE FOR THIS SQUARE: ";VS
430 VTAB 20:HTAB 1:PRINT QS;QS:IF VS = "" THEN 200
440 T = VAL(V$):IF T < 0 OR LEN(V$) > MAX THEN 200
450 M(V,H) = INT(T):GOSUB 2000:GOSUB 3000
460 FOR X = 1 TO 3:VTAB VP(4):HTAB HP(X)-1:PRINT BS
470 VTAB VP(4):HTAB HP(X)+(MAX-LEN(STR$(SUM(X))))/2
480 PRINT SUM(X):NEXT X
490 FOR X = 4 TO 8:VTAB VP(X-4):HTAB HP(4)-1:PRINT BS
500 VTAB VP(X-4):HTAB HP(4):PRINT SUM(X):NEXT X
510 GOTO 200
520 IF K <> UP AND K <> DWN AND K <> LF AND K <> RT TH
EN 200
530 GOSUB 4000:IF (K = LF) OR (K = RT) THEN 560
540 V = V+(K = DWN)-(K = UP)
550 V = V+((V < 1)-(V > 3))*3:GOSUB 2000:GOTO 580
560 H = H+(K = RT)-(K = LF)
570 H = H+((H < 1)-(H > 3))*3:GOSUB 2000
580 IF SF = 2 THEN 200
590 SEC = SEC+0.6:GOSUB 1010:IF MIN <> 60 THEN 200
600 FOR X = 1 TO 500:VTAB 3+RND(1)*13
610 HTAB 1+RND(1)*(MD+3+1):PRINT SS:NEXT X
620 FOR D = 1 TO DL:NEXT D:HOME:END
1000 FOR D = 1 TO SD:NEXT D:SEC = SEC+0.2
1010 IF SEC > 59.99 THEN SEC = SEC-60:MIN = MIN+1
1020 VTAB 1:HTAB CM:SEC$ = STR$(INT(SEC))
1030 IF SEC < 10 THEN SEC$ = "0"+SEC$
1040 IF MIN < 60 THEN 1070
1050 FLASH:PRINT SS;"MIDNIGHT!";SS:NORMAL
1060 GOSUB 2010:FOR D = 1 TO DL:NEXT D:RETURN
1070 PRINT "11:";MIN;";";SEC$;" PM":RETURN
2000 INVERSE
2010 T$ = STR$(M(V,H)):B = HP(H)+(MAX-LEN(T$))/2
2020 GOSUB 4000:NORMAL:RETURN
3000 SUM(4) = 0:SUM(8) = 0
3010 FOR Y = 1 TO 3:SUM(Y) = M(1,Y)+M(2,Y)+M(3,Y)
3020 SUM(Y+4) = M(Y,1)+M(Y,2)+M(Y,3)
3030 SUM(8) = SUM(8)+M(Y,Y):SUM(4) = SUM(4)+M(4-Y,Y)
3040 NEXT Y:RETURN
4000 VTAB VP(V):HTAB HP(H)-1:PRINT BS;
4010 VTAB VP(V):HTAB B:PRINT T$;:RETURN
6000 DATA 7,1,2,3,7,5,6,2,3

```

Atari/Scrambled Eggs

```

10 DIM HP(4),VP(4),M(3,3),SUM(8)
20 DIM AS(31),CLS(1),QS(31),RS(1)
30 DIM SS(1),SEC$(2),T$(10),VS(9),Z$(7)
40 POKE 752,1:POKE 82,0:SETCOLOR 2,9,4
50 PICK=0:SF=1:MIN=45:SEC=0:CLS=CHR$(125)
60 SS=CHR$(32):QS=SS:QS(31)=SS:QS(2)=QS
70 RS=CHR$(160):AS=RS:AS(31)=AS:AS(2)=AS
80 FOR X=0 TO 4:VP(X)=X*4+1:NEXT X
90 FOR X=1 TO 4:HP(X)=(X-1)*10+2:NEXT X
100 REM GOTO 330
110 FOR X=1 TO 3:FOR Y=1 TO 3:READ T
120 M(X,Y)=T:NEXT Y:NEXT X
130 PRINT CL$;:GOSUB 1020
140 POSITION 0,3:FOR X=1 TO 3:PRINT AS
150 FOR Y=1 TO 3:PRINT RS;:FOR Z=1 TO 3
160 PRINT QS(1,9);:PRINT RS;:NEXT Z:PRINT
170 NEXT Y:NEXT X:PRINT AS
180 FOR V=1 TO 3:FOR H=1 TO 3:GOSUB 2000:NEXT H:NEXT V
190 H=2:V=2:GOSUB 3000
200 K=PEEK(764):POKE 764,255:IF K<>255 THEN 230
210 IF SF=2 THEN FOR D=1 TO 10:NEXT D:GOTO 200
220 GOSUB 1000:ON MIN=60 GOTO 580:GOTO 200
230 IF K=47 THEN POKE 752,0:POKE 82,2:PRINT CL$;:END
240 ON K<>12 GOTO 480:IF SF=2 THEN 390
250 IF H=1 AND V=1 THEN 200
260 IF PICK=0 THEN 350
270 PICK=0:M(V,H)=M(V,H)+EGG:GOSUB 3000
280 C=0:GOSUB 4000:FOR X=1 TO 8
290 C=C+(SUM(X)=12):NEXT X:IF C<8 THEN 570
300 POSITION 0,18:PRINT "CORRECT ARRANGEMENT!"
310 PRINT "YOU SAVED THE NEZODS."
320 FOR D=1 TO 800:NEXT D
330 SF=2:FOR X=1 TO 3:FOR Y=1 TO 3
340 M(X,Y)=0:NEXT Y:NEXT X:PRINT CL$:GOTO 140
350 GOSUB 5000:IF F OR T<1 THEN 380
360 EGG=T:IF EGG>M(V,H) THEN EGG=M(V,H)
370 PICK=1:M(V,H)=M(V,H)-EGG:GOSUB 3000
380 SEC=SEC+4:GOSUB 1010:GOTO 200
390 GOSUB 5000:IF F THEN 200
400 IF T<0 OR LEN(V$)>6 THEN 200
410 M(V,H)=INT(T):GOSUB 3000:GOSUB 4000
420 FOR X=1 TO 3:POSITION HP(X)-1,VP(4):PRINT QS(1,8);
430 Z$=STR$(SUM(X))
440 POSITION HP(X)+(7-LEN(Z$))/2,VP(4):PRINT Z$:NEXT X
450 FOR X=4 TO 8:POSITION HP(4)-1,VP(X-4):PRINT QS(1,8
);
460 POSITION HP(4),VP(X-4):PRINT SUM(X):NEXT X
470 GOTO 200
480 IF K<>6 AND K<>7 AND K<>14 AND K<>15 THEN 200
490 GOSUB 2000:IF SF=2 THEN 510
500 SEC=SEC+0.6:GOSUB 1010:IF HR=12 THEN 580
510 IF (K=6) OR (K=7) THEN 540
520 V=V-(K=14)+(K=15)
530 V=V+((V<1)-(V>3))*3:GOSUB 3000:GOTO 560
540 H=H-(K=6)+(K=7)
550 H=H+((H<1)-(H>3))*3:GOSUB 3000
560 IF SF=2 THEN 200
570 SEC=SEC+0.6:GOSUB 1010:IF MIN<>60 THEN 200
580 GOSUB 2000:FOR X=1 TO 500
590 POSITION RND(1)*30,3+RND(1)*12:PRINT SS:NEXT X
600 FOR D=1 TO 400:NEXT D:PRINT CL$;
610 POKE 752,0:POKE 82,2:END
1000 FOR D=1 TO 23:NEXT D:SEC=SEC+0.2
1010 IF SEC>59.99 THEN SEC=SEC-60:MIN=MIN+1
1020 POSITION 10,0:SEC$=STR$(INT(SEC))
1030 IF SEC<10 THEN SEC$(2)=SEC$:SEC$(1,1)="0"
1040 IF MIN<60 THEN 1070
1050 PRINT SS;"MIDNIGHT!";SS
1060 GOSUB 2000:FOR D=1 TO DL:NEXT D:RETURN
1070 PRINT "11:";MIN;";";SEC$;" PM":RETURN
2000 T$=STR$(M(V,H)):B=HP(H)+(7-LEN(T$))/2
2010 GOSUB 6000:RETURN
3000 T$=STR$(M(V,H)):B=HP(H)+(7-LEN(T$))/2
3010 FOR I=1 TO LEN(T$):T$(I,I)=CHR$(ASC(T$(I,I))+128)

```

```

500 K=ASC(RIGHT$(K$,1))
510 IF K<>72 AND K<>75 AND K<>77 AND K<>80 THEN 180
520 GOSUB 4000:IF (K=75) OR (K=77) THEN 550
530 V=V-(K=80)+(K=72)
540 V=V-((V<1)-(V>3))*3:GOSUB 2000:GOTO 570
550 H=H-(K=77)+(K=75)
560 H=H-((H<1)-(H>3))*3:GOSUB 2000
570 IF SF=2 THEN 180
580 SEC=SEC+.6:GOSUB 1010:IF MIN<>60 THEN 180
590 FOR X=1 TO 500
600 LOCATE 3+RND*12,RND*31+LM:PRINT $$:NEXT X
610 FOR D=1 TO DL:NEXT D:CLS:END
1000 FOR D=1 TO SD:NEXT D:SEC=SEC+.2
1010 IF SEC>59.99 THEN SEC=SEC-60:MIN=MIN+1
1020 LOCATE 1,CM:SEC$=MID$(STR$(INT(SEC)),2)
1030 IF SEC<10 THEN SEC$="0"+SEC$
1040 MIN$=MID$(STR$(MIN),2):IF MIN<60 THEN 1070
1050 COLOR 9:PRINT $$:"MIDNIGHT!";$$:COLOR 2
1060 GOSUB 2010:FOR D=1 TO DL:NEXT D:RETURN
1070 PRINT "11:";MIN$;";";SEC$;" PM":RETURN
2000 COLOR 9
2010 T$=MID$(STR$(M(V,H)),2):B=HP(H)+(7-LEN(T$))/2
2020 GOSUB 4000:COLOR 2:RETURN
3000 SUM(4)=0:SUM(8)=0
3010 FOR Y=1 TO 3:SUM(Y)=M(1,Y)+M(2,Y)+M(3,Y)
3020 SUM(Y+4)=M(Y,1)+M(Y,2)+M(Y,3)
3030 SUM(8)=SUM(8)+M(Y,Y):SUM(4)=SUM(4)+M(4-Y,Y)
3040 NEXT Y:RETURN
4000 LOCATE VP(V),HP(H)-1:PRINT B$
4010 LOCATE VP(V),B:PRINT T$:RETURN
5000 DATA 7,1,2,3,7,5,6,2,3

```

TRS-80 Color Computer/Scrambled Eggs

```

10 CLEAR 500:DIM HP(4),VP(4),M(3,3),SUM(8)
20 DL=700:MAX=4:MD=7:SD=23:UP=94:WL=32:LM=1:F=0
30 BM=352:S$=CHR$(32):W$=CHR$(175):H$=W$
40 PICK=0:SF=1:MIN=45:SEC=0:CM=(MD*3-10)/2+LM
50 R$=W$:FOR X=1 TO MD*3:Q$=Q$+S$:R$=R$+W$:NEXT X
60 B$=LEFT$(Q$,MAX+2):C$=LEFT$(R$,MAX+2)
70 X$=H$:Y$=H$
80 FOR X=1 TO 3:X$=X$+C$+H$:Y$=Y$+B$+H$:NEXT X
90 FOR X=0 TO 4:VP(X)=(X+2)*WL:NEXT X
100 FOR X=1 TO 4:HP(X)=(X-1)*MD+LM+2:NEXT X
110 REM GOTO 320
120 FOR X=1 TO 3:FOR Y=1 TO 3:READ M(X,Y):NEXT Y,X
130 CLS:GOSUB 1020
140 PRINT@2+WL,"";
150 FOR Z=1 TO 3:PRINT TAB(LM);X$
160 PRINT TAB(LM);Y$:NEXT Z:PRINT TAB(LM);R$
170 FOR V=1 TO 3:FOR H=1 TO 3:GOSUB 2000:NEXT H,V
180 H=2:V=2:GOSUB 3000
190 K$=INKEY$:IF K$<>" " THEN K=ASC(K$):GOTO 220
200 IF SF=2 THEN 190
210 GOSUB 1000:ON -(MIN=60) GOTO 580:GOTO 190
220 IF K=81 OR K=113 THEN CLS:END
230 ON -(K<>13) GOTO 500:V$="":IF SF=2 THEN 400
240 IF H=1 AND V=1 THEN 190
250 IF PICK=0 THEN 340
260 PICK=0:M(V,H)=M(V,H)+EGG:GOSUB 3000
270 C=0:GOSUB 4000:FOR X=1 TO 8
280 C=C-(SUM(X)=12):NEXT X:IF C<8 THEN 570
290 PRINT@BM+LM,"CORRECT ARRANGEMENT!"
300 PRINT TAB(LM);"YOU SAVED THE NEZODS."
310 FOR D=1 TO DL*2:NEXT D
320 SF=2:FOR X=1 TO 3:FOR Y=1 TO 3
330 M(X,Y)=0:NEXT Y,X:CLS:GOTO 140
340 PRINT@BM,"PICK UP HOW MANY EGGS";:INPUT V$
350 PRINT@BM,Q$;Q$
360 EGG=VAL(V$):IF EGG<1 THEN 390
370 IF EGG>M(V,H) THEN EGG=M(V,H)
380 PICK=1:M(V,H)=M(V,H)-EGG:GOSUB 3000
390 SEC=SEC+.4:GOSUB 1010:GOTO 190
400 PRINT@BM,"VALUE FOR THIS SQUARE";:INPUT V$
410 PRINT@BM,Q$;Q$:IF V$=" " THEN 190
420 T=VAL(V$):IF T<0 OR LEN(V$)>MAX-F THEN 190
430 M(V,H)=INT(T):GOSUB 3000:GOSUB 4000

```

```

440 FOR X=1 TO 3:PRINT@VP(4)+HP(X)-1,B$;
450 Z$=MID$(STR$(SUM(X)),2)
460 PRINT@VP(4)+HP(X)+(MAX-LEN(Z$))/2,Z$;:NEXT X
470 FOR X=4 TO 8:PRINT@VP(X-4)+HP(4)-1,B$;
480 PRINT@VP(X-4)+HP(4)-1,SUM(X);:NEXT X
490 GOTO 190
500 IF K<>8 AND K<>9 AND K<>10 AND K<>UP THEN 190
510 GOSUB 2000:IF (K=8) OR (K=9) THEN 540
520 V=V-(K=10)+(K=UP)
530 V=V-((V<1)-(V>3))*3:GOSUB 3000:GOTO 560
540 H=H-(K=9)+(K=8)
550 H=H-((H<1)-(H>3))*3:GOSUB 3000
560 IF SF=2 THEN 190
570 SEC=SEC+.6:GOSUB 1010:IF MIN<>60 THEN 190
580 FOR X=1 TO 500:PRINT@RND(BM-WL)+WL,$$;
590 NEXT X:FOR D=1 TO DL:NEXT D:CLS:END
1000 FOR D=1 TO SD:NEXT D:SEC=SEC+.2
1010 IF SEC>59.99 THEN SEC=SEC-60:MIN=MIN+1
1020 SEC$=MID$(STR$(INT(SEC)),2)
1030 IF SEC<10 THEN SEC$="0"+SEC$
1040 MIN$=MID$(STR$(MIN),2):IF MIN<60 THEN 1070
1050 PRINT@CM,$$:"MIDNIGHT!";$$
1060 GOSUB 2000:FOR D=1 TO DL:NEXT D:RETURN
1070 PRINT@CM,"11:";MIN$;";";SEC$;" PM":RETURN
2000 T$=MID$(STR$(M(V,H)),2):B=HP(H)+(MAX-LEN(T$))/2
2010 GOSUB 5000:RETURN
3000 T$=MID$(STR$(M(V,H)),2):B=HP(H)+(MAX-LEN(T$))/2-1
3010 T$=">"+T$+"<":GOSUB 5000:RETURN
4000 SUM(4)=0:SUM(8)=0
4010 FOR Y=1 TO 3:SUM(Y)=M(1,Y)+M(2,Y)+M(3,Y)
4020 SUM(Y+4)=M(Y,1)+M(Y,2)+M(Y,3)
4030 SUM(8)=SUM(8)+M(Y,Y):SUM(4)=SUM(4)+M(4-Y,Y)
4040 NEXT Y:RETURN
5000 PRINT@VP(V)+HP(H)-1,B$;
5010 PRINT@VP(V)+B,T$:RETURN
6000 DATA 7,1,2,3,7,5,6,2,3

```

MODIFICATIONS FOR OTHER COMPUTERS

ADAM/Scrambled Eggs

Use the Apple version, with the following alterations. Add lines 10, 100, and 5000:

```

10 LOMEM: 29000
100 FOR i = 28000 TO 28005:READ a:POKE i,a:NEXT i
5000 DATA 62,0,50,117,253,201

```

Also, change lines 30, 40, 200-230, and 1000 to read as follows:

```

30 dl = 1000: max = 4: md = 7: sd = 135
40 up = 160: dwn = 162: lf = 163: rt = 161
200 CALL 28000: FOR d = 1 TO sd: NEXT d: IF sf = 2 THEN 220
210 GOSUB 1000: IF min = 60 THEN 600
220 VTAB 20: HTAB 1: k = PEEK(64885)
230 ON k > 0 GOTO 240: GOTO 200
1000 sec = sec + 0.2

```

Commodore 64 w/B&W TV or monochrome monitor/Scrambled Eggs

Use the version labeled "Commodore 64 w/color TV or monitor," except change line 40 to read as follows:

```
40 BLS=CHR$(144):YWS=BLS:WHS=CHR$(5)
```

IBM PCjr/Scrambled Eggs

Use the IBM PC version, except change line 20 to read as follows:

```
20 DL=900:LM=1:SD=49:SW=40
```

TRS-80 Model III/Scrambled Eggs

Use the TRS-80 Color Computer version, except change lines 20 and 30 to read as follows:

```
20 DL=300:MAX=9:MD=12:SD=8:UP=91:WL=64:LM=9:F=4
30 BM=704:S$=CHR$(32):W$=CHR$(143):H$=CHR$(191)
```

VIC-20/Scrambled Eggs

Use the version labeled "Commodore 64 w/color TV or monitor," with the following alterations. Add line 60:

```
60 AS=SS:FOR X=1 TO 20:AS=AS+SS:NEXT X
```

Change lines 10, 30, 370, 380, 430, and 440 to read as follows:

```
10 POKE 36879,25
```

```
30 BM=18:DL=900:MAX=2:MD=5:SD=44
```

```
370 POKE 214,18:PRINT:PRINT "PICK UP HOW MANY EGGS":IN  
PUT VS
```

```
380 POKE 214,18:PRINT:PRINT AS:PRINT AS
```

```
430 POKE 214,18:PRINT:PRINT "VALUE FOR THIS SQUARE":IN  
PUT VS
```

```
440 POKE 214,18:PRINT:PRINT AS:PRINT AS:IF VS="" THEN  
220
```

Finally, if you are using a color television or monitor, change line 40 to read as follows:

```
40 BL$=CHR$(144):YWS=CHR$(28):WHS=CHR$(31)
```

If you are using a black-and-white television or monochrome monitor, change line 40 to read as follows:

```
40 BL$=CHR$(144):YWS=BL$:WHS=CHR$(31)
```

PROGRAMMING P.S.

Corrections to previous months' programs

Apple/Banner (April 1985, page 63)

To run *Banner* under ProDOS, change lines 500 and 690 to read as follows:

```
500 PRINT CHR$(4);"PR# 1"
```

```
690 PRINT CHR$(4);"PR# 0"
```

TI-99/4A/Perpetual Calendar (January 1985, page 74)

The first minus sign in line 190 should have been a plus sign:

```
190 LD(2)=28+SGN(((Y=INT(Y/4)*4)*(Y<>INT(Y/100)*100))+  
(Y=2000))
```

TRS-80 Color Computer/Disk Label Maker (June 1984, page 78), **Brain Terrain** (August 1984, page 86), **The Black Mask** (October 1984, page 80), **By Invitation Only** (December 1984, page 116), **Perpetual Calendar** (January 1985, page 75), **Banner** (April 1985, page 67)

All these programs require Extended Color BASIC. In the future, when a CoCo program requires Extended Color BASIC, we'll tell you so clearly. We apologize for any inconvenience this omission may have caused.

But if you have standard Color BASIC, all is not lost! These six programs all contain a STRINGS function, which, while it's missing in Color BASIC, can be simulated.

STRINGS, often used in the form

```
AS=STRINGS(number, code)
```

is a function that creates a string containing *number* characters, each of which has ASCII code *code*. For example, STRINGS(50,32) creates a string of 50 spaces (the ASCII code for space is 32; see your manual). Another way to create strings of this kind is with a statement such as

```
FOR X=1 TO number:AS=AS+CHR$(code):NEXT X
```

For example, to create a string of 50 spaces we could write

```
FOR X=1 TO 50:AS=AS+CHR$(32):NEXT X
```

CoCo owners who don't have Extended Color BASIC may wish to use this approach to modify the six programs listed above to run on their computers.

TRS-80 Color Computer/Banner (April 1985, page 67)

You can print longer messages if you add line 5:

```
5 CLEAR 1000
```

Also see the note above.

TRS-80 Model III/Banner (April 1985, page 67)

On a Model III (and a Model 4 running Model III BASIC), you can print longer messages if you add line 5:

```
5 CLEAR 1000
```

VIC-20 w/8K or 16K RAM Cartridge/Optical Illusion (April 1985, page 59)

In Line 30, SH=17 should have read SH=16:

```
30 SH=16:SW=22:TRU=-1:ES="" <RETURN> ":CLS=CHR$(147)
```

Corrections to programs from "Helpful Hints"

ADAM & Apple/Print Out Your Disk Directory

(April 1985, page 50)

This program was incorrect as published. The following program will work correctly:

```
10 DS = CHR$(4)
```

```
20 PRINT DS;"PR# 1"
```

```
30 PRINT DS;"CATALOG"
```

```
40 PRINT DS;"PR# 0"
```

This program will print out the directory of the "current" disk or (ADAM) digital data pack. To print the directory of the disk or pack in another drive, add the designation of that drive after CATALOG in line 30. For example, to print the directory of the data pack in the second ADAM data drive, or the disk in the second Apple disk drive, you'd change line 30 to

```
30 PRINT DS;"CATALOG,D2"
```

The first ADAM disk drive is referred to as D5.

Also, if your Apple printer card is in a slot other than slot 1, change the 1 in line 20 to the number of that slot.

IBM PCs/Print out Your Disk Directory (April 1985, page 50)

If you've specially configured your system, you may have to use the name of the device on which you want the directory printed. Thus, the command you use might be DIR>LPT1, DIR>LPT2, DIR>LPT3, DIR>AUX, DIR>COM1, or DIR>COM2.

TRS-80 Model III/Print Out Your Disk Directory

(April 1985, page 50)

To print the directory of the disk in the first or second drive, the command is DIR:0 (PRT) or DIR:1 (PRT), respectively.

TRS-80 Models III & 4/Rule Your Stationery (April 1985, page 50)

The program works fine under TRSDOS Version 6 BASIC. But on a Model III (and a Model 4 running Model III BASIC), you need to add a line to the program:

```
5 CLEAR 1000
```

EDUCATION/FUN LEARNING									
Title Manufacturer Price	Brief description	Hardware/ Equipment required	Backup provided	Ratings					
				O	D	EH	GQ	EU	V
ACTORS AND ACTIONS Baudville 1001 Medical Park Drive SE Grand Rapids, MI 49506 (616) 957-3036 \$30 ©1984	Use and animate this library of characters in conjunction with TAKE 1. Cuts out some complicated steps and cuts down on time it normally takes for satisfying results. (See review of TAKE 1, below.) —FRANK	Apple II series, 64K (d.).	90-day warranty; \$5 fee for backup.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	A	★ ★ ★
THE BODY TRANSPARENT DesignWare 185 Berry St. San Francisco, CA 94107 (800) 572-7767 \$44 ©1985	Identify bones and parts of the body, learn about functions of organs and diseases in straightforward anatomy program suggested for kids 9-16. —MORRIS	Reviewed on Apple II series, 48K. Planned for C 64 (d.), IBM PC/PCjr, 64K (d.).	90-day warranty; satisfaction guaranteed for first 30 days.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	A	★ ★ ★
EASY GRAPH Grolier Electronic Publishing Sherman Turnpike Danbury, CT 06816 (800) 858-8858 \$39 ©1984	Introduction to pictographs, bar graphs, and pie charts also serves as easy-to-use graphics utility for school papers and reports. For ages 8+. † —MORRIS	Apple II series, 64K (d.). Planned for C 64; IBM PC/PCjr.	90-day warranty; \$10 fee for backup at time of purchase.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	E	★ ★ ★
LIBRARY ADVENTURE Learning Well 200 S. Service Road Roslyn Heights, NY 11577 (800) 645-6564 \$49 ©1984	Up to six players wander through a library, searching for rooms where they answer library-related questions (preprogrammed or ones you enter). Game keeps kids, ages 7-9, interested. —BUMGARNER	Apple II series, 48K (d.).	30-day warranty; \$20 fee thereafter for 1 year.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	E	★ ★ ★
MATH MAN Scholastic Software 730 Broadway New York, NY 10003 (212) 505-3567 \$39 ©1984	Scramble up and down ladders collecting correct integers to total special number in fun arcade game for ages 6-12. —MORRIS	Reviewed on Apple II series, 48K (d.). Planned for IBM PC/PCjr.	60-day warranty; \$5 thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	A	★ ★ ★
MONKEY ACADEMY Coleco Industries 999 Quaker Lane S. West Hartford, CT 06110 (203) 725-6660 \$15 ©1984	Math students 8 and up find missing numbers to complete addition, subtraction, multiplication, and division problems in lively arcade game. —DAVENPORT	Coleco ADAM (data cassette).	90-day warranty.	★ ★	★ ★ ★	★ ★ ★	★ ★ ★	E	★ ★ ★
POETRY EXPRESS Learning Well 200 S. Service Road Roslyn Heights, NY 11577 (800) 645-6564 \$39 ©1984	Learn and write eight different styles of poetry, from limericks to haiku, in thorough tutorial/verse-processor for ages 7+. † —MORRIS	Apple II series, 48K (d.). Planned for IBM PC/PCjr.	30-day warranty (includes user-damaged); \$10 fee thereafter or for backup.	★ ★ ★	★ ★ ★	★ ★ ★	N/A	A	★ ★ ★
REMEMBER! DesignWare 185 Berry St. San Francisco, CA 94107 (800) 572-7767 \$79 ©1985	Electronic flashcard maker provides strategy for memorizing facts for school. Visual, verbal, or auditory hints can be included in powerful package for ages 12+. † —MORRIS	Reviewed on Apple II series, 48K (d.). Also for C 64 (d.); IBM PC/PCjr (PC requires color card), 128K (d.).	90-day warranty; satisfaction guaranteed for first 30 days.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	A	★ ★ ★
SNOOPY'S READING MACHINE Random House Software 201 E. 50th St. New York, NY 10022 (800) 241-6042 \$29 ©1984	Accompanied by the "Peanuts" clan, beginning readers practice one-syllable words grouped in five different word families. Great graphics and fun music motivate ages 4-7. —BUMGARNER	Reviewed on Apple II series, 48K (d.). Also for C 64 (d.).	90-day warranty; \$5 fee thereafter for 9 months.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	E	★ ★ ★ ★
TAKE 1 Baudville 1001 Medical Park Drive SE Grand Rapids, MI 49506 (616) 957-3036 \$59 ©1984	Create shapes and characters, or use images from graphics package and bring them to life in difficult but rewarding "cartoon-processor" package for ages 10+. Younger users will need help; all will need patience. † —FRANK	Apple II series, 64K (d.).	90-day warranty; \$5 fee for backup or if user-damaged.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	D	★ ★ ★

RATINGS KEY O Overall performance; D Documentation; EH Error-handling; GQ Graphics quality; EU Ease of use; V Value for money; ★ Poor; ★★ Average; ★★★ Good; ★★★ Excellent; N/A Not applicable; E Easy; A Average; D Difficult; † Longer review follows chart

GAMES REVIEWS BY JAMES DELSON

Title Manufacturer Price	Brief description	Hardware/ Equipment required	Backup policy	Ratings					
				O	D	PS	GQ	EU	V
THE ANCIENT ART OF WAR Broderbund 17 Paul Drive San Rafael, CA 94903-2101 (415) 479-1170 \$44 ©1984	Challenging multilevel war game lets you use built-in scenarios and opponents (Napoleon, Genghis Khan, Caesar, and more), or create your own encounters. Best for beginners and pros taking a break; for ages 12+. †	IBM PC/PCjr, 128K (d.). Planned for Apple II series, Mac.	Unlimited warranty; \$5 fee if user-damaged.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	A	★ ★ ★
B.C. II: GROG'S REVENGE Sierra Inc. P.O. Box 485 Coarsegold, CA 93614 (209) 683-6858 \$34 ©1984	Steer Thor along mountain trails, through caverns, picking up clams, and avoiding Grog the dino and other perils. Wonderful graphics and easy play make this good for ages 8+.	Reviewed on C 64 (d.). Also for Coleco ADAM (data cassette) from Coleco. Joystick.	90-day warranty; \$5 fee thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	E	★ ★ ★
GALACTIC ADVENTURES Strategic Simulations 883 Stierlin Rd., Bldg A-200 Mountain View, CA 94043 (415) 964-1353 \$59 ©1982-1984	Guide up to 10 different characters through a vast galaxy in exciting preprogrammed adventures or those you build yourself. Finest role-playing game ever. For ages 12+. †	Reviewed on Atari, 48K (d.). Also for Apple II series, 48K (d.).	30-day warranty; \$10 fee thereafter.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	A	★ ★ ★ ★
HITCHHIKER'S GUIDE TO THE GALAXY Infocom 55 Wheeler St. Cambridge, MA 02138 (617) 492-1031 \$39 (Apple, IBM, TI); \$34 (Atari, C 64) ©1984	In this funny text adventure based on best-selling book, you are the lone surviving earthling, fated to wander the galaxy in a quest for truth and meaning. Good for sci-fi and text-adventure fans, ages 14+. It's tough, but "don't panic!" †	Reviewed on Apple II series, 48K (d.). Also for Atari, 32K (d.); C 64 (d.); IBM PC/PCjr, 64K (d.); Mac; TI-99/4A, 32K (d.).	90-day warranty; \$5 fee thereafter.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	N/A	D	★ ★ ★ ★
MASTER OF THE LAMPS Activision 2350 Bayshore Frontage Rd. Mountain View, CA 94043 (415) 960-0410 \$29 ©1985	Intriguing skill/arcade game puts you in the driver's seat on a flying carpet. After you've flown through a tunnel, you must match sounds and colors with a genie's offerings; for ages 8+.	C 64 (d.). Joystick.	1-year warranty.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	A	★ ★ ★
ON-COURT TENNIS Gamestar Inc. 1302 State St. Santa Barbara, CA 93101 (805) 963-3487 \$29 ©1984	Superb tennis simulation lets you choose player styles and court surfaces, then use joystick to control angle, speed, and direction of shots. Good for long-lasting play. For ages 10+. †	C 64 (d.). Joystick.	90-day warranty.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	A	★ ★ ★
PARIS IN DANGER Avalon Hill 4517 Harford Road Baltimore, MD 21214 (301) 254-5300 \$35 ©1983	Opposing armies face off in simulation of Napoleon's 1814 defense of France against Prussian/Austrian/Russian forces. Ages 12+ engage in both large-scale planning and close combat.	Atari, 48K (d.).	Unlimited warranty; \$10 fee if user-damaged, or for backup.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	D	★ ★ ★ ★
QUINK CBS Software 1 Fawcett Place Greenwich, CT 06836 (203) 622-2500 \$34 ©1985	Choose from a variety of subject areas, set a skill level, and prepare yourself for an exciting thinking/knowledge game. Trivia-like game makes terrific use of the computer. For ages 12+.	Reviewed on Apple II series, 48K (d.). Also for C 64 (d.); IBM PC/PCjr, 128K (d.).	90-day warranty; \$5 fee thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	A	★ ★ ★
SHORT CIRCUIT Micro Fun 2699 Skokie Valley Road Highland Park, IL 60035 (312) 433-7550 \$20 ©1985	Zip through a dazzling array of circuit boards as you try to head off the destruction of the world. Exciting game requires limited strategy, methodical movement, and a quick wrist. For age 8+.	Apple II series, 48K (d.).	30-day warranty; \$5 fee thereafter or if user-damaged.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	A	★ ★ ★
WINGS OUT OF SHADOW Baen Enterprises 8 W. 36 St. New York, NY 10018 (212) 947-8244 \$34 ©1984	Command 10 ships in combat, defend flagship against boarding enemies. Several games in one simulate space adventure. Complex for beginners, but worth the effort. For ages 12+.	Apple II/II plus/IIe, 48K (d.).	30-day warranty; \$5 fee thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	D	★ ★ ★

RATINGS KEY O Overall performance; D Documentation; PS Play system; GQ Graphics quality; EU Ease of use; V Value for money; ★ Poor; ★★ Average; ★★★ Good; ★★★★ Excellent; N/A Not applicable; E Easy; A Average; D Difficult; † Longer review follows chart

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