TEACHING and computers

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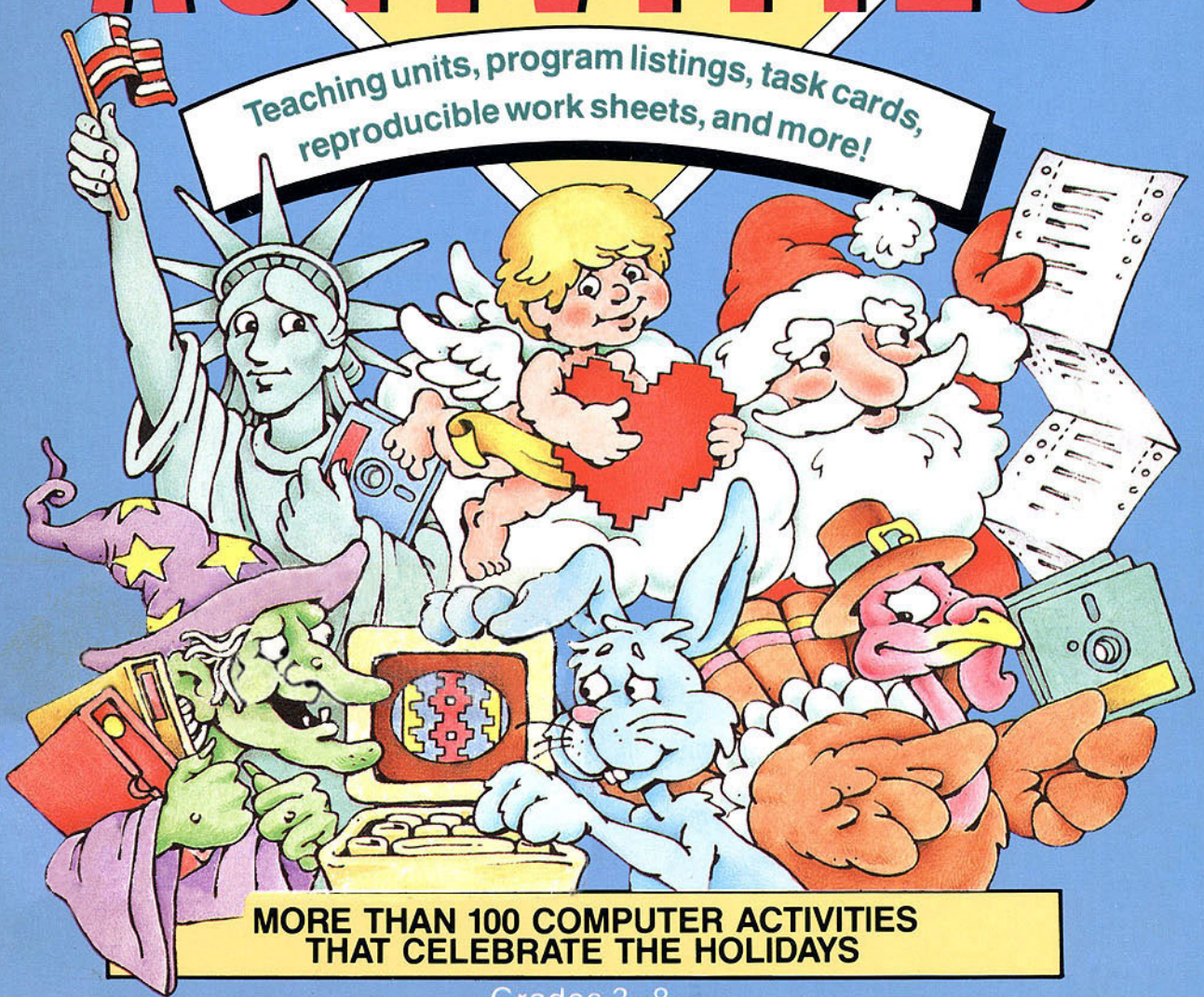
HOLIDAY COMPUTER ACTIVITIES

Teaching units, program listings, task cards, reproducible work sheets, and more!



MORE THAN 100 COMPUTER ACTIVITIES THAT CELEBRATE THE HOLIDAYS

Grades 3–8

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MORE THAN 100 COMPUTER ACTIVITIES
THAT CELEBRATE THE HOLIDAYS

Grades 3–8

Much of the material in this book is taken from articles published in *Teaching and Computers* magazine between 1982 and 1985.

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COVER ILLUSTRATION BY M. AND R. MOSLEY

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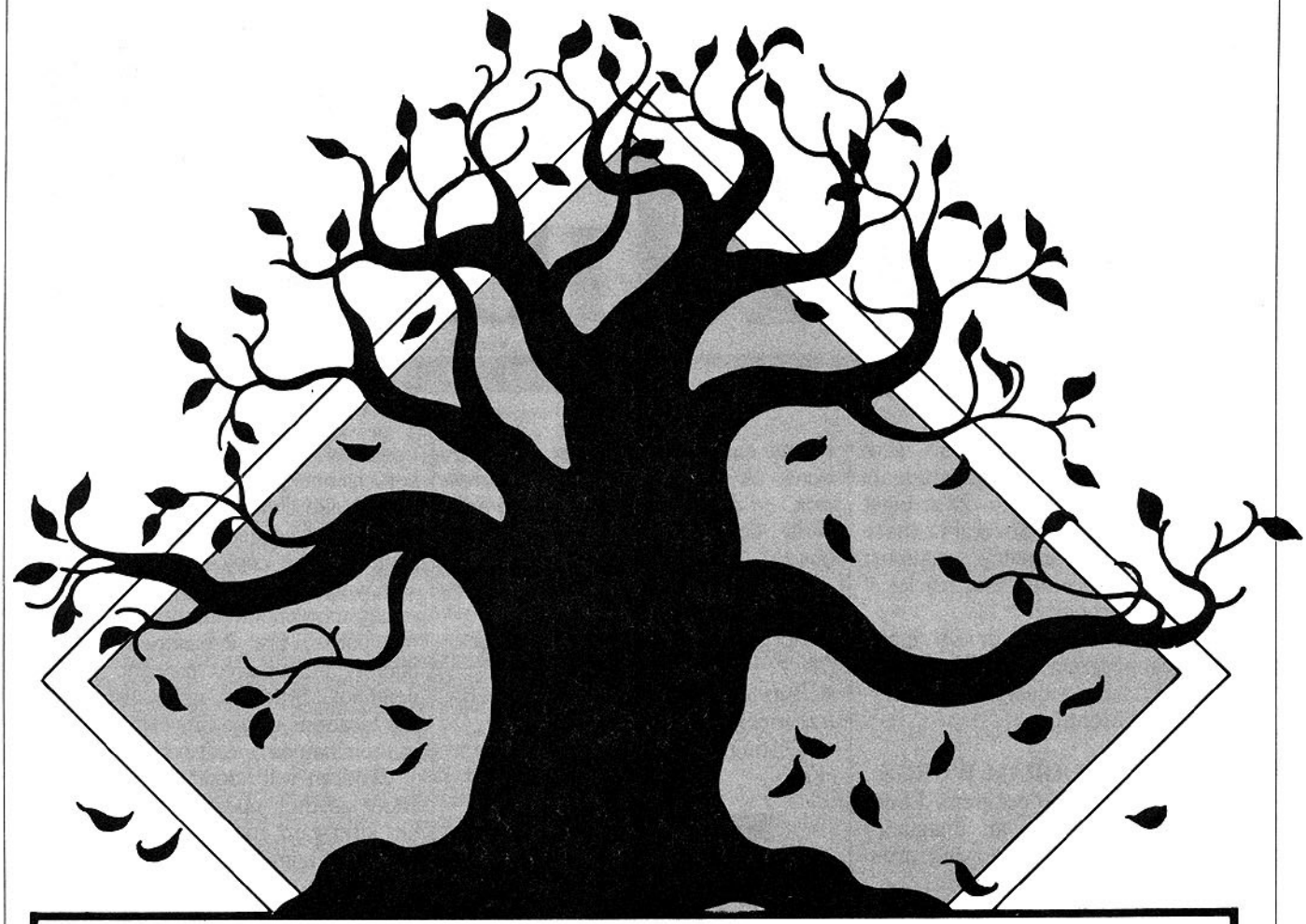

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EMERGENCY!

Emergency! is a BASIC program that helps students decide what to do in eight situations. Several of these situations are emergency situations; others could become emergencies if not handled properly.

September is a good time to introduce this program to children, because it has been designated Emergency Care Month.

HOW THE PROGRAM WORKS

In the *Emergency!* program, Elmer "Bad Luck" Briggs, an imaginary friend, runs into the following problems.

- He misses the school bus.
- He loses his house key.
- He gets stung by a bee.
- He witnesses a bicycle theft.
- He falls off a swing set and nearly breaks his arm.
- He sets the stove on fire.
- He blows a fuse in his house.
- A stranger knocks on the door while he is home and his parents are not.

For each problem situation, students must choose between three courses of action for Elmer. Correct choices solve Elmer's problems and give students points. Incorrect choices cause further problems.

For some problems, students can gain extra points by correctly entering the appropriate emergency phone number for their area. The largest number of points children can score is 140.

INTRODUCING THE PROGRAM

Ask students what an emergency is. *(Any dangerous situation, serious accident, or serious illness.)* Ask them to give examples of emergency situations. *(A fire, a gas leak, a broken arm, an allergic reaction, and so on.)* Write down their reponses on the board.

Ask students if the following situations are emergencies:

- Forgetting to do your homework. *(No.)*
- Burning a pan of cookies. *(No, unless it catches fire.)*
- Getting lost in a strange city. *(Yes.)*

Children should be prepared to handle common emergencies.

- Smashing your bicycle in an accident. *(Yes, if you are hurt.)*

Explain to students that many emergency situations are avoidable. For example, many fires are caused by carelessness. Review the list of emergencies on the board and decide which ones could probably be avoided and how.

One of the best ways to avoid an emergency or to handle one that is unavoidable is to be prepared. Posting a list of emergency phone numbers is one good means of preparation. Make copies of the Emergency Phone List worksheet on page 11 and pass out one copy to each student. The worksheet asks students to fill in emergency phone numbers, including the police, fire department, family doctor, ambulance, parents, and a neighbor. Students must also fill in the locations of the fire extinguishers in their homes and at school.

Children will need to refer to this sheet as they operate the program, but afterward encourge them to take the sheet home and post it in a prominent place.

USING THE PROGRAM

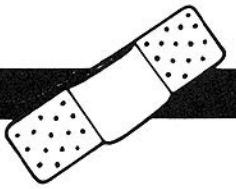
Type in and save the *Emergency!* program on page 7. Have students run through the program individually. At the beginning of the program, students will be asked to enter the information on their Emergency Phone List, so remind kids to have the worksheets handy.

Encourage the programmers in your class to add more situations to the program. For example, while Elmer is home alone, the gas stove could leak, the telephone could ring, a robber could enter the house, Elmer could break a lamp, he could choke on some food, he could get something in his eye, or he could have an asthma attack.

An excellent resource for information on handling emergencies is *The Official Kids' Survival Kit,* by Elaine Chaback and Pat Fortunato. ($8.95; Little, Brown, and Co., 34 Beacon St., Boston, MA 02106)

Lorraine Hopping

PROGRAM LISTING FOR *EMERGENCY!*



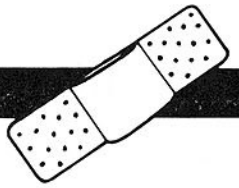
This program listing is for Apple computers. To convert the program for use on Atari, Commodore, and Radio Shack computers, see Program Conversions, page 151.

```
10  REM EMERGENCY! ©1985 SCHOLASTIC INC.
20  HOME : CLEAR
30  PRINT "  ELMER 'BAD LUCK' BRIGGS CAN'T GET"
40  PRINT "THROUGH A SINGLE DAY WITHOUT AN"
50  PRINT "EMERGENCY. (THAT'S WHY WE CALL HIM"
60  PRINT "'BAD LUCK.')
70  PRINT : PRINT "  WHEN ELMER RUNS INTO A PROBLEM, HE"
80  PRINT "TURNS TO YOU FOR HELP."
90  PRINT : PRINT "  HE KNOWS THAT YOU KEEP A LIST OF"
100  PRINT "EMERGENCY PHONE NUMBERS HANDY."
110  PRINT : PRINT "  IN CASE SOMETHING HAPPENS TO ELMER,"
120  PRINT "LET'S REVIEW THE LIST OF PHONE NUMBERS"
130  PRINT "ON YOUR EMERGENCY CHECKLIST WORKSHEET."
140  PRINT : PRINT "  ENTER THE PHONE NUMBER OF THE FIRE"
150  PRINT "DEPARTMENT AND PRESS <RETURN>:": INPUT FD$
160  PRINT : PRINT "  ENTER THE PHONE NUMBER OF THE POLICE"
170  PRINT "DEPARTMENT AND PRESS <RETURN>:": INPUT PD$
180  PRINT : PRINT "  ENTER THE PHONE NUMBER FOR AN"
190  PRINT "AMBULANCE AND PRESS <RETURN>:": INPUT AM$
200  PRINT : PRINT "  ENTER THE PHONE NUMBER OF YOUR"
210  PRINT "DOCTOR AND PRESS <RETURN>:": INPUT DO$
220  PRINT : PRINT "  ENTER YOUR MOTHER'S OR FATHER'S DAY"
230  PRINT "PHONE NUMBER AND PRESS <RETURN>:": INPUT MD$
240  PRINT : PRINT "  ENTER YOUR NEIGHBOR'S PHONE NUMBER"
250  PRINT "AND PRESS <RETURN>.": INPUT NE$
260  PRINT : PRINT "  WHERE IS THE FIRE EXTINGUISHER IN"
270  PRINT "YOUR HOME? (IF YOU DON'T HAVE ONE, TYPE"
280  PRINT "'NONE' AND PRESS <RETURN>.": INPUT FI$
290  PRINT : PRINT "  PRESS <RETURN> TO BEGIN.": INPUT Z$
300  HOME : PRINT "  ELMER'S ALARM CLOCK DOESN'T GO OFF."
310  PRINT "HE WAKES UP LATE AND MISSES THE BUS."
320  PRINT "HIS PARENTS HAVE ALREADY LEFT FOR WORK."
330  PRINT : PRINT "  HE CALLS YOU FOR ADVICE. YOU SAY:"
340  PRINT : PRINT "  1. HITCHHIKE TO SCHOOL."
350  PRINT "  2. TAKE THE DAY OFF."
360  PRINT "  3. GET A RIDE FROM A NEIGHBOR."
370  GOSUB 2000
380  IF A$ = "1" THEN  GOSUB 3000
390  IF A$ = "2" THEN  GOSUB 3100
400  IF A$ = "3" THEN SC = SC + 10: GOSUB 3200
410  PRINT : PRINT "  PRESS <RETURN>.": INPUT Z$
420  HOME : PRINT "  ELMER IS IN SUCH A HURRY TO GET TO"
430  PRINT "CLASS THAT HE LOSES HIS HOUSE KEY."
440  PRINT : PRINT "  YOU TELL HIM:"
450  PRINT : PRINT "  1. DON'T WORRY. IT WILL TURN UP SOME-"
460  PRINT "WHERE."
470  PRINT "  2. CALL MOM OR DAD RIGHT AWAY."
480  PRINT "  3. LOOK FOR IT AFTER SCHOOL."
490  GOSUB 2000
500  IF A$ = "1" OR A$ = "3" THEN  GOSUB 3300
510  IF A$ = "2" THEN SC = SC + 10: GOSUB 3400
520  PRINT : PRINT "  PRESS <RETURN>.": INPUT Z$
530  HOME : PRINT "  AT RECESS, YOU AND ELMER HEAD OUT TO"
540  PRINT "THE PLAYGROUND."
550  PRINT "  'OUCH!' SHOUTS ELMER. 'A BEE STUNG"
560  PRINT "ME! I FEEL WEAK.'
570  PRINT : PRINT "  WHAT DO YOU DO TO HELP ELMER?"
580  PRINT : PRINT "  1. CALL A DOCTOR RIGHT AWAY."
590  PRINT "  2. NOTHING. IT'S JUST A BEE STING."
600  PRINT "  3. KILL THE BEE."
610  GOSUB 2000
620  IF A$ = "1" THEN SC = SC + 10: GOSUB 3500
630  IF A$ = "2" OR A$ = "3" THEN  GOSUB 3600
640  PRINT : PRINT "  PRESS <RETURN>.": INPUT Z$
650  HOME : PRINT "  YOU AND ELMER ARE EATING LUNCH."
660  PRINT "  ELMER POINTS OUTSIDE. 'LOOK!' HE"
670  PRINT "SAYS. 'SOMEONE IS TAKING BILLY'S BIKE.'"
```

(continued)

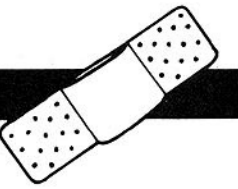
PROGRAM LISTING FOR *EMERGENCY!*

```
680  PRINT : PRINT "  YOU REPLY:"
690  PRINT : PRINT "  1. LET'S TELL THE MAN TO STOP."
700  PRINT "  2. FORGET IT. IT'S NOT OUR BIKE."
710  PRINT "  3. LET'S CALL THE POLICE."
720  GOSUB 2000
730  IF A$ = "1" THEN  GOSUB 3700
740  IF A$ = "2" THEN  GOSUB 3800
750  IF A$ = "3" THEN SC = SC + 10: GOSUB 3900
760  PRINT : PRINT "  PRESS <RETURN>.": INPUT Z$
770  HOME : PRINT "  LATER THAT DAY, ELMER FALLS OFF THE"
780  PRINT "SWING SET. HE IS NOT MOVING. HIS ARM"
790  PRINT "LOOKS TWISTED."
800  PRINT : PRINT "  WHAT CAN YOU DO TO HELP ELMER?"
810  PRINT : PRINT "  1. HELP HIM STAND ON HIS FEET."
820  PRINT "  2. CALL AN AMBULANCE."
830  PRINT "  3. TELL HIM HE LOOKS LIKE HE IS GOING"
840  PRINT "TO DIE."
850  GOSUB 2000
860  IF A$ = "1" THEN  GOSUB 4000
870  IF A$ = "2" THEN SC = SC + 10: GOSUB 4100
880  IF A$ = "3" THEN  GOSUB 4200
890  PRINT : PRINT "  PRESS <RETURN>.": INPUT Z$
900  HOME : PRINT "  ELMER INVITES YOU TO HIS HOUSE FOR"
910  PRINT "AN AFTER-SCHOOL SNACK. HE PUTS A PAN OF"
920  PRINT "SOUP ON THE STOVE. IT CATCHES FIRE."
930  PRINT : PRINT "  YOU KNOW JUST WHAT TO DO:"
940  PRINT : PRINT "  1. TURN OFF THE HEAT AND COVER THE"
950  PRINT "PAN WITH A LID."
960  PRINT "  2. POUR WATER ON THE FIRE."
970  PRINT "  3. PANIC AND RUN OUT OF THE HOUSE."
980  GOSUB 2000
990  IF A$ = "1" THEN SC = SC + 10: GOSUB 4300
1000  IF A$ = "2" OR A$ = "3" THEN  GOSUB 4400
1010  PRINT : PRINT "  PRESS <RETURN>.": INPUT Z$
1020  HOME : PRINT "  ELMER PUTS THE SOUP IN THE TOASTER"
1030  PRINT "OVEN AND TURNS ON THE STEREO, THE TV,"
1040  PRINT "AND TWO LAMPS."
1050  PRINT "  SUDDENLY, EVERYTHING GOES OFF."
1060  PRINT : PRINT "  IT'S A GOOD THING YOU ARE THERE TO:"
1070  PRINT : PRINT "  1. FIND A FLASHLIGHT AND GO DOWN-"
1080  PRINT "STAIRS TO THE FUSE BOX."
1090  PRINT "  2. TURN OFF ALL THE APPLIANCES."
1100  PRINT "  3. DO BOTH 1 AND 2."
1110  GOSUB 2000
1120  IF A$ = "3" THEN SC = SC + 10
1130  GOSUB 4500
1140  PRINT : PRINT "  PRESS <RETURN>.": INPUT Z$
1150  HOME : PRINT "  SOMEONE KNOCKS ON THE FRONT DOOR."
1160  PRINT : PRINT "  YOU TELL ELMER TO:"
1170  PRINT : PRINT "  1. OPEN THE DOOR TO SEE WHO IT IS."
1180  PRINT "  2. ASK WHO IT IS."
1190  PRINT "  3. IGNORE IT."
1200  GOSUB 2000
1210  IF A$ = "1" THEN  GOSUB 4600
1220  IF A$ = "2" THEN SC = SC + 10: GOSUB 4700
1230  IF A$ = "3" THEN  GOSUB 4800
1240  PRINT : PRINT "  PRESS <RETURN>.": INPUT Z$
1250  HOME : PRINT "  ELMER'S PARENTS RETURN HOME. YOU SAY"
1260  PRINT "GOODBYE TO ELMER AND LEAVE."
1270  PRINT "  YOU REMEMBER, THOUGH, THAT TOMORROW"
1280  PRINT "WILL BE ANOTHER DAY IN THE LIFE OF"
1290  PRINT "ELMER 'BAD LUCK' BRIGGS."
1300  PRINT : PRINT "  BY THE WAY, YOUR SCORE WAS ";SC
1310  PRINT "OUT OF 140."
1320  END
2000  REM  ENTER AND CHECK ANSWER
2010  PRINT : PRINT "  ENTER THE NUMBER OF YOUR CHOICE AND"
2020  PRINT "PRESS <RETURN>."
2030  INPUT A$: IF A$ <  > "1" AND A$ <  > "2" AND A$ <  > "3" THEN 2030
```



```
2040  RETURN
3000  REM  DON'T HITCHHIKE
3010  PRINT "  ELMER SAYS, 'THAT SOUNDS DANGEROUS."
3020  PRINT "MOM SAYS NEVER TO RIDE WITH STRANGERS.'"
3030  PRINT "  YOU TELL ELMER TO CALL A NEIGHBOR."
3040  GOSUB 3200: RETURN
3100  REM  DON'T SKIP SCHOOL
3110  PRINT "  ELMER GETS INTO BIG TROUBLE FOR NOT""
3120  PRINT "GOING TO SCHOOL. HE MISSES A MATH TEST."
3130  PRINT "THE TEACHER GIVES HIM AN F. ELMER'S"
3140  PRINT "PARENTS GROUND HIM FOR THREE WEEKS.
3150  PRINT "  THE NEXT DAY, ELMER GOES TO SCHOOL."
3160  RETURN
3200  REM  RIDE FROM NEIGHBOR
3210  PRINT "  ENTER THE NEIGHBOR'S PHONE NUMBER:": INPUT P$
3220  IF P$ = NE$ THEN  PRINT "  ELMER ARRIVES AT SCHOOL JUST IN TIME.":SC
      = SC + 10
3230  IF P$ < > NE$ THEN  PRINT "  SORRY, WRONG NUMBER.": GOSUB 3100
3240  RETURN
3300  REM  LOST KEY
3310  PRINT "  ELMER ASKS, 'HOW WILL I GET IN THE"
3320  PRINT "HOUSE WITHOUT A KEY?'
3330  PRINT "  YOU SAY, 'I GUESS YOU BETTER CALL MOM"
3340  PRINT "OR DAD RIGHT AWAY.'"
3350  GOSUB 3400
3360  RETURN
3400  REM  CALL MOM OR DAD
3410  PRINT "  ENTER MOM'S OR DAD'S PHONE NUMBER:": INPUT P$
3420  IF P$ < > MD$ THEN  PRINT "  SORRY, WRONG NUMBER. ELMER MAKES THE
     CALL."
3430  IF P$ = MD$ THEN SC = SC + 10
3440  PRINT "  ELMER'S PARENTS TELL HIM WHERE THE"
3450  PRINT "SPARE KEY IS. FROM NOW ON, ELMER KEEPS"
3460  PRINT "THE KEY ON A CHAIN AROUND HIS NECK."
3470  RETURN
3500  REM  CALL DOCTOR
3510  PRINT "  ENTER THE DOCTOR'S PHONE NUMBER:": INPUT P$
3520  IF P$ < > DO$ THEN  PRINT "  SORRY, WRONG NUMBER. ELMER MAKES THE
     CALL."
3530  IF P$ = DO$ THEN SC = SC + 10
3540  PRINT "  THE DOCTOR ARRIVES AND GIVES ELMER A"
3550  PRINT "SHOT. ELMER RECOVERS FROM THE ATTACK."
3560  RETURN
3600  REM   DO NOTHING FOR BEE STING
3610  IF A$ = "3" THEN  PRINT "  THE BEE IS ALREADY DEAD."
3620  PRINT "  ELMER GETS WORSE. HE SAYS, 'I THINK"
3630  PRINT "YOU BETTER CALL THE DOCTOR RIGHT AWAY.'"
3640  GOSUB 3500: RETURN
3700  REM   TELL THIEF TO STOP
3710  PRINT "  ELMER SAYS, 'HE LOOKS KIND OF SCARY."
3720  PRINT "YOU TELL HIM TO STOP. I'LL WATCH.'"
3730  PRINT "  YOU WALK TOWARD THE THIEF. HE IS VERY"
3740  PRINT "BIG. YOU DECIDE TO CALL THE POLICE."
3750  GOSUB 3900
3760  RETURN
3800  REM  IGNORE THIEF
3810  PRINT "  THE THIEF RIDES AWAY ON BILLY'S BIKE."
3820  PRINT "  BILLY IS MAD AT YOU FOR NOT CALLING"
3830  PRINT "THE POLICE."
3840  RETURN
3900  REM  CALL POLICE
3910  PRINT "  ENTER THE PHONE NUMBER OF THE POLICE:"
3920  INPUT P$
3930  IF P$ < > PD$ THEN  PRINT "  SORRY, WRONG NUMBER.": GOSUB 3800: GOTO
     3980
3940 SC = SC + 10
3950  PRINT "  WHEN THE POLICE ARRIVE, YOU GIVE THEM"
3960  PRINT "A GOOD DESCRIPTION OF THE THIEF."
3970  PRINT "  THEY CATCH THE THIEF TEN BLOCKS AWAY."
3980  RETURN
```

PROGRAM LISTING FOR *EMERGENCY!*



```
4000  REM  DON'T MOVE INJURED PERSON
4010  PRINT "  ELMER SCREAMS IN PAIN. YOU REMEMBER"
4020  PRINT "THAT YOU'RE NOT SUPPOSED TO MOVE AN"
4030  PRINT "INJURED PERSON UNLESS HE OR SHE IS IN"
4040  PRINT "IMMEDIATE DANGER."
4050  PRINT "  ELMER GASPS, 'A-A-AMBULANCE!'"
4060  GOSUB 4100: RETURN
4100  REM  CALL AMBULANCE
4110  PRINT "  ENTER THE PHONE NUMBER FOR AN"
4120  PRINT "AMBULANCE:"
4130  INPUT P$
4140  IF P$ < > AM$ THEN  PRINT "  SORRY, WRONG NUMBER. A TEACHER MAKES
     THE CALL."
4150  IF P$ = AM$ THEN SC = SC + 10
4160  PRINT "  THE AMBULANCE TAKES ELMER TO THE"
4170  PRINT "HOSPITAL. HIS ARM IS SPRAINED, BUT NOT"
4180  PRINT "BROKEN. HE GOES HOME."
4190  RETURN
4200  REM   SCARE ELMER
4210  PRINT "  ELMER'S EYES GROW BIG. HE GOES INTO"
4220  PRINT "DEEP SHOCK."
4230  PRINT "  YOU REALIZE YOU SAID THE WRONG THING."
4240  PRINT "YOU DECIDE TO CALL FOR AN AMBULANCE."
4250  GOSUB 4100: RETURN
4300  REM  PUT OUT FIRE
4310  PRINT "  YOU SMOTHER THE FIRE. TO MAKE SURE IT"
4320  PRINT "IS OUT, YOU DECIDE TO USE THE FIRE"
4330  PRINT "EXTINGUISHER. WHERE IS IT?"
4340  INPUT P$
4350  IF P$ < > FI$ OR P$ = "NONE" THEN  PRINT "  YOU CAN'T FIND IT.": GOSUB
     4400
4360  IF P$ = FI$ THEN SC = SC + 10: PRINT "  THE FIRE DIES OUT."
4370  RETURN
4400  REM  POUR WATER/ RUN AWAY
4410  PRINT "  THE FIRE GETS WORSE. YOU DECIDE TO"
4420  PRINT "CALL THE FIRE DEPARTMENT."
4430  PRINT "  ENTER THE PHONE NUMBER:"
4440  INPUT P$
4450  IF P$ < > FD$ THEN  PRINT "  SORRY, WRONG NUMBER. ELMER MAKES THE
     CALL."
4460  IF P$ = FD$ THEN SC = SC + 10
4470  PRINT "  THE FIRE FIGHTERS PUT OUT THE BLAZE."
4480  RETURN
4500  REM  FUSE BLOWN OUT
4510  PRINT "  YOU CHECK WHAT TO DO IN A BOOK. IT"
4520  PRINT "SAYS: (1) TURN OFF ALL APPLIANCES;"
4530  PRINT "(2) FIND A FLASHLIGHT; (3) GO DOWN-"
4540  PRINT "STAIRS AND FLIP THE SWITCH IN THE FUSE"
4550  PRINT "BOX. YOU FOLLOW THESE STEPS. THE"
4560  PRINT "ELECTRICITY IS WORKING NOW."
4570  RETURN
4600  REM  ANSWER DOOR
4610  PRINT "  ELMER SAYS, 'IT COULD BE A ROBBER. I"
4620  PRINT "BETTER ASK WHO IT IS.'"
4630  GOSUB 4700
4640  RETURN
4700  REM  ASK WHO
4710  PRINT "  'WHO IS IT?' ELMER ASKS."
4720  PRINT "  'IS YOUR MOM HOME?' THE VISITOR ASKS."
4730  PRINT "  ELMER SAYS, 'MY PARENTS ARE...'"
4740  PRINT "  'BUSY!' YOU INTERRUPT. YOU REMIND"
4750  PRINT "ELMER THAT YOU SHOULD NEVER TELL A"
4760  PRINT "STRANGER THAT YOU ARE HOME ALONE."
4770  PRINT "  THE VISITOR LEAVES."
4780  RETURN
4800  REM  IGNORE KNOCK ON DOOR
4810  PRINT "  THE VISITOR KEEPS KNOCKING. HE SAYS,"
4820  PRINT "'HELLO IN THERE! ANSWER THE DOOR!'"
4830  PRINT "  ELMER SAYS, 'I BETTER ASK WHO IT IS.'"
4840  GOSUB 4700: RETURN
```

EMERGENCY CARE WORKSHEET

EMERGENCY CARE MONTH — MONTH OF SEPTEMBER

NAME: _____

DIRECTIONS: Fill in the phone numbers and other information in the blanks below. Use this list with the *Emergency!* program.

EMERGENCY PHONE LIST

Fire Department: _____

Police Department: _____

Ambulance: _____

Doctor: _____

Home phone: _____

Mother (day): _____

Father (day): _____

Neighbor or Friend: _____

Others: _____

_____

_____

_____

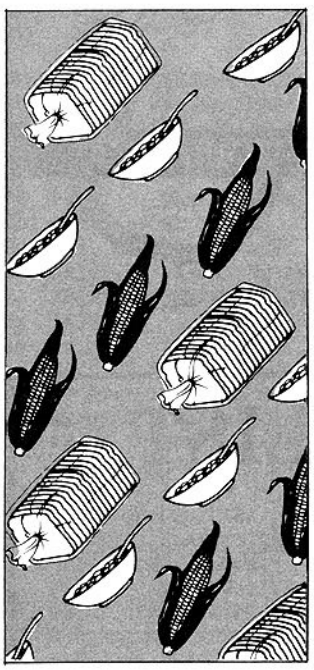
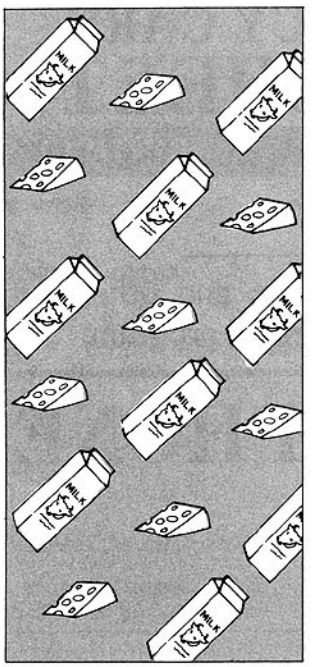
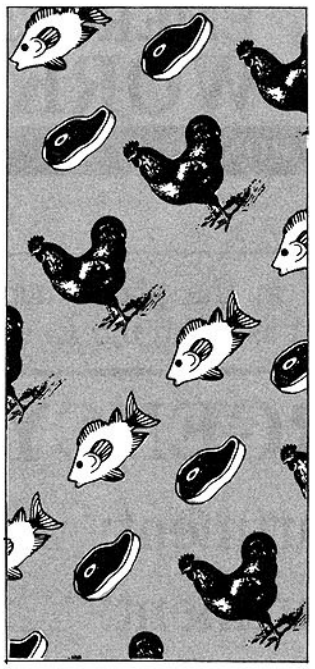
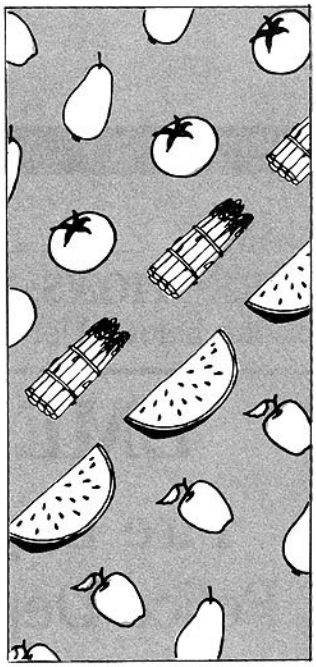
Other Emergency Information:

Location(s) of home fire extinguisher(s): _____

_____

Location(s) of school fire extinguisher(s): _____

_____

WHAT'S FOR BREAKFAST?

What's for Breakfast? is a BASIC program that teaches students how to select nutritious foods for breakfast. A printer is optional.

September is the perfect month to introduce this program to your students, because September has been designated Better Breakfast Month.

HOW THE PROGRAM WORKS

The program presents students with a list of 12 foods, including eggs, hash browns, pancakes, puffed cereal, bran cereal, bacon, toast, soda pop, orange drink, tomato juice, jello, and pastry. Students must select three foods from the list to make a balanced and nutritious breakfast.

After students have made their selections, the program prints out or displays a nutrition report that includes the following information:

- The student's score out of 500 possible points. Students receive points for choosing foods that are balanced among the four basic food groups and that are nutritious.
- The food groups, if any, that are not represented by the student's food selections.
- The calorie count for each food selected and the total number of calories for the meal.
- Additional facts about the foods selected.

INTRODUCING THE PROGRAM

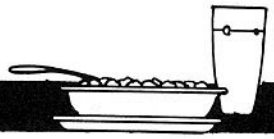
Take a quick class survey of what students ate for breakfast this morning. List the different foods on the board. Explain that *nutritious* foods, or foods that are good for you, have *nutrients,* which include vitamins, minerals, proteins, carbohydrates, and fats. For example, eggs are nutritious because they have protein, iron, and vitamins A, B_{12}, and D.

One way to tell if some foods are nutritious is to read the lists of ingredients on their packaging. Pass around food labels from cereal, bacon, jello, juice, bread, pastry, and other packages.

Ask students to give examples of nutritious foods, either from the list on the board or from the food labels. *(Bran cereal, bread, and bacon are a few examples.)* What makes these foods nutritious? *(Encourage students to name specific vitamins and other nutrients in the foods.)*

Are any foods not nutritious? *(Pastries, some instant drinks, soda pop, jello, some cereals.)*

Point out that some nutritious foods also contain ingredients that are not very good for you. These



ingredients include too much sugar, salt, fat, caffeine (found in colas, coffee, tea, and some chocolate drinks), artificial preservatives, colorings, and flavorings.

Ask students to look for such ingredients listed on the food labels. Which foods contain them? *(Bacon contains sodium nitrate, a preservative; many cereals contain extra sugar and artificial additives; fried foods contain extra fat.)* Remind students that foods containing harmful ingredients should be avoided or eaten only in moderation.

USING THE PROGRAM

Type in and save the *What's for Breakfast?* program on page 13. Have students run the program individually. Post the nutrition reports generated by the computer on a bulletin board.

Ask students which combinations of foods listed in the program are the most nutritious. *(The highest possible score is 500, which is achieved by selecting the eggs, bran cereal, and tomato juice. Other good foods include pancakes, potatoes, and toast.)*

Which foods are the least nutritious? *(Soda pop and jello.)*

Have students read food labels and books on nutrition to find out what nutrients, if any, the *What's for Breakfast?* foods contain. (See the nutrition resources listed below.)

Encourage the programmers in your class to add the information to the program under "Additional Food Facts" (lines 2000 to 13040).

Ask students what nutritious foods they could substitute for the non-nutritious foods on the menu. *(Bran muffins could be substituted for pastry, orange juice for orange drink, water for soda pop, fresh fruit for jello, and so on.)*

NUTRITION RESOURCES

The U.S. Department of Agriculture publishes several nutrition pamphlets, books, and educational aids. For a free catalog, write to Consumer Information Catalog, attn: S. James, PO Box 100, Pueblo, CO 81002. To order material, write to The Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

A few titles include:

- *Some Facts and Myths About Vitamins*, a free pamphlet that lists foods that are good sources of vitamins.
- *Consumer's Guide to Food Labels*, a free pamphlet on how to interpret food labels.
- "Fred the Horse Who Likes Bread," "Meet Molly Moo," "Mary Mutton and the Meat Group," and "Gussie Goose Introduces the Fruit and Vegetable Group," free primary-grade worksheets that teach students about the four food groups.
- "Snack Facts," a free poster about how snacking can cause tooth decay.

Following is a list of free or low-cost nutrition materials published by other agencies.

- "Nutrition Scoreboard," a poster that rates foods according to their nutritional value. Price is $3.50 for nonlaminated or $7 for laminated. Volume discounts available. Center for Science in the Public Interest, 1501 16th St. NW, Washington, DC 20036.
- Public Affairs Pamphlets, a series of pamphlets on nutrition and health, $1 each. Volume discounts available. Write for a free catalog. Public Affairs Committee, 381 Park Ave. South, New York, NY 10016.
- A free catalog of pamphlets, kits, films, and other nutrition materials is available from the National Dairy Council, 6300 N. River Rd., Rosemont, IL 60018.
- *Why Do You Need Vitamin C?*, a free booklet for primary and middle grades. The Department of Citrus, Florida Citrus Commission, Lakeland, FL 33802.

Lorraine Hopping

PROGRAM LISTING FOR *WHAT'S FOR BREAKFAST?*

This program listing is for Apple computers. To convert the program for use on Commodore 64, VIC-20, and TRS-80 Model III computers, see the Program Conversions on page 151.

```
10  REM WHAT'S FOR BREAKFAST? @1985 SCHOLASTIC INC.
20  HOME : CLEAR :F = 12: REM  NUMBER OF FOODS
30  DIM FI$(F),C(F),MT(F),DP(F),BR(F),FV(F),SC(F)
40  FOR I = 1 TO F
50  READ FI$(I),C(I),MT(I),DP(I),BR(I),FV(I),SC(I)
60  NEXT I
70  REM FOOD, CALORIES, MEAT, DAIRY, BREAD, FR/VEG, SCORE
80  DATA SCRAMBLED EGGS (3),330,1,0,0,0,100
90  DATA HASHED BROWN POTATOES,350,0,0,0,1,100
100  DATA PLAIN PANCAKES (3),120,0,0,1,0,50
110  DATA  PUFFED RICE CEREAL,280,0,1,1,0,25
120  DATA BRAN/FRUIT CEREAL,245,0,1,1,1,200
130  DATA BACON (3 BIG STRIPS),135,1,0,0,0,25
140  DATA WHITE TOAST (2 SLICES),140,0,0,1,0,50
150  DATA SODA POP (12 OZ.),150,0,0,0,0,0
160  DATA ORANGE DRINK (8 OZ.),140,0,0,0,1,25
170  DATA  TOMATO JUICE (8 OZ.),50,0,0,0,1,100
180  DATA RASPBERRY JELLO (1 CUP),140,0,0,0,0,0
190  DATA JELLY-FILLED PASTRY,275,0,0,1,0,25
200  REM ENTER THREE FOOD CHOICES
210  PRINT "  HELLO! PLEASE ENTER YOUR NAME AND"
220  PRINT "PRESS <RETURN>.": INPUT N$
230  PRINT : PRINT "  THANK YOU, ";N$;"."
240  PRINT : PRINT "  IN A MOMENT, I WILL SHOW YOU A LIST"
250  PRINT "OF BREAKFAST FOODS. CHOOSE THREE FOODS"
260  PRINT "FROM THE LIST."
270  PRINT : PRINT "  YOU WILL RECEIVE POINTS FOR CHOOSING"
280  PRINT "FOODS THAT ARE BALANCED IN THE FOUR"
290  PRINT "FOOD GROUPS AND THAT ARE NUTRITIOUS."
300  PRINT : PRINT "  PRESS <RETURN> TO START.": INPUT Z$
310  GOSUB 1500
320  PRINT : PRINT "  ENTER THE NUMBER OF YOUR CHOICE"
330  PRINT "(1-";F;") FOR FOOD #1. PRESS <RETURN>."
340  INPUT X: IF X < 1 OR X > F THEN 340
350  GOSUB 1500
360  PRINT : PRINT "  ENTER THE NUMBER OF YOUR CHOICE"
370  PRINT "(1-";F;") FOR FOOD #2. PRESS <RETURN>."
380  INPUT Y: IF Y < 1 OR Y > F THEN 380
390  GOSUB 1500
400  PRINT : PRINT "  ENTER THE NUMBER OF YOUR CHOICE"
```

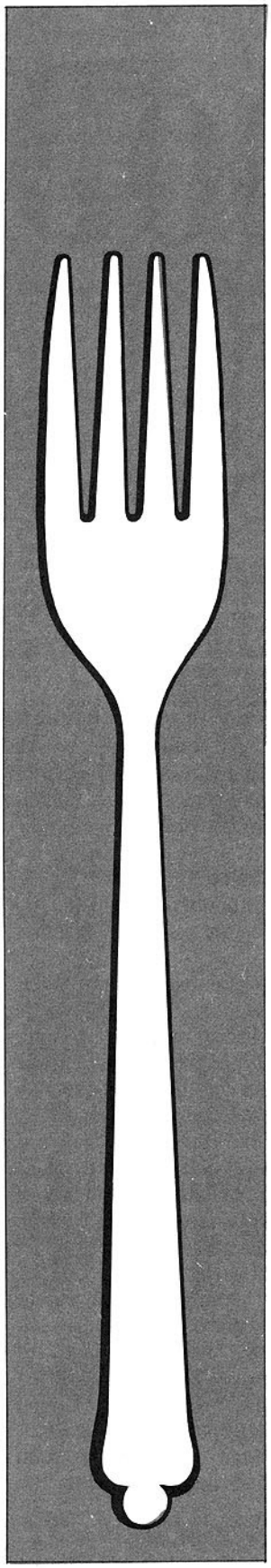
(continued)

PROGRAM LISTING FOR *WHAT'S FOR BREAKFAST?*

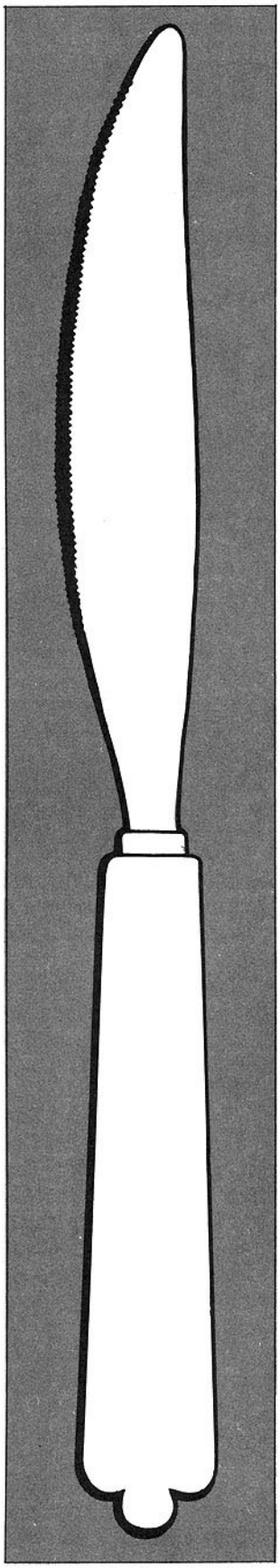
```
410  PRINT "(1-";F;") FOR FOOD #3. PRESS <RETURN>."
420  INPUT Z: IF Z < 1 OR Z > F THEN 420
430  REM   CALCULATE CALORIES, FOOD GROUPS, SCORE
440 TC = C(X) + C(Y) + C(Z): REM  TOTAL CALORIES
450 TM = MT(X) + MT(Y) + MT(Z): REM  MEAT GROUP
460 TD = DP(X) + DP(Y) + DP(Z): REM  DAIRY GROUP
470 TB = BR(X) + BR(Y) + BR(Z): REM  BREAD GROUP
480 TF = FV(X) + FV(Y) + FV(Z): REM  FRUIT/VEGETABLE GROUP
490 TS = SC(X) + SC(Y) + SC(Z): REM  TOTAL SCORE
500  IF TM > 0 THEN FG = FG + 1: REM  FG=FOOD GROUPS
510  IF TD > 0 THEN FG = FG + 1
520  IF TB > 0 THEN FG = FG + 1
530  IF TF > 0 THEN FG = FG + 1
540  IF FG = 4 THEN TS = TS + 100: REM FOOD IN FOUR GROUPS
550  IF FG = 3 THEN TS = TS + 50: REM FOOD IN THREE GROUPS
560  IF FG = 2 THEN TS = TS + 10: REM FOOD IN TWO GROUPS
570  REM PRINT OR DISPLAY NUTRITION REPORT?
580  HOME : PRINT "  NOW, I WILL GIVE YOU A NUTRITION"
590  PRINT "REPORT BASED ON YOUR FOOD CHOICES."
600  PRINT "WHICH WOULD YOU PREFER, ";N$;"?"
610  PRINT : PRINT "  1  READ THE REPORT ON THE SCREEN."
620  PRINT : PRINT "  2  PRINT OUT THE REPORT ON PAPER."
630  PRINT "(YOU NEED A PRINTER ATTACHED TO YOUR"
640  PRINT "COMPUTER TO DO THIS.)"
650  PRINT : PRINT "  ENTER '1' OR '2' AND PRESS <RETURN>."
660  INPUT Q$: IF Q$ <  > "1" AND Q$ <  > "2" THEN 660
670  IF Q$ = "2" THEN  GOSUB 20000
680  REM  NUTRITION REPORT
690  HOME : PRINT "     ***** NUTRITION REPORT *****"
700  PRINT : PRINT "PREPARED FOR: ";N$
710  PRINT : PRINT "FOODS SELECTED:"
720  PRINT "     ";FI$(X)
730  PRINT "     ";FI$(Y)
740  PRINT "     ";FI$(Z)
750  PRINT : PRINT "TOTAL SCORE (500 POSSIBLE): ";TS
760  PRINT : PRINT "  ";N$;", YOU HAVE CHOSEN FOODS IN
770  PRINT FG;" OUT OF THE 4 BASIC FOOD GROUPS."
780  IF FG <  > 4 THEN  PRINT : PRINT "  NEXT TIME, CHOOSE
     SOMETHING IN THE:"
790  IF TM = 0 THEN  PRINT "     MEAT GROUP"
800  IF TD = 0 THEN  PRINT "     DAIRY GROUP"
810  IF TB = 0 THEN  PRINT "     BREAD AND CEREAL GROUP"
820  IF TF = 0 THEN  PRINT "     FRUIT AND VEGETABLE GROUP"
830  IF Q$ = "1" THEN  PRINT : PRINT "  PRESS <RETURN>.":
     INPUT Z$: HOME
840  PRINT : PRINT "  ";N$;", IF YOU ARE 7 TO 9 YEARS"
850  PRINT "OLD, YOU NEED 2100 CALORIES PER DAY."
860  PRINT "  IF YOU ARE 10 TO 12, YOU NEED 2500"
870  PRINT "CALORIES PER DAY."
880  PRINT : PRINT "  HERE IS A CALORIE BREAKDOWN FOR THE"
890  PRINT "FOODS YOU SELECTED:"
900  PRINT : PRINT "NAME OF FOOD ITEM","CALORIES"
910  PRINT "----------------------------------------"
920  PRINT FI$(X),C(X)
930  PRINT FI$(Y),C(Y)
940  PRINT FI$(Z),C(Z)
950  PRINT "----------------------------------------"
960  PRINT "TOTAL # OF CALORIES",TC
970  IF Q$ = "1" THEN  PRINT : PRINT "  PRESS <RETURN>.":
     INPUT Z$: HOME
980  PRINT "ADDITIONAL FOOD FACTS:"
990  ON X GOSUB 2000,3000,4000,5000,6000,7000,8000,9000,10000,
     11000,12000,13000
1000 ON Y GOSUB 2000,3000,4000,5000,6000,7000,8000,9000,10000,
     11000,12000 ,13000
1010 ON Z GOSUB 2000,3000,4000,5000,6000,7000,8000,9000,10000,
     11000,12000 ,13000
1020 PR# 0: PRINT : PRINT "  BON APPETIT, ";N$;"....": END
1500 REM  LIST OF FOOD
1510 HOME : PRINT "  HERE IS THE LIST OF FOOD ITEMS."
1520 PRINT "WHAT'S FOR BREAKFAST, ";N$;"?"
1530 PRINT
1540 FOR I = 1 TO F
1550 PRINT "   ";I;"  ";FI$(I);"."
1560 NEXT I
1570 RETURN
2000 REM   EGGS
2010 PRINT : PRINT "  EGGS HAVE A LOT OF PROTEIN. BUT THEY"
2020 PRINT "ALSO HAVE CHOLESTEROL, WHICH MIGHT LEAD"
2030 PRINT "TO HEART PROBLEMS."
2040 PRINT "  POACHED OR BOILED EGGS ARE BETTER FOR"
2050 PRINT "YOU THAN SCRAMBLED OR FRIED EGGS."
2060 RETURN
3000 REM  HASH BROWNS
3010 PRINT : PRINT "  HASH BROWNS ARE A GOOD CHOICE, BUT"
3020 PRINT "THEY HAVE A LOT OF FAT FROM FRYING."
3030 PRINT "  STEAMED, BOILED, OR BAKED POTATOES"
3040 PRINT "(WITHOUT BUTTER) ARE BETTER FOR YOU."
3050 RETURN
4000 REM  PANCAKES
4010 PRINT : PRINT "  PANCAKES ARE A PRETTY GOOD CHOICE,"
4020 PRINT "BUT GO EASY ON THE SYRUP AND BUTTER.
4030 RETURN
5000 REM   PUFFED RICE CEREAL
5010 PRINT : PRINT "  MOST PUFFED CEREALS ARE HIGH IN VITA-"
5020 PRINT "MINS, BUT THEY ALSO CONTAIN UP TO 40"
5030 PRINT "PERCENT SUGAR."
5040 PRINT "  READ THE INGREDIENTS ON THE BOX."
5050 PRINT "AVOID SUGAR, PRESERVATIVES, AND ARTIFI-"
5060 PRINT "CIAL COLORINGS AND FLAVORINGS."
5070 RETURN
6000 REM   BRAN/FRUIT CEREAL
6010 PRINT : PRINT "  BRAN CEREAL WITH FRUIT IS A GREAT"
6020 PRINT "CHOICE. IT HAS VITAMINS AND FIBER,"
6030 PRINT "WHICH IS GOOD FOR DIGESTION."
6040 PRINT "  SOME BRAN CEREALS ARE BETTER THAN"
6050 PRINT "OTHERS. READ THE INGREDIENTS ON THE"
6060 PRINT "BOX. AVOID SUGAR AND ARTIFICIAL COLOR-"
6070 PRINT "INGS AND FLAVORINGS."
6080 RETURN
7000 REM  BACON
7010 PRINT : PRINT "  BACON HAS PROTEIN. BUT, LIKE HOT DOGS"
7020 PRINT "AND SAUSAGES, IT HAS A LOT OF FAT AND"
7030 PRINT "A CHEMICAL CALLED SODIUM NITRATE."
7040 RETURN
8000 REM  TOAST
8010 PRINT : PRINT "  TOAST HAS MANY NEEDED VITAMINS."
8020 PRINT "IN GENERAL, RYE TOAST AND WHEAT TOAST"
8030 PRINT "ARE BETTER FOR YOU THAN WHITE TOAST."
8040 PRINT "  GO EASY ON THE BUTTER AND JAM."
8050 RETURN
9000 REM  SODA POP
9010 PRINT : PRINT "  SODA POP HAS A LOT OF SUGAR AND NO"
9020 PRINT "NUTRIIONAL VALUE."
9030 PRINT "  READ THE INGREDIENTS ON THE BOTTLE."
9040 PRINT "AVOID CAFFEINE, SUGAR, AND ARTIFICIAL"
9050 PRINT "COLORINGS AND SWEETENERS."
9060 RETURN
10000  REM  ORANGE DRINK
10010  PRINT : PRINT "  ORANGE 'DRINK' IS DIFFERENT FROM"
10020  PRINT "ORANGE 'JUICE'. IT HAS LITTLE OR NO"
10030  PRINT "REAL JUICE. MANY FRUIT DRINKS ALSO HAVE"
10040  PRINT "A LOT OF SUGAR."
10050  PRINT "  READ THE INGREDIENTS ON THE PACKAGE.
10060  PRINT "REAL ORANGE JUICE SAYS '100% ORANGE"
10070  PRINT "JUICE' AND NOTHING ELSE."
10080  RETURN
11000  REM  TOMATO JUICE
11010  PRINT : PRINT "  TOMATO JUICE IS AN EXCELLENT CHOICE"
11020  PRINT "BECAUSE IT IS HIGH IN VITAMINS AND LOW"
11030  PRINT "IN CALORIES AND SUGAR."
11040  RETURN
12000  REM  JELLO
12010  PRINT : PRINT "  JELLO HAS A LOT OF SUGAR AND LITTLE"
12020  PRINT "OR NO NUTRITIONAL VALUE. READ THE IN-"
12030  PRINT "GREDIENTS ON THE PACKAGE. AVOID ARTIFI-"
12040  PRINT "CIAL COLORINGS AND FLAVORINGS."
12050  RETURN
13000  REM   PASTRY
13010  PRINT : PRINT "  PASTRIES, INCLUDING DOUGHNUTS, ARE"
13020  PRINT "HIGH IN SUGAR AND HAVE FEW VITAMINS OR"
13030  PRINT "OTHER NUTRIENTS."
13040  RETURN
20000  REM  PRINT OUT NUTRITION REPORT
20010  PRINT : PRINT "  MAKE SURE YOUR PRINTER IS TURNED ON"
20020  PRINT "AND THE PAPER IS IN PLACE."
20030  PRINT "  IF YOU DON'T WANT TO PRINT OUT THE"
20040  PRINT "REPORT AFTER ALL, TYPE 'Q' AND PRESS."
20050  PRINT "<RETURN>."
20060  PRINT "  IF EVERYTHING IS READY, PRESS"
20070  PRINT "<RETURN> TO BEGIN PRINTING."
20080  INPUT Z$: IF Z$ <  > "Q" THEN  PR# 1
20090  IF Z$ = "Q" THEN Q$ = "1"
20100  RETURN
```

NUTRITION REPORT

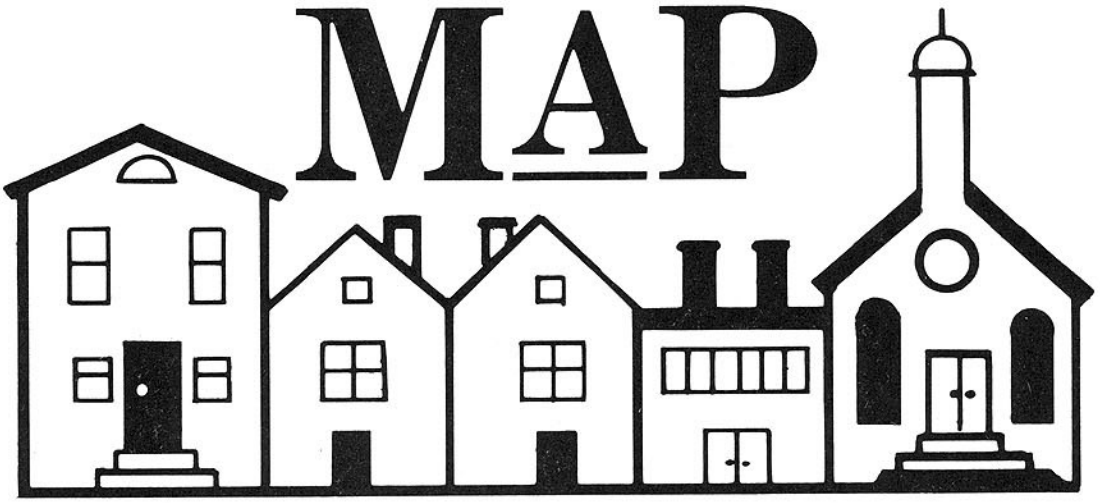
Sample of a nutrition report provided by the *What's for Breakfast* program.



```
      ***** NUTRITION REPORT *****

PREPARED FOR: SANDY

FOODS SELECTED:
    SCRAMBLED EGGS (3)
    WHITE TOAST (2 SLICES)
    ORANGE DRINK (8 OZ.)

TOTAL SCORE (500 POSSIBLE): 225

  SANDY, YOU HAVE CHOSEN FOODS IN
3 OUT OF THE 4 BASIC FOOD GROUPS.

  NEXT TIME, CHOOSE SOMETHING IN THE:
    DAIRY GROUP

  SANDY, IF YOU ARE 7 TO 9 YEARS
OLD, YOU NEED 2100 CALORIES PER DAY.
  IF YOU ARE 10 TO 12, YOU NEED 2500
CALORIES PER DAY.

  HERE IS A CALORIE BREAKDOWN FOR THE
FOODS YOU SELECTED:

NAME OF FOOD ITEM                CALORIES
-------------------------------------
SCRAMBLED EGGS (3)                330
WHITE TOAST (2 SLICES)            140
ORANGE DRINK (8 OZ.)              140
-------------------------------------
TOTAL # OF CALORIES               610

ADDITIONAL FOOD FACTS:
  EGGS HAVE A LOT OF PROTEIN. BUT THEY
ALSO HAVE CHOLESTEROL, WHICH MIGHT LEAD
TO HEART PROBLEMS.
  POACHED OR BOILED EGGS ARE BETTER FOR
YOU THAN SCRAMBLED OR FRIED EGGS.

  TOAST HAS MANY NEEDED VITAMINS.
IN GENERAL, RYE TOAST AND WHEAT TOAST
ARE BETTER FOR YOU THAN WHITE TOAST.
  GO EASY ON THE BUTTER AND JAM.

  ORANGE 'DRINK' IS DIFFERENT FROM
ORANGE 'JUICE'. IT HAS LITTLE OR NO
REAL JUICE. MANY FRUIT DRINKS ALSO HAVE
A LOT OF SUGAR.
  READ THE INGREDIENTS ON THE PACKAGE.
REAL ORANGE JUICE SAYS '100% ORANGE
JUICE' AND NOTHING ELSE.
```



FOLLOW A NEIGHBORHOOD MAP



September 7 is National Neighborhood Day. This holiday was instituted to recognize the neighborhood as a vital national asset, to encourage people to get to know their neighborhood, and to celebrate the accomplishments of neighborhood organizations.

If your students know how to use four basic Logo commmands, FORWARD, BACK, LEFT, and RIGHT, they will be able to complete the two neighborhood activities that follow.

The first activity has kids draw their own neighborhood on a sheet of transparent acetate. They then attach this sheet to the computer screen. By moving the Logo turtle from place to place along the acetate map, kids will become more familiar with important sites in their neighborhood.

The second activity provides a program listing that will allow your computer to display a town map in turtle graphics. Once again, kids are to travel from place to place on the map.

In both activities children practice using basic Logo commands. The activities also allow students to explore directional movement and to estimate distances. (Students must determine what direction and how far to move the turtle to reach a specific destination.)

MAP TRANSPARENCY ACTIVITY

Objective: Students move the screen turtle to different destinations on a map.

Activity: On a transparent piece of acetate, draw a simple map of your neighborhood or town. Label important sites such as the police station, city hall, bank, grocery store, and so on. Tape the map over a computer screen. Be sure to match the center of the screen with the center of the diagram.

Instruct children to use Logo commands to move the turtle from place to place on the map. For example, what commmands would they use to travel from say, city hall to police headquarters, or from the grocery store to the bank?

Extension: (1) Construct more complex maps that have diagonal streets and traffic circles. (2) As children master these maps, draw in roadblocks, detours, and one-way streets. (3) An enlarged map of downtown Washington, DC, with its many circular streets, is a real challenge to turtle travelers!

LOGO MAP PROGRAM

Objective: Students manipulate the screen turtle on a turtle graphics map.

Activity: You can use turtle graphics to make a town map, too. Just type in the program listing on the next page. Be sure to type procedures exactly as they appear and to follow the correct version for your machine.

To call up the town map, have students type MAP and then press RETURN or ENTER. Now kids are ready to travel from place to place on a turtle graphics map!

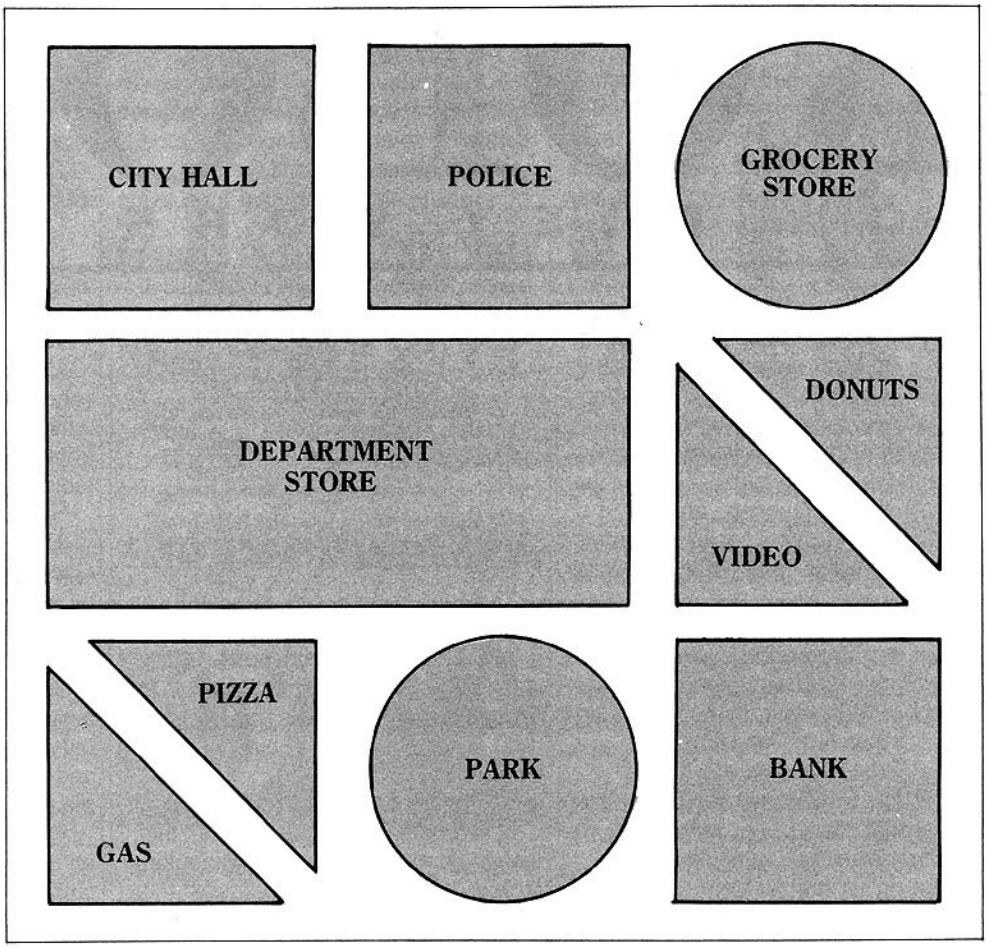
Extension: (1) Have kids record the sequence of commands they use to go from one place to another. Ask them to study these sequences to determine if they always choose the fastest possible routes. (2) If you have some fairly advanced Logo students, challenge them to program roadblocks and dead ends into the map.

Tom Lough and Steve Tipps

PROGRAM LISTING FOR *FOLLOW A NEIGHBORHOOD MAP*

Use the Logo program below with the second neighborhood activity on the previous page. The program can be used with MIT, TI, and Apple Logo.

```
TO MAP
FULLSCREEN HT
FIRST.ROW
SECOND.ROW
THIRD.ROW
SET.TURTLE ST
END


TO FIRST.ROW
FIRST.POSITION
SQUARE
POSITION.RIGHT
SQUARE
POSITION.RIGHT
CIRCLE.BLOCK
END


TO FIRST.POSITION
PU
FD 50 LT 90 FD 120 RT 90
PD
END


TO SQUARE
REPEAT 4 [FD 60 RT 90]
END


TO POSITION.RIGHT
PU
RIGHT 90 FORWARD 80 LT 90
PD
END


TO CIRCLE.BLOCK
PU FD 27 PD
CIRCLE
PU BK 27 PD
END


TO SECOND.ROW
SECOND.POSITION
RECTANGLE
POSITION.RIGHT POSITION.RIGHT
TRIANGLE.BLOCK
END


TO SECOND.POSITION
PU HOME BK 30 LT 90 FD 120 RT 90 PD
END


TO RECTANGLE
REPEAT 2 [FD 60 RT 90 FD 140 RT 90]
END
```



Sample town map for making a transparent overlay.

```
TO TRIANGLE.BLOCK
TRIANGLE
DIAGONAL
TRIANGLE
DIAGONAL
END


TO THIRD.ROW
THIRD.POSITION
TRIANGLE.BLOCK
POSITION.RIGHT
CIRCLE.BLOCK
POSITION.RIGHT
SQUARE
END


TO THIRD.POSITION
PU HOME
BK 110
LT 90 FD 120 RT 90
PD
END
```

```
TO SET.TURTLE
PU HOME BK 40 PD
END


TO CIRCLE
REPEAT 24 [FD 8 RT 15]
END


TO TRIANGLE
FD 50
RT 135
FD 71
RT 135
FD 50 RT 90
END


TO DIAGONAL
RT 45
PU FD 85 PD
RT 180
LT 45
END
```

ROBOTS

HOW THEY WORK FOR US

Labor Day, the first Monday in September, is set aside each year as the U.S. laborers' holiday. The word *labor* comes from the Latin word *laborare,* which means "to be tired." On Labor Day, American laborers are given a day off from work and are honored through parades and other special festivities.

In the past few years a new kind of laborer has entered the work force. Chances are you and your students depend on this laborer for some kind of work each day. The laborer we are talking about is the *robot.*

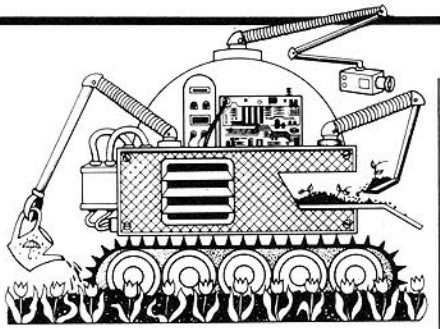
A robot is a computer-controlled device that can be programmed to perform different manipulative tasks without direct human interaction. For example, police robots, like the RMT Mark-3, can help bomb squads dispose of bombs or drag an injured bomb victim to safety; the Hospital Helper robot can feed disabled patients; special robotic arms can assemble automobiles or lift satellites from the bay of the space shuttle.

Some robots have sensor devices that enable them to detect and measure sound, light, motion, heat, and/or touch. These sensors can be used in programs written for the robot. For example, a robot can be programmed to turn up the thermostat in your classroom whenever the robot's heat sensor detects a temperature drop below 65 degrees Fahrenheit.

The following classroom activities will teach your students more about robots and how they work.

QUICK QUIZ

Test students' knowledge of robotics by giving them the following true-false quiz.



1. Most robots can talk and can understand human language.
2. Some robots play chess.
3. All robots are controlled by computers.
4. It is possible to build a robot mousetrap.
5. Robots can explore the ocean.
6. Robots can guess your age, weight, and birthdate just by looking at you.

Go over the answers to the quiz together. They are as follows.

1. *False.* Few robots can talk or understand speech. Those that can, can understand only the simplest of voice commands.
2. *True.* Some robots can even move chess pieces on a board.
3. *True.*
4. *True.* One robot mousetrap on the market contains a dish and a scale. The robot weighs any creature that steps on the scale. A lightweight object, such as a mouse, causes the robot to spring a trap. Something heavier, such as a cat, makes the robot deposit food (more bait) in the dish.
5. *True.* Some robots perform tasks that are dangerous or impossible for humans to do, such as detonating a bomb or diving deep into the sea.
6. *False.* Robots have very poor vision. Many cannot tell the difference between a human and a lamppost.

FACT SHEET ON ROBOTS

Use articles and books to make a robot fact sheet. Include facts on which countries have the most robots, how robots are used, what they look like, and their cost.

Start with these fascinating facts.

1. The word *robot* comes from the Czech word *robata,* which means dull work. (That's what most robots do!)
2. Robots have three parts: a computer, sensors, and mechanical parts.
3. Most robots are just mechanical arms. That's because robots have only enough parts to do their jobs, and most of their jobs are fairly simple.
4. Robotic arms manipulate (move or operate) objects ranging from machines as a large as a room to tiny chess pieces.

RULES FOR ROBOTS

Some people fear that robots will take over and even harm the world. Ask kids how they think robots could do this. As a class, make a "Robot Rule Book" listing laws that would prevent robots from taking over.

Science fiction writer Isaac Asimov can help you with this project. He addresses the issue of robot behavior in many of his stories. In fact, he wrote three laws for robots to follow. Paraphrased, these laws state that: 1) Robots cannot injure a human being and must protect humans from injury; 2) Robots must obey human orders, except in violation of the first law; and 3) Robots must protect their own existence, except in violation of the first two laws.

ROBOT JOKES

Have students write their own robot jokes. Use the following jokes for inspiration.

Question: What do British robots eat for dinner?
Answer: Efficient chips. (Fish 'n chips, get it?)

Question: What did the factory worker say to the half-built robot?
Answer: Hold your circuits. ROM wasn't built in a day!

Question: What do you get when you cross a robot with a snowman?
Answer: Frostbyte.

Question: Why did the robot become a clown?
Answer: So it could join the *circuit.*

PLAY ROBOT

Write these commands on the board: WALK, RIGHT, LEFT, BACK, FORWARD, PICK UP, PUT DOWN, and CALCULATE.

Now divide students into pairs and tell them they are going to play a robot game. In this game, one student in each pair is the programmer and the other is the robot. Programmers use the commands on the board to program their robots to do simple tasks. For example, to program a robot to do a math problem on the board, the programmer might tell the robot, who is facing the board, to WALK (to the board), PICK UP (a piece of chalk), and CALCULATE (a problem written on the board).

DESIGN A ROBOT

Post the illustration *(next page)* of Gardner T. Robot, a robot who can tend to most all your gardening needs. Discuss Gardner's parts and how they work. How does Gardner tell weeds and flowers apart? (It has a smelling sensor and a video camera.) How does Gardner keep from trampling flowers? (It has touch-sensitive mesh around the bottom to detect obstacles.)

Conduct a contest in which students create their own robots. Tell them to draw a design of a robot and label all the parts. They should include a short description of what their robot does and how it works.

Judge entries on overall design, understanding of how robots work and what they can do, and creativity.

ROBOTS AT WORK

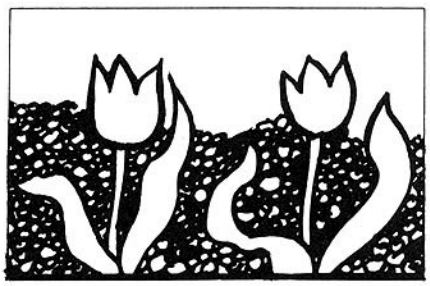
Have kids collect newspaper and magazine clippings about robots at work, such as space shuttle arms, hospital aides, police and fire fighter robots, and robots designed especially for use in schools. Post these clippings on a bulletin board.

ROBOTS IN THE CLASSROOM

Educational robots, those designed especially for use with students, are excellent teaching tools.

Seeing a robot respond to commands helps kids understand abstract principles of programming, such as the fact that robots can only do what someone programs them to do.

Besides their programming possi-



bilities, robots inspire discussions about the similarities and differences between human beings and robots.

Another advantage of using robots in class is to introduce children to an increasingly important field in the business world—robots.

There are several educational robots to choose from. Let's start with Turtle Tot, a robot that plugs into a computer and performs commands addressed to it in BASIC or Logo. Tot "feels" with touch sensors, draws with a 10-color pen set, has "eyes" that blink, and, with a speech option, can talk. Turtle Tot comes with software for Apple, Atari, Commodore 64, TRS-80 Models III and 4, and IBM PC and PCjr computers. Tot sells for $299. The talking model of Tot costs $399.

Another robot manufactured by Harvard Associates, the makers of Tot, is the Tasman Turtle. This robot is larger and has more robotics capabilities but sells for more than twice Tot's price.

Recently, Harvard Associates adopted the Valiant Turtle into its family of turtle robots. Like the other two, the Valiant Turtle can be programmed in either BASIC or Logo. Special features include a rechargeable battery power adapter and an infrared transmitter. The transmitter sends signals from the computer to the robot and allows it to move freely without being attached to any cords. Valiant Turtle is available for use with the Apple II, IBM PC, PCjr, and Commodore 64. The price is $500.

Another more sophisticated robot is Topo II, a three-foot walking, talking robot. It can be operated by a joystick or by pressing certain keys on the computer keyboard. Students program Topo in Logo or FORTH.

Topo's younger relative, F.R.E.D. (Friendly Robotic Educational Device), is a 12-inch tabletop model with a 45-word voacbulary that kids program in Logo.

Both Topo II and F.R.E.D. work with Commodore 64 and Apple computers. Topo II is $1595; F.R.E.D. costs under $500.

A less expensive option is a battery-operated toy tank called Big Trak. Kids can program Big Trak to move in any direction, from one foot to several hundred feet in distance. Although Milton Bradley stopped manufacturing it recently, Big Trak is still available in some major department stores for about $50.

ROBOT MANUFACTURERS

Big Trak, Milton Bradley, 443 Shaker Rd., Longmeadow, MA 01028; 800/628-8608.

F.R.E.D., Androbot, 101 E. Daggett Dr., San Jose, CA 95134; 408/262-8676.

Tasman Turtle, Harvard Associates, 260 Beacon St., Somerville, MA 02143; 800/622-4070. In Illinois, 800/942-7317.

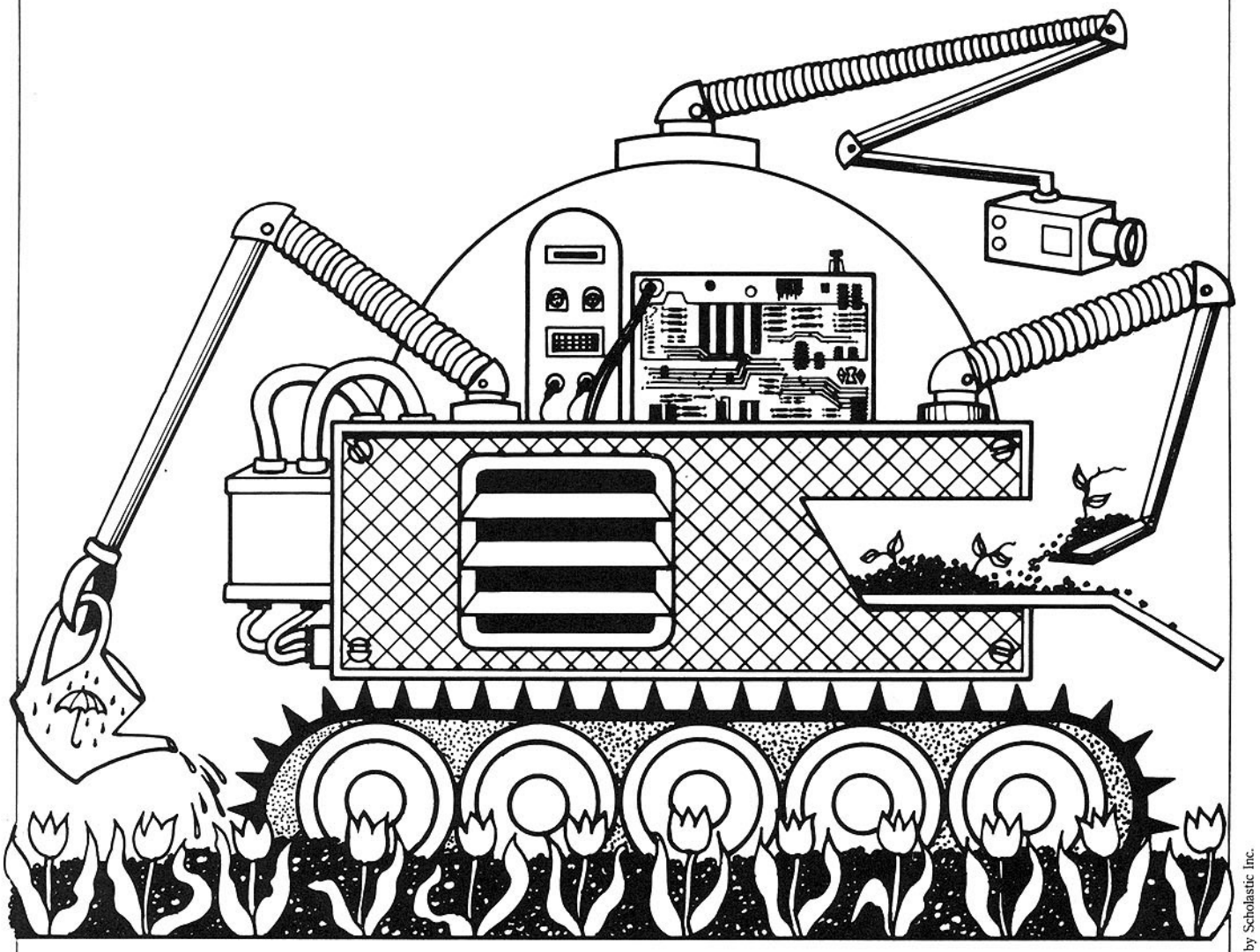
Topo II, Androbot, 101 E. Daggett Dr., San Jose, CA 95134; 408/262-8676.

Turtle Tot, Harvard Associates, 260 Beacon St., Somerville, MA 02143; 800/622-4070. In Illinois, 800/942-7317.

Valiant Turtle, Harvard Associates, 260 Beacon St., Somerville, MA 02143; 800/622-4070. In Illinois, 800/942-7317.

GARDNER T. ROBOT

A ROBOT THAT WEEDS AND WATERS FLOWERS



1. Video camera looks for small objects that look like plants. Can see the ground from any angle and has a zoom lens to look at things close up.

2. Interface port hooks Gardner to an outside computer. Gardner can be reprogrammed to mow lawns, trim bushes, and chase dogs.

3. On-board computer uses information it gets from soil samples, the video camera, and the smell sensor to do Gardner's job better. Stops Gardner when the wire mesh runs into an object.

4. Waterproof sunshield protects Gardner from hot sun, rain, and other bad weather.

5. Optional **battery pack** lets Gardner work for three extra hours before recharging.

6. Smell-sensitive vent keeps Gardner from overheating. Smell sensors can also tell flowers from weeds.

7. All-purpose **mechanical arm** can use the watering can, garden hose, and other objects.

8. Soil scoop collects soil and sends it to on-board computer to check for dryness and nutrients. Can spread fertilizer if needed. Also works as a **weed puller**. Drops weeds through door at left for storage inside Gardner's pouch.

9. Storage pouch has space for pulled weeds and separate place for up to two pounds of fertilizer.

10. Fine, touch-sensitive **wire mesh** detects things that will get in Gardener's way, like rocks and hoses.

11. Spiked wheels let Gardner move in dirt.

CORNY CORNSTALK WORKSHEET

LABOR DAY — **FIRST MONDAY IN SEPTEMBER**

NAME: _____

Farmers plant corn seeds in early spring. The seeds grow into cornstalks that are knee-high by the Fourth of July. By the first day of fall in September, the stalks are as high as an elephant's eye!

You can make cornstalks grow on the computer screen.

WHAT TO DO

1. Load any Logo program into your computer.

2. Type in the following RLEAF procedure.

```
TO RLEAF :S
  REPEAT 2 [RT 30 FD :S]
  RT 60 FD :S
  BK :S LT 60
  REPEAT 2 [BK :S LT 30]
END
```

3. Type RLEAF 15 and press RETURN or ENTER. The Logo turtle will draw a cornstalk leaf that looks like this:

Clear the screen.

4. Take a close look at the RLEAF procedure. Use the commands to make a procedure called LLEAF that draws a similar leaf to the left. (Hint: Change left to right and right to left in the RLEAF procedure.) The Logo turtle should draw a cornstalk leaf that looks like this:

Clear the screen.

5. Type RLEAF 15 and press RETURN or ENTER. Then type LLEAF 15 and press RETURN or ENTER. Your screen will look like this:

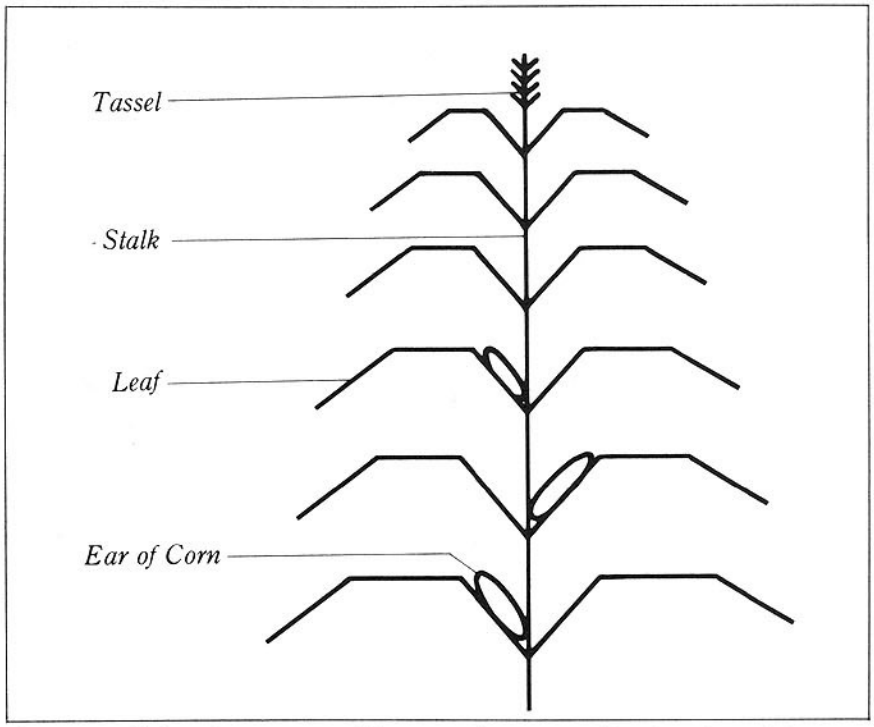
6. Here comes the fun part! You can make a cornstalk that has leaves growing one on top of the other. Start with this procedure.

```
TO CORNSTALK
  RLEAF 15 LLEAF 15 FD 15
  RLEAF 13 LLEAF 13 FD 15
  RLEAF 11 LLEAF 11 FD 15
  RLEAF 9 LLEAF 9 FD 15
  RLEAF 7 LLEAF 7 FD 15
  RLEAF 5 LLEAF 5 FD 15
END
```

CORNSTALK CHALLENGES

How many of these Logo programming challenges can you do?

- Make the cornstalk grow higher.
- Add a TASSEL to the top of your stalk. *(See illustration.)* A tassel is the flower part of the cornstalk.
- A cornstalk has one to eight *ears* (spikes) of corn growing on it. The corn grows where the leaf meets the stalk. Add EARS of corn to your cornstalk.
- Grow a whole field of corny corn on your computer screen! (Remember that corn is planted in rows.)



A cornstalk has leaves, a stalk, ears of corn, and a tassel on top.

 Answer: Your teacher has the answer. It is on page 156 of the book, **Holiday Computer Activities.**

JOHNNY'S APPLE TREE WORKSHEET

JOHNNY APPLESEED'S BIRTHDAY **SEPTEMBER 26**

NAME: _____

On September 26, 1774, a boy named John Chapman was born. John loved animals and plants. When he grew up, he planted seeds for apple trees all across the country. That's how he earned the name Johnny Appleseed.

You can use Logo to make an apple tree in honor of Johnny's birthday.

WHAT TO DO

1. Boot any Logo program into your computer.

2. Type in each of the following procedures exactly as they appear.

```
TO GROUND
  HT RT 90 FD 278 LT 90
END

TO TRUNK
  FD 60
END

TO APPLE
  REPEAT 10 [FD 2 RT 36]
END

TO TWIG
  RT 45 FD 10 APPLE BK 10
  LT 90 FD 10 APPLE BK 10
  RT 45
END

TO BRANCH
  REPEAT 3 [FD 15 TWIG]
  BK 45
END

TO BRANCHES
  LT 90
  REPEAT 5 [BRANCH RT 45]
END
```

3. To see what any of the procedures look like on the screen, type the name of the procedure and press RETURN or ENTER.

4. To make a whole tree, you need to put these procedures together into a new procedure called TREE. The TREE procedure is started for you above . All you need to do is write the correct procedure names in the blanks. (Hint: You only need to write in three procedures, because some of the procedures include other procedures.)

```
TO TREE
_____
_____
_____
END
```

5. Type your TREE procedure into the computer.

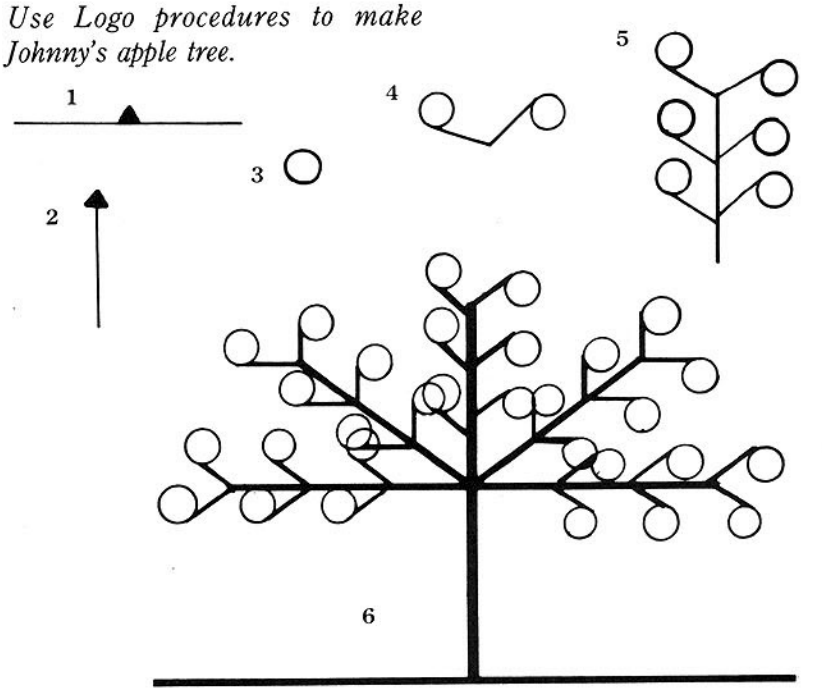
6. Type TREE and press RETURN or ENTER.

APPLE CHALLENGES

How many of these challenges can you do?

- Add color to your picture.
- Make the apples bigger.
- Use the BRANCH procedure to make roots under the ground.
- Make a new procedure called ORCHARD that draws an apple orchard.

Use Logo procedures to make Johnny's apple tree.



 Answer: Your teacher has the answer. It is on page 156 of the book, **Holiday Computer Activities.**

OCTOBER

TEST YOUR STUDENTS' COMPUTER I.Q.

October is the perfect month to test your students' knowledge of computer literacy; it's Computer Learning Month.

Before you can test kids' knowledge of computer literacy, you need to answer a fundamental question: What is computer literacy? It's more than knowing an Apple from an Atari, but it doesn't have to mean knowing how to program a rocket to land on the moon, either. Most computer literates fall somewhere in between.

In general, a person who is computer literate has an understanding in five major areas: computer parts, computer software and hardware, computer vocabulary, computers in society (past, present, and future), and computer programming.

This fun and instructive quiz on computers will help you find out how your students rate in these five areas. The quiz is not a definitive checklist, just a helpful gauge.

Make copies of the quiz and give one to each student. Have your students take the test cold, without studying or preparing for it. After they have completed the quiz, grade the tests and rate students according to the chart in the Answer Key. You'll discover whose circuits are hot, whose circuits are warm, whose circuits are cool, and whose circuits have not been plugged in yet!

Lorraine Hopping

ANSWER KEY

Part 1: Computer Parts
1.B, 2.C, 3.D, 4.A, 5.E
Bonus: Computer graphics.

Part 2: Software and Hardware
1.c, 2.a, 3.b, 4.b, 5.c
Bonus: A modem.

Part 3: Vocabulary
1.a, 2.b, 3.c, 4.a, 5.b
Bonus: The term "64K" means a computer can store 64,000 bytes in its memory.

Part 4: Computers in Society
1.F (Charles Babbage), 2.T, 3.F (data processing), 4.T,
Bonus: Sand.

Part 5: Programming
1. BASIC.
2. Turtle.
3. The computer prints HELP! I'M STUCK INSIDE A COMPUTER! on the monitor until the user presses the BREAK or SYSTEM RESET key.
4. The computer counts from one to 10 and displays the numbers on the screen.
5. The computer prints 35 on the screen.
Bonus: A byte is larger; it is made up of eight bits.

SCORING

Give your students five points for each regular question and 15 points for each bonus question they answer correctly. Grand total: 200 points.
160–200: Your circuits are hot!
120–159: Your circuits are warm!
80–119: Your circuits are cool!
Less than 80: Your circuits have not been plugged in yet!

COMPUTER I.Q.
WORKSHEET 1

COMPUTER LEARNING MONTH **MONTH OF OCTOBER**

NAME: _____

Part 1 COMPUTER PARTS

Directions: Match the words with the pictures.

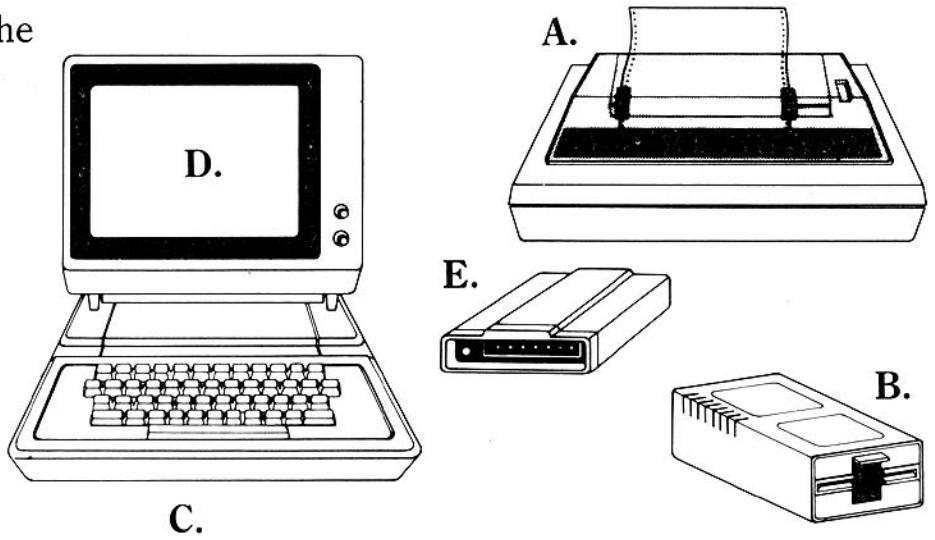
_____ 1. Disk drive

_____ 2. Keyboard

_____ 3. Monitor

_____ 4. Printer

_____ 5. Modem



Bonus Question: What do you call pictures, designs, or diagrams that are on a computer's screen?

Part 2 COMPUTER SOFTWARE AND HARDWARE

Directions: Circle the correct answer.

1. Inside a robot you will find:
   a) A small person who makes it move.
   b) Metal organs, such as a heart, a brain, and a pair of lungs.
   c) A computer or microprocessor.

2. What is *not* another name for a monitor?
   a) ESD (Electronic Screen Device).
   b) VDT (Video Display Terminal).
   c) CRT (Cathode-Ray Tube).

3. How big were the first computers?
   a) The size of a typewriter.
   b) Longer than a tyrannosaurus rex.
   c) About the size of Rhode Island.

4. Which one of the following items does *not* contain a computer?
   a) A digital watch.
   b) A nonelectric typewriter.
   c) A touch-tone telephone.

5. Which of the following is *not* a software program?
   a) An electronic spreadsheet.
   b) A word processor.
   c) A graphics tablet.

Bonus Question: What do you call a machine that changes computer code into signals that can travel over telephone lines?

COMPUTER I.Q.
WORKSHEET 2

COMPUTER LEARNING MONTH **MONTH OF OCTOBER**

NAME: _____

Part 3 COMPUTER VOCABULARY

Directions: Circle the correct answer.

1. A data base is:
   a) A software program that lets you store and get information.
   b) The "base" inside a computer that stores all information.
   c) A star base for computer repairs.

2. A programming error is called:
   a) A chip.
   b) A bug.
   c) A crash.

3. CPU stands for:
   a) Calculating Principle Usage.
   b) Computer Programmers' Union.
   c) Central Processing Unit.

4. A cursor is:
   a) A blinking light that tells where the next character will appear on the computer screen.
   b) A light on the keyboard that tells you if the power is on or off.
   c) A person who keeps forgetting to press RETURN or ENTER after each program line.

5. Information printed out on paper is called:
   a) Soft copy.
   b) Hard copy.
   c) A paper product.

Bonus Question: What does 64K mean?

Part 4 COMPUTER PROGRAMMING

Directions: Read the sentences below. Put a "T" next to the ones that are true and an "F" next to the ones that are false.

1. Blaise Pascal is called the father of computing because he invented the first real computer. It was called the analytical machine.

2. Fingers and toes were the first computing devices used by cave people.

3. The biggest use of computers is for word processing.

4. In the next 10 years microcomputers will be so common that nearly everyone will use them to shop, bank, and vote.

Bonus Question: What grainy material does the silicon in a silicon chip come from?

Part 5 COMPUTERS IN SOCIETY: PAST, PRESENT, AND FUTURE

Directions: Fill in the blanks.

1. PRINT, GOTO, and END are commands in a computer language called _____.

2. A _____ is the animal that draws in Logo.

Directions: For each program below, describe what will happen if you put your computer in BASIC, type in the program, and RUN it.

3.
```
10 PRINT "HELP! I'M STUCK
    INSIDE A COMPUTER!"
20 GOTO 10
30 END
```

4.
```
10 FOR P=1 TO 10
20 PRINT P
30 NEXT P
40 END
```

5.
```
10 PRINT 15 + 20
20 END
```

Bonus Question: What is larger, a bit or a byte?

COMPUTER OPERATOR'S LICENSE WORKSHEET

COMPUTER LEARNING MONTH **MONTH OF OCTOBER**

NAME: _____ knows how to:

- ☐ Turn on the monitor.
- ☐ Turn on the computer.
- ☐ Get the computer into BASIC mode.
- ☐ Insert a disk in the disk drive.
- ☐ Load a program.
- ☐ Save a program.
- ☐ Restart a program.
- ☐ Exit from a program.
- ☐ Remove a disk from the disk drive.
- ☐ Turn off the computer system.

Cut along dotted lines.

COMPUTER OPERATOR'S LICENSE

This is to certify that _____
(Student's name)

has been licensed to operate the _____ computer
(Computer brand)

at _____ School.
(School's name)

_____ _____
Approved By Date

This license expires June ____, 19 ____. License must be presented upon request.

Directions: Give each student a copy of this sheet. Each time a student performs one of the tasks listed on the Operator's Test, check it off on his or her sheet. After a student has performed every task listed, fill out the Operator's License at the bottom of his or her sheet. This student is now permitted to operate a computer independently.

Publish a Classroom Newspaper

EXTRY! EXTRY!
READ ALL ABOUT IT!

Fighting Rages in Lebanon!

Shoppers Bombard Cabbage Patch Dolls!

Gerbils Scarce in Bangor!

Where do I turn for the latest news? Not to the *New York Times,* but to *Pickering's Daily Express,* a four- to eight-page newspaper published by students in my sixth grade English class. Besides the latest in local, national, and international news, the *Express* contains editorials, interviews, reviews, cartoons, poetry, and recipes.

How do these young reporters and editors do it? With a little help from their computer, of course! Using a word processing program, students find the ability (and motivation) to write and revise their articles with ease. A printer provides them with clean, neat copy. The finished product is a professional looking newspaper that students, teachers, and parents can enjoy.

An appropriate time to begin publishing a school newspaper is during International Newspaper Week, usually the second week in October. (You can get the exact dates of International Newspaper Week for a specific year by contacting the International Circulation Mangers Association at 202/620-9555.)

Here's how to "get the printer rolling" (so to speak) in your classroom. First teach students how to use a word processing program. Then follow this teaching unit. It introduces

students to the basic elements of good newspaper writing and tells you how to organize a newspaper staff in your room. The four task cards provided at the end of the article let students practice newswriting and editing on a word processor.

TEACH THE ELEMENTS OF A NEWSPAPER ARTICLE

Bring in issues of local and national newspapers. Point out the basic elements of typical stories: the *headline* (article title), *deck* (short subhead, sentence, or phrase that draws the reader in), *lead* (introductory paragraph), *byline* (writer's name), and *dateline* (origin and date of story). Also point out the news section of the paper as well as the features, entertainment, and editorial sections.

Have students take a closer look at the elements that follow:

Headline: Write these sample headlines on the board:

1. Shuttle Schedule Up in Air
2. Crime: Slap the Cuffs on It!
3. Pick a Peck of...Peanuts?

Tell students that headlines are like telegrams; every word in them counts. Are headlines always complete sentences? *(No. Due to limited space, they often lack articles and sometimes do not contain verbs, as in the first example.)* Ask students what make the headlines on the board good ones. *(The first one contains a play on words. The second example begins with a word that encapsulates the subject of the article. It also contains a strong, active verb to create a vivid image. The third headline draws on a familiar saying and captures the reader's interest by not revealing everything.)*

Cut out articles from several news-

papers and remove the headlines. Mount the untitled articles on stiff paper and laminate them. Have students write headlines for each of the articles.

Lead: A story's lead, or introduction, has to grab the reader's attention. In general, good leads start with the most important word or words in the story. For example, "Peace and prosperity were the subjects of President Reagan's State of the Union address," is better than

Headlines are like telegrams. Every word counts.

"President Reagan talked about peace and prosperity in his State of the Union address."

Tell students that there are two basic kinds of newspaper stories: *news stories* and *feature stories*. Each has slightly different standards for effective leads.

News story: A news story contains timely information about an event. All facts and information are directly related to these questions: *Who? What? Where? When? Why?* and *How?* In news articles, these questions are answered in the lead, which is usually no longer than a paragraph. The remaining paragraphs elaborate on the details of the story (the five Ws and the H), in order of importance. This process is called *inverted pyramid* writing. In an inverted pyramid, the most important details of a story are written first, and the least important, last. So if an article has to be cut to fit a space in the newspaper, editors can chop off the bottom paragraphs without losing essential information. Or if a reader decides not to read the entire article, he or she will still gain the most important facts.

Have students identify news stories in newspapers and find the five Ws and the H for each.

As students read the news stories, point out that good articles use precise words with punch—lively adjectives, concrete nouns, and active verbs. For example, "Wild flames consumed the attic and top floors, despite fire fighters' efforts to save the doomed building," is better than, "The fire got out of control."

Feature Story: Feature stories are, in general, human interest stories. They are often about animals, unique hobbies, babies, or an interesting (but not particularly newsworthy) experience. Unlike straight news stories, features don't have to appear in tomorrow's paper. They can appear next week and still be interesting.

Feature leads can be longer than news leads. Often they contain a bit of intrigue that makes the reader want to read on. Here are a few kinds of feature leads:

1. *Summary:* A summary lead gives overall details of an event. Here's an example:

Each day, students at Central Elementary School in Columbia, Louisiana, broadcast a radio news show! They report on current events, weather, science, and sports.

2. *Novelty:* A novelty lead arouses interest without disclosing everything. Here's an example:

Citizens in the Northeast fear it. Canandians insist that the U.S. get rid of it. And President Reagan proposes that we study it. "It" is acid rain.

3. *Question:* A question lead starts with a probing or interesting question. Here's an example:

What do clam chowder, onions, chocolate, and peanut butter have in common? Believe it or not, they're all popcorn flavorings!

4. *Quotation:* A quotation lead starts with an interesting or provocative quote. Here's an example:

"If the U.S. ever got bombed, it would sure be a lot worse than what we saw on TV." That was one viewer's response to The Day After, *a televised movie about a nuclear holocaust.*

Mount sample headlines from feature articles on stiff paper. Laminate the headlines and distribute them to the class. Have students write summary, novelty, quotation, and question leads to match the headlines.

As another activity, have students write an entire feature story on one of these topics: an unusal pet, a funny thing that happened, or a friend's hobby.

Then cut out the four task cards at the end of this article and laminate them. Place them in your computer center for children to work on. Students will need a computer, a word processing program, and blank disks or cassettes to complete the cards. The task cards provide exercises on writing headlines, leads, and newspaper stories.

A news story should answer: Who? What? When? Why? Where? and How?

ORGANIZE A STAFF

Once students are familiar with the main elements of a newspaper article, you are ready to set up your own class newspaper. First you need a staff. Choose an editor-in-chief and two section editors, one to supervise news-story writing and one to head feature writing. (More advanced classes may wish to have editorial and entertainment section editors, too.) These editors should have good

leadership qualities. Their jobs are primarily ones of organizing, paying attention to detail, and working with other students.

Another important staff member is the copy editor. He or she is in charge of proofreading all the articles for spelling and grammar. A good spelling and English student is needed here.

Depending on the size of your class, other jobs can include beat reporters, reviewers, interviewers, artists or cartoonists, keyliners in charge of pasting up the newspaper, a production manager in charge of printing and running off copies, and a circulation manager in charge of distributing the paper.

One way to assign positions is to have students "apply" for them. Their applications should contain a letter explaining why they would be good at a particular position and what kinds of innovations they would bring to the paper. Tell students that you will assign positions based on the qualifications and ideas stated in their applications.

When the positions are filled, conduct an editorial staff meeting. Decide on the name of the paper, the number of pages, deadlines, who will receive the newspaper, and other important details.

ASSIGN ARTICLES

Put the editor-in-chief in charge of a class brainstorming session to determine story ideas for the first issue.

- List national and international news of interest to your paper's readers.
- List school news: an accident on the playground, an upcoming open house, building improvements, and so on.
- Discuss feature story ideas, such as interviews with teachers or parents, articles on community groups, short stories or poetry, an advice column, recipes, and cartoons.
- Discuss entertainment possibilities, such as publishing book and movie reviews, a calendar of school activities, and the cafeteria menu.
- Perhaps students would like to include a few editorials as well.

Have the copy editor write all brainstorming ideas on the board.

You will probably end up with an abundance of feature article proposals. It's up to the editor-in-chief and section editors to decide what's important, to assign a good balance of articles, and to impress upon workers the importance of meeting deadlines.

Feature stories, in general, are human interest stories.

WRITE AND EDIT THE NEWSPAPER

Before writing anything, have students outline their ideas. Have them jot down topic sentences, possible leads, phrases, and so on, to help them formulate their ideas. Then have them organize their notes into outlines. Review students' outlines and make suggestions for using livelier words, specific details, and examples to back up opinions.

Students are now ready to type first drafts of their articles into the computer. After students have typed their stories into the computer, encourage them to use the word processor to fine-tune them.

Writers should save their stories on a disk or cassette under a *slug*, a short, one-word description of the story. Near the computer keep an editorial schedule that lists each article's name, the author, the section editor in charge, and the slug.

As writers finish their articles, their section editors should edit the stories, checking for clarity, accuracy, organization, and appropriate word length. The editor-in-chief then reviews all stories, looking for stray errors and overlap between articles.

The copy editor then proofreads the final drafts to correct spelling and grammar and signals the production manager (or teacher) that the stories are ready for printing.

LAY OUT AND PRINT THE NEWSPAPER

The way you design the columns of your newspaper depends on artistic taste and the computer equipment available to you.

For our newspaper, we use letter-size paper and fit three columns of copy on each page. The columns are 20 characters wide (including spaces between words and punctuation). This allows you to leave a five-space *gutter* between each column and a five-space margin on each side. For some features, book reviews, or personal columns, we use a two-column, 33-character format. This leaves four spaces of gutter between the two columns and five for the margins.

Some computer equipment allows you to position articles the way you want them on a page before you run the printer. Ours does not.

Our production manager prints out stories separately (usually at 20 characters wide) and turns them over to the keyliners, or pasteup artists. The keyliners use rubber cement to paste all copy, artwork, and page numbers onto our newspaper pages.

When the *mechanicals* (pasteups of the pages) are complete, the production manager makes enough copies for all our readers.

Once the circulation manager or a select group of students has seen that your papers have been distributed, conduct a *postmortem* session. Gather the entire staff and flip through the newspaper together. What articles and layouts were most successful this issue? Could anything be improved upon for the next issue?

Beth Deardorff

NEWSPAPER TASK CARD #1
THE FIVE *W*'S

Feline Rescued from Burning Building
Misty, a black cat, was rescued from a burning building by fire fighters in Angora, Maine, late Monday night. When the fire fighters reached 114 Hancock Street, the building was already engulfed in flames. Mr. and Mrs. Tom Jakes, residents of the home, had escaped unharmed, but the family's pet cat remained inside. Fire fighters found Misty crouching by the kitchen door and removed her safely from the building

Directions:
1. Read the news story carefully.
2. Use a word processor to list the five *W*'s of a news story: who, what, when, where, and why.
3. Read the article again. After each *W*, fill in an answer.
4. SAVE your work and PRINT a copy for yourself.

NEWSPAPER TASK CARD #2
LEAD ON THE LOOSE

A horse was found loose. It was in the way of traffic and was also eating people's gardens.

Directions:
1. Use the word processor to type the lead onto the computer screen.
2. You're the editor in charge of this story. Pretend that you know all the details of the runaway horse and REPLACE or ADD words to make this lead more colorful. Remember to include the five *W*'s.
3. SAVE the lead and PRINT a copy for yourself.

NEWSPAPER TASK CARD #3
LEADS AWAY!

Circus Lion Escapes
Farmer Sees Spaceship
Woman Saves Drowning Victim

Directions:
1. Choose one of the headlines and use your word processing program to write a good lead.
2. Add your byline and a dateline to the story.
3. Edit the article by ADDING exciting words or REPLACING dull words. Have you included the five *W*'s?
4. SAVE the text and PRINT a copy for yourself.

NEWSPAPER TASK CARD #4
EDIT, EDIT, EDIT!

There are no clues or suspects at this time.

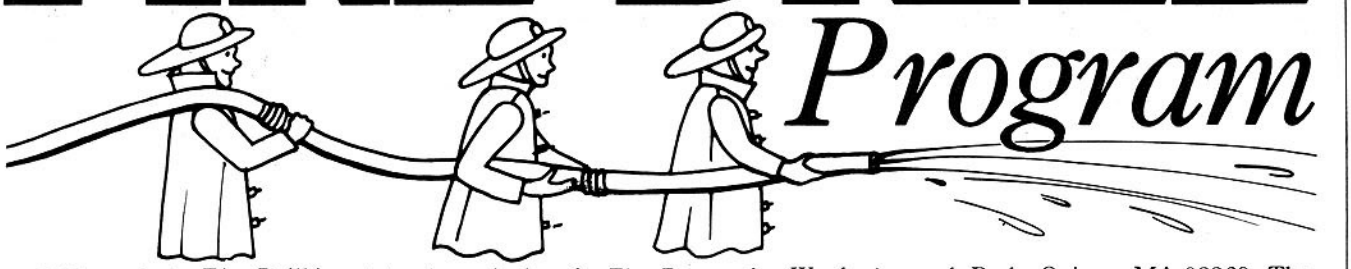
Thursday morning, shortly before noon, a masked gunman held up the Walker Grocery Store and escaped with over $900.

Mr. John Walker, the store's owner, said the man must have entered the store while he was busy with a customer. The man appeared behind him with a gun and asked for the contents of the cash register.

Directions:
1. Using your word processing software, type this scrambled article onto the screen.
2. Put the paragraphs in the correct order.
3. Add a headline, a deck, a byline, and a dateline to the story.
4. Edit the article to make it better.
5. SAVE the article and PRINT a copy for yourself.

COPY AND LAMINATE

A Computer FIRE DRILL *Program*



Computer Fire Drill is a tutorial program that simulates a fire emergency at the Collins home. Students learn basic fire safety rules as they help the Collins family safely escape from the fire.

HOW THE PROGRAM WORKS

The program presents six emergency situations that could happen during a fire. For each situation, students decide what action the family members should take.

For example, 10-year-old Billy Collins smells smoke. Should he: (1) Find his prized baseball glove and leave the house? or (2) Get out of the house immediately? If players choose number one, Billy loses time getting out of the house and the smoke grows worse. If players choose number two, Billy gets out safely and quickly.

Although the Collins family always escapes safely in the end, making wrong decisions creates problems.

At the end of the program, the computer lists fire safety rules.

USING THE PROGRAM

Each year nearly one million fires break out across the country. Tens of thousands of people die or are injured in these fires. Many lives can be saved and injuries prevented if victims know more about fire prevention and safety.

To help my students become aware of fire prevention tips and safety procedures, I plan a special curriculum for Fire Prevention Week.

During Fire Prevention Week, the second week in October, I post fire safety rules in my classroom *(see box)* and go over them with the class. After students have passed a short quiz on fire safety, they run the *Computer Fire Drill* program. For extra credit, some students write their own fire drill programs.

As a class, we discuss how the fire in the Collins home might have started. Did someone leave too many appliances plugged into a socket? Was somebody playing with matches?

We then go over the procedures for a school and home fire-safety inspection. At school and at home, we look for faulty or overloaded wires, chemicals that are not stored in tightly sealed containers or placed away from heat, out-of-order fire extinguishers, candles placed near flammable materials, and matches within reach of small children. We then make sure these hazards are corrected.

I also set aside one afternoon during Fire Prevention Week for a class visit to the local fire department. Kids ask fire fighters about their job and for advice on fire safety.

As a final project for the week, students write their own puppet show, starring Freddie the Fire Fighter. They then perform the show for younger students.

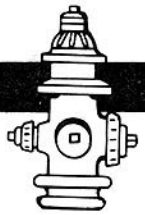
For more information on fires and a free catalog of fire safety materials, you can write to the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269. The NFPA, sponsor of Fire Prevention Week, also publishes a fire safety curriculum for grades K–2, 3–5, and 6–8. Details are included in the catalog.

FIRE SAFETY RULES

1. As soon as you detect a fire, get out of the area immediately. Do not look for valuables.
2. Call the fire department from a safe place and wait for the fire fighters to arrive. Do not try to put out the fire yourself.
3. When escaping from a fire, always touch a door before opening it. If it is hot, keep it closed.
4. If you can't escape immediately from another exit, use wet towels to seal the crack under the hot door.
5. If there is a window nearby, open the top part slightly to let hot air and smoke out. Open the bottom part slightly to let fresh air in. Do not open windows widely.
6. If you get trapped inside a burning building, signal fire fighters of your whereabouts by placing a bright object in a window or other opening.
7. Stay low to the ground, where you will find oxygen and cooler air.
8. Never enter a burning building.
9. Have your family choose a safe place on your block to meet should they have to escape a fire in your house. This way you can tell who may still need help escaping.

Richard Bollinger

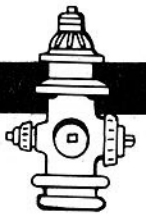
PROGRAM LISTING FOR *COMPUTER FIRE DRILL*



This program will run on Apple computers. See Program Conversions, page 152, to modify the program for use on other machines.

```
10  REM  COMPUTER FIRE DRILL ©1984 SCHOLASTIC INC.
20  HOME : CLEAR
30  PRINT "  IT IS 11:43 P.M. THE COLLINS FAMILY"
40  PRINT "IS FAST ASLEEP. SUDDENLY, 10-YEAR-OLD"
50  PRINT "BILLY WAKES UP. HE SMELLS SMOKE!"
60  PRINT "  WHAT SHOULD HE DO?"
70  PRINT : PRINT "  1. GET HIS BASEBALL GLOVE FROM THE"
80  PRINT "     CLOSET AND LEAVE."
90  PRINT "  2. GET OUT OF THE HOUSE IMMEDIATELY."
100  GOSUB 2000
110  IF A$ = "2" THEN 140
120  PRINT "  BILLY LOSES TIME FINDING HIS GLOVE."
130  PRINT "THE FIRE IS GETTING WORSE."
140  PRINT "  AS BILLY FLEES, HE YELLS, 'FIRE!' TO"
150  PRINT "WAKE THE FAMILY."
160  PRINT : PRINT "  MRS. COLLINS RUNS TO THE BEDROOM"
170  PRINT "DOOR. OUCH! IT IS VERY HOT."
180  PRINT "  SHE SHOULD:"
190  PRINT : PRINT "  1. OPEN THE DOOR QUICKLY AND RUN OUT."
200  PRINT "  2. KEEP THE DOOR CLOSED AND LOOK FOR"
210  PRINT "     ANOTHER WAY OUT."
220  GOSUB 2000
230  IF A$ = "2" THEN 280
240  PRINT "  WHEN MRS. COLLINS OPENS THE DOOR,"
250  PRINT "FLAMES SHOOT UP IN THE HALL. SHE"
260  PRINT "QUICKLY CLOSES THE DOOR TO STOP THE"
270  PRINT "FIRE FROM SPREADING."
280  PRINT "  MR. COLLINS OPENS THE BEDROOM WINDOW."
290  PRINT "HE AND MRS. COLLINS USE A SHEET TO"
300  PRINT "CLIMB TO SAFETY."
310  PRINT "  MRS. COLLINS CALLS THE FIRE DEPART-"
320  PRINT "MENT. BUT WHERE IS JULIE?"
330  PRINT "  MR. COLLINS SHOULD:"
340  PRINT : PRINT "  1. WAIT FOR THE FIRE FIGHTERS TO"
350  PRINT "     ARRIVE."
360  PRINT "  2. GO BACK INTO THE HOUSE AND LOOK"
370  PRINT "     FOR JULIE."
380  GOSUB 2000
390  IF A$ = "1" THEN 430
400  PRINT "  MR. COLLINS OPENS THE FRONT DOOR. HE"
410  PRINT "IS OVERCOME BY SMOKE. HE CLOSES THE"
420  PRINT "DOOR AND STUMBLES BACK TO THE SIDEWALK."
430  PRINT : PRINT "  EIGHT-YEAR-OLD JULIE IS TRAPPED IN"
440  PRINT "HER ROOM. THE FLAMES ARE OUTSIDE HER"
450  PRINT "DOOR, AND THE SMOKE IS CHOKING HER."
460  PRINT "  JULIE SHOULD:"
470  PRINT : PRINT "  1. OPEN THE WINDOW AS FAR AS POSSIBLE"
480  PRINT "     TO LET IN FRESH AIR."
490  PRINT "  2. OPEN THE WINDOW JUST A LITTLE."
500  GOSUB 2000
510  IF A$ = "2" THEN 550
520  PRINT "  AIR FROM THE WINDOW IS FANNING THE"
530  PRINT "FLAMES. THE FIRE AND SMOKE ARE SPREAD-"
540  PRINT "ING. REALIZING HER DANGEROUS MISTAKE,"
550  PRINT "JULIE KEEPS THE BOTTOM HALF OF THE WIN-"
560  PRINT "DOW OPEN A CRACK TO ALLOW AIR IN. SHE"
570  PRINT "OPENS THE TOP HALF AN INCH TO LET HEAT"
580  PRINT "AND SMOKE OUT."
```

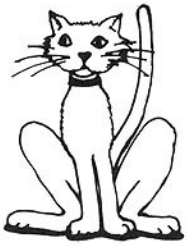
PROGRAM LISTING FOR *COMPUTER FIRE DRILL*



(continued from page 33)

```
590  PRINT "  JULIE PUTS A BRIGHT PILLOWCASE IN THE"
600  PRINT "WINDOW. WHAT SHOULD SHE DO NOW?"
610  PRINT : PRINT "  1. LIE ON THE FLOOR."
620  PRINT "  2. BEAT THE FIRE WITH A TOWEL."
630  GOSUB 2000
640  IF A$ = "1" THEN 670
650  PRINT "  THE FLAMES ARE TOO HIGH. BEATING A"
660  PRINT "TOWEL DOES NO GOOD."
670  PRINT "  JULIE LIES ON THE FLOOR. A FIRE"
680  PRINT "FIGHTER SEES THE PILLOWCASE IN THE"
690  PRINT "WINDOW AND RESCUES HER."
700  PRINT : PRINT "  MRS. COLLINS LOOKS AROUND. 'WHERE'S"
710  PRINT "BILLY?' SHE ASKS. 'I SAW HIM LEAVE"
720  PRINT "WITH US.' THE FAMILY SEARCHES THE"
730  PRINT "NEIGHBORHOOD."
740  PRINT : PRINT "  BILLY IS BEHIND THE HOUSE WATCHING"
750  PRINT "THE FIRE. HE REMEMBERS THAT HE LEFT HIS"
760  PRINT "PACMAN GAME IN THE LIVING ROOM."
770  PRINT "  BILLY SHOULD:"
780  PRINT : PRINT "  1. GO INTO THE HOUSE AND FIND IT."
790  PRINT "  2. TELL THE FIRE FIGHTERS ABOUT IT."
800  PRINT "  3. NOTHING."
810  INPUT A$: HOME
820  IF A$ = "3" THEN 890
830  IF A$ = "2" THEN  PRINT "  THE FIRE FIGHTERS ARE WAY TOO BUSY TO": PRINT
     "LOOK FOR A TOY.": GOTO 890
840  IF A$ <  > "1" THEN 770
850  PRINT "  BILLY ENTERS THE LIVING ROOM. THE"
860  PRINT "SMOKE IS VERY THICK. FORTUNATELY, A"
870  PRINT "FIRE FIGHTER SEES BILLY AND TAKES HIM"
880  PRINT "BACK OUTSIDE."
890  PRINT : PRINT "  MR. AND MRS. COLLINS FINALLY FIND"
900  PRINT "BILLY. THE WHOLE FAMILY WAITS ON THE"
910  PRINT "SIDEWALK WHILE THE FIRE FIGHTERS PUT"
920  PRINT "OUT THE FIRE."
930  PRINT "  PRESS <RETURN> TO CONTINUE.": INPUT Z$
940  HOME : PRINT "  DID YOU FOLLOW THESE SAFETY RULES?"
950  PRINT : PRINT "  1. AS SOON AS YOU DETECT A FIRE, GET"
960  PRINT "     OUT IMMEDIATELY."
970  PRINT "  2. CALL THE FIRE DEPARTMENT FROM A"
980  PRINT "     NEIGHBOR'S PHONE."
990  PRINT "  3. WAIT FOR FIRE FIGHTERS TO ARRIVE."
1000  PRINT "  4. TOUCH A DOOR BEFORE OPENING IT. IF"
1010  PRINT "     IT'S HOT, KEEP IT CLOSED."
1020  PRINT "  5. DO NOT OPEN WINDOWS ALL THE WAY."
1030  PRINT "  6. STAY LOW TO AVOID BREATHING SMOKE."
1040  PRINT "  7. IF TRAPPED, SIGNAL FIRE FIGHTERS"
1050  PRINT "     WITH A BRIGHT OBJECT."
1060  PRINT "  8. NEVER GO BACK INSIDE A HOUSE TO"
1070  PRINT "     GET SOMETHING."
1080  END
2000  REM  ENTER ANSWER
2010  PRINT : PRINT "  TYPE 1 OR 2 AND PRESS <RETURN>."
2020  INPUT A$
2030  IF A$ <  > "1" AND A$ <  > "2" THEN 2020
2040  HOME : RETURN
```

RESCUE MUFFIN



Who can rescue Muffin, Mrs. Poppenstoppernobbin's snooty kitten, from a blazing fire? Type the *Rescue Muffin* program listing into your computer and see.

This program, written in honor of Fire Prevention Week (the second week in October), challenges students to see if they've got what it takes to be a good fire fighter. When students run the program, the computer describes a scene in which the user is involved. Here's the scenario: The user is at the fire station playing cards with other fire fighters when the alarm goes off. There is a fire in Mrs. Poppenstoppernobbin's home! The student is then presented with a series of options on how to fight the fire and save Muffin, Mrs. P's kitten. If the student makes all the right choices, he or she becomes the town hero. But if the user makes a wrong decision, another fire fighter becomes the town hero.

This program can be used during Fire Prevention Week to introduce kids to fire safety tips, fire prevention rules, and fire escape procedures. After students have run through the program, ask them how the fire started. *(The fire started from an overload of wires in an electrical socket.)* Then have students list the safety tips a good fire fighter must observe while in a burning building. *(Feel a closed door to see if it is hot before opening it. If the smoke is overpowering, breathe through a handkerchief or a piece of cloth.)*

Lorraine Hopping

PROGRAM LISTING FOR *RESCUE MUFFIN*

This program runs on Apple computers. See Program Conversions, page 152, to modify the program for use on other machines.

```
10  REM  RESCUE MUFFIN @1983 SCHOLASTIC INC.
20  HOME : CLEAR
30  PRINT "  YOU ARE PLAYING CARDS AS USUAL WITH"
40  PRINT "FELLOW FIRE FIGHTERS AT THE FLAME-A-"
50  PRINT "WEEK FIRE STATION IN BLAZINGTOWN, USA."
60  PRINT "  BOB SAYS, 'GO FISH.' BUT BEFORE YOU"
70  PRINT "PICK A CARD, THE ALARM GOES OFF."
80  PRINT "  WHAT DO YOU WANT TO DO?"
90  PRINT : PRINT "   1. PICK A CARD."
100  PRINT "   2. GET IN THE FIRE TRUCK."
110  GOSUB 1000
120  IF A$ = "1" THEN 830
130  PRINT "  YOU SEE THE FLAMES AS YOU DRIVE DOWN"
140  PRINT "MAIN STREET. YOU DECIDE TO:"
150  PRINT : PRINT "  1. TAKE A SHORT CUT."
160  PRINT "  2. STAY ON MAIN STREET."
170  GOSUB 1000
180  IF A$ = "1" THEN  GOSUB 590
190  PRINT "YOU REACH THE FIRE. IT LOOKS REAL BAD."
200  PRINT "  FORTUNATELY, NO ONE IS INSIDE THE"
210  PRINT "HOUSE. BUT MRS. POPPENSTOPPERNOBBIN"
220  PRINT "TELLS YOU AND BOB THAT HER KITTEN IS"
230  PRINT "STUCK ON THE ROOF."
240  PRINT "  YOU DECIDE TO:"
250  PRINT : PRINT "   1. ENTER THE BLAZING HOUSE."
260  PRINT "   2. LET BOB GET THE KITTEN."
270  GOSUB 1000
280  IF A$ = "2" THEN  GOTO 800
290  PRINT "  WAIT! BEFORE GOING IN, FEEL THE DOOR."
300  PRINT "IS IT HOT ('Y' OR 'N')?"
310  INPUT A$: IF A$ <  > "N" AND A$ <  > "Y" THEN 310
320  IF A$ = "Y" THEN  PRINT "  YOU ENTER THROUGH THE WINDOW."
330  IF A$ = "N" THEN  PRINT "  YOU KICK DOWN THE DOOR AND ACT TOUGH."
340  PRINT "  YOU TRIP OVER A MASS OF WIRES OVER-"
350  PRINT "LOADED INTO A SOCKET."
360  PRINT "  YOU HEAR A FAINT MEOW OVER THE ROAR"
370  PRINT "OF THE FLAMES. COULD IT BE MUFFIN?"
380  PRINT "  YOUR FOOT REALLY HURTS AND THE SMOKE"
390  PRINT "IS STIFLING."
400  PRINT "  WHAT SOUNDS GOOD?"
410  PRINT : PRINT "  1. CONTINUING UP THE STAIRS."
420  PRINT "  2. GOING BACK TO THE STATION TO"
430  PRINT "     FINISH THE GAME OF 'FISH'."
440  GOSUB 1000
450  IF A$ = "2" THEN 20
460  PRINT "  YOU PUT A HANKY OVER YOUR MOUTH AND"
470  PRINT "LIMP UP THE STAIRS. MUFFIN IS LOOKING"
480  PRINT "OVER THE EDGE OF THE ROOF."
490  PRINT "  YOU CALL HER: 'HERE, KITTY, KITTY!'"
500  PRINT "DOES SHE FEEL LIKE COMING TO YOU (Y/N)?"
510  INPUT A$: IF A$ <  > "Y" AND A$ <  > "N" THEN 510
520  HOME
530  IF A$ = "Y" THEN 760
540  PRINT "  MUFFIN SMIRKS AND JUMPS TO A NEARBY"
550  PRINT "TREE. SHE CLIMBS DOWN SAFELY INTO HER"
560  PRINT "MASTER'S ARMS."
570  PRINT "  YOU ARE THE TOWN HERO!"
580  END
590  PRINT "  YOU SEE A BIG SIGN THAT SAYS:"
600  PRINT : PRINT "      **********************"
610  PRINT "      * SHORT CUT TO FIRE *"
620  PRINT "      **********************"
630  PRINT : PRINT "  YOU FOLLOW THE SIGN DOWN INFINITY"
640  PRINT "ROAD. THE ROAD SEEMS TO GO ON FOREVER"
650  PRINT "AND EVER."
660  PRINT "  PRESS <RETURN> TO GO ON."
670  INPUT Z$: HOME
680  PRINT "  YOU DON'T KNOW WHICH WAY TO GO. YOU"
690  PRINT "SPOT ANOTHER BIG SIGN THAT SAYS:"
700  PRINT : PRINT "      **********************"
710  PRINT "      * THIS WAY TO FIRE! *"
720  PRINT "      **********************"
730  PRINT : PRINT "  YOU REMEMBER THE FIRST SIGN AND GO"
740  PRINT "IN THE OPPOSITE DIRECTION. SOON."
750  RETURN
760  PRINT "  MUFFIN JUMPS INTO YOUR ARMS AND RIPS"
770  PRINT "YOUR SHIRT TO SHREDS. YOU RUN FOR THE"
780  PRINT "LAWN. THE HOUSE COLLAPSES."
790  PRINT "  BOB TAKES MUFFIN FROM YOUR ARMS."
800  PRINT "  MRS. POPPENSTOPPERNOBBIN SEES THAT"
810  PRINT "MUFFIN IS SAFE IN BOB'S ARMS. SHE GIVES"
820  PRINT "BOB $1,000,000,000,000,000 AS A REWARD."
830  PRINT "  YOU LOSE. DO YOU STILL WANT TO PLAY"
840  PRINT "CARDS WITH BOB (Y/N)?"
850  INPUT A$: IF A$ <  > "Y" AND A$ <  > "N" THEN 850
860  IF A$ = "Y" THEN 20
870  END
1000  REM  ENTER CHOICE
1010  PRINT : PRINT "  TYPE 1 OR 2 AND PRESS <RETURN>."
1020  INPUT A$
1030  IF A$ <  > "1" AND A$ <  > "2" THEN 1020
1040  HOME : RETURN
```

COPY AND LAMINATE
COLUMBUS DAY

OCTOBER 12

AHOY, COLUMBUS!

IT'S A BOY! Christopher Columbus is born in Genoa, Italy in 1451. MOVE AHEAD 1.

1
Flip a coin. Did you flip heads?

NO → HOP ABOARD! As a boy, Chris learns to sail by hitching rides on small trading boats.

YES → KNIT ONE, PURL TWO. As a young boy, Chris works in the family wool weaving business.

SAILING, SAILING. When he is 25, Columbus sails for England. MOVE AHEAD 1.

COLUMBUS BROTHERS, INC. As a young man, he and his brother open a map store in Portugal. MOVE AHEAD 2.

2
Flip a coin. Did you flip tails?

YES → A HAPPY COUPLE! In 1479, Columbus marries Donna Felipa Perestrello.

NO → ATTACK! The ship sinks under attack. But Columbus floats back to shore on an oar. LOSE A TURN.

A DREAM COME TRUE? Columbus dreams of sailing to China and India.

ANOTHER BOY! Christopher and Donna Felipa name their first son Diego. MOVE AHEAD 2.

A COLUMBUS DAY FLOWCHART GAME

Become a swashbuckling sea captain and help Christopher Columbus sail to a new land in this Columbus Day Flowchart Game. You'll learn all about the adventures that led to Columbus's discovery of the West Indies on October 12, 1492.

HOW TO PLAY

No. of Players: Two.

Materials: You need a marker, such as an eraser, for each player and a coin, such as a dime.

Getting Started: Each player puts his or her marker on START. Flip a coin to see who goes first.

Sailing the High Seas: Take turns moving one space at a time. If you land on a rectangle that tells you to do something, follow the directions before the other player takes a turn.

LAND HO! The crew sights land on October 12, 1492. They go ashore on the West Indies.

END

YES

5

Flip a coin. Did you flip heads?

NO

COLUMBUS SAILS THE OCEAN BLUE. Trying to find a shortcut to the East, Columbus heads west in 1492.

MUTINY! After three weeks some members plot to mutiny. HELP! LOSE A TURN.

ALL YOU NEED IS MONEY! In 1482, Columbus asks King John II of Portugal for money to sail to the Orient.

NO

3

Flip a coin. Did you flip heads?

YES

NO WAY! The king thinks Columbus is crazy and refuses to help him.

PRETTY PLEASE? Six years later, Columbus asks Queen Isabella of Spain to lend a hand. MOVE AHEAD 1.

SHIPS AHOY! In 1492, Queen Isabella gives Columbus the *Niña,* the *Pinta,* and the *Santa Maria.*

NO

4

Flip a coin. Did you flip tails?

YES

A SECOND CHANCE. A monk arranges a second meeting with the queen. No, again. LOSE A TURN.

Beulah's BREW

Three Word Processing Activities

Toil and trouble, boil and bubble...Beulah the witch has cooked up a great recipe for young word processors! Using any word processing software and the activity cards on the next page, students can practice deleting, inserting, and replacing words in Beulah's recipe, and even create their own recipes modeled after Beulah's Brew!

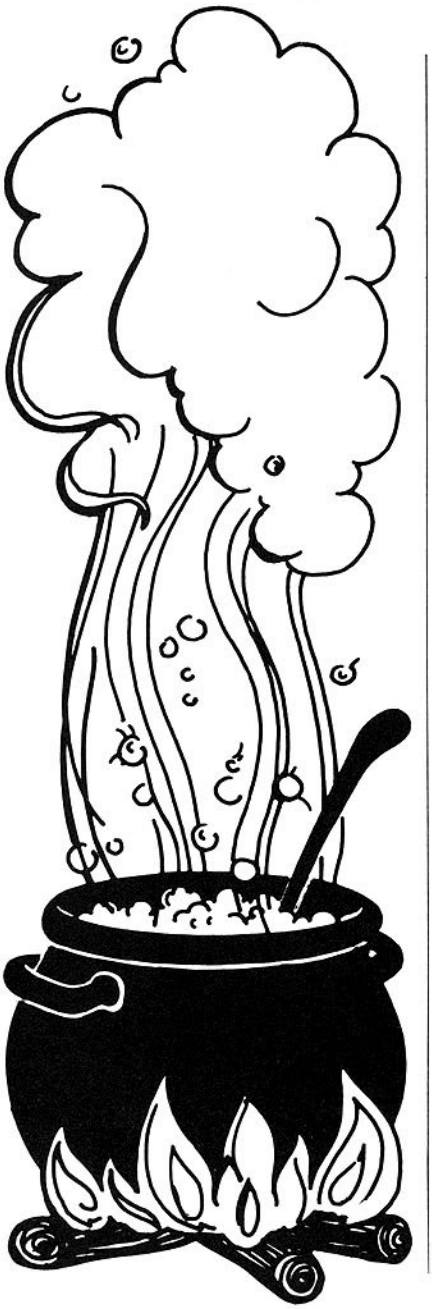
Depending on the kind of data storage device you use, you will need to create a data disk or cassette for students to use with the activity cards. Information on how to create a data disk or cassette is supplied under the "Teacher Preparation" heading.

WORD PROCESSING PREREQUISITES

Students must be able to access, save, delete, insert, and replace text in a data disk or cassette. They must also be able to type information into the computer and save it on a blank disk or cassette.

TEACHING OBJECTIVES

Word Processing Card 1 asks students to use the dictionary to look up certain words that appear in a recipe called Beulah's Brew. Students type the words and definitions into the computer and save them on a blank disk or cassette. Word Processing Card 2 tells students to use the definitions to replace words in the recipe. Finally, Word Processing Card 3 asks students to write their own recipe modeled after Beulah's Brew.



MATERIALS

Any word processing program, a data disk or cassette, a dictionary, the word processing cards, and blank disks or cassettes.

TEACHER PREPARATION

1. Copy and laminate the word processing cards on page 39.

2. To create a data disk or cassette containing the recipe for Beulah's Brew, boot up your word processing program and type in the recipe exactly as it appears on this page (same capital letters, line spacing, and indentations). Save the text on a blank disk or cassette under the file name RECIPE.

3. Place the cards and the data disk or cassette in a learning center so that students can work on them individually. Tell students to complete the cards in numerical order.

RECIPE FOR BEULAH'S BREW

Ingredients

2 cups beetle BOUILLON
½ cup bat CONSOMMÉ
2 whole fresh FLOUNDER
1 tablespoon chilled CHUTNEY
1 quart swamp SYRUP
2 pints toad TRIPE

Directions

Combine liquids in a large CAULDRON. Heat and stir. When the liquid turns a dark MOLASSES color, remove from heat. Add remaining ingredients. GARNISH with pumpkin seeds. Serve hot. (Serves six.)

Thomas E. Boudrot

Beulah's Brew: Word Processing Card 1

WRITE A BEWITCHING WORD LIST

Beulah isn't your typical cook! She uses odd tools and ingredients to make her recipes. Find out what those are in this recipe for Beulah's Brew. Here's what you do.

1. Find all the capitalized words in her brew recipe and write them on a sheet of paper. Look up each word in the dictionary to find a brief definition.
2. Using a word processing program, type the list of words and their definitions into the computer.
3. Print out a copy for yourself.

Beulah's Brew: Word Processing Card 2

FIND SUBSTITUTES FOR SOME INGREDIENTS

Now that you know the meanings of the special cooking words in Beulah's Brew, translate the recipe so others can understand it, too. Just follow these steps.

1. Load the data disk or cassette and call up the RECIPE file again.
2. Remove the data disk or cassette and load a blank disk.
3. Replace each capitalized word in Beulah's recipe with a simple word or phrase that means the same thing. Use the printout you made with Card 1 to help you think of substitute words.
4. Print out a copy of the recipe for yourself and save it on the blank disk or cassette.

Beulah's Brew: Word Processing Card 3

CREATE YOUR OWN BEWITCHING BREW

Cooking isn't just for kooks like Beulah! You can be a kook—we mean cook—too.

Boot up your word processing program and create a recipe for Fang-tastic Frog Legs, Spine-Tingling Soup, or another creepy concoction. Use Beulah's recipe as a model for setting up your own. Be sure to include a list of ingredients and the cooking directions.

Save your recipe on a blank disk or cassette. *Bon appetit!*

THE LOGO

HAUNTED HOUSE GAME

Mr. Bones is a scary skeleton whose favorite holiday is Halloween. He likes to hide in closets, under rugs, behind pictures—anywhere that's dark and creepy!

In this activity, students use the Logo turtle to help them find Mr. Bones, who is hiding somewhere in a haunted house. To find the skeleton, students must direct the Logo turtle through a transparency of the haunted house, uncovering all of Mr. Bones' usual hiding places as they go. The students who are able to track down Mr. Bones and uncover the fewest number of hiding places are the winners.

RECOMMENDED FOR:

Grades 2–4.

OBJECTIVES

Students practice using the Logo commands FORWARD, BACK, RIGHT, LEFT, PENUP, PENDOWN, and CLEARSCREEN. Students also practice estimating distance on the Logo screen.

PREREQUISITES

Students must be familiar with the Logo commands listed above. They must also be able to estimate distances.

MATERIALS

A computer system with Logo software, a thermofax transparency of the haunted house master *(page 41)*, cutouts of Mr. Bones (skull and crossbones) and the six game flaps below, tape or rubber cement, scissors.

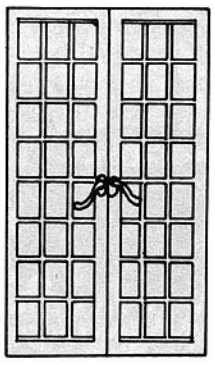
PREPARATIONS

1. Make a thermofax transparency of the haunted house master on page 41.
2. Cut out Mr. Bones (the skull and crossbones) and the six game flaps on this page. Secretly tape or glue Mr. Bones on the back of one of the flaps.
3. Tape the haunted house transparency to the computer screen. Trim edges.
4. Tape the top of each game flap to its corresponding spot on the transparency.
5. Boot Logo into the computer and clear the screen. The turtle should appear in the center of the screen with the pen down.
6. Pick up the pen (PENUP) and move the turtle to the doorway at the lower left corner of the thermofax. Put the pen back down (PENDOWN).

HOW TO PLAY

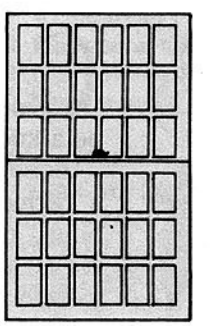
1. Divide students into small groups. Give each group a turn at the computer.
2. To start, one group picks a flap behind which they think Mr. Bones might be. One student in that group then types in commands to move the turtle to the selected flap.
3. The turtle can move only on the floor and stairs. To move the turtle to a window or a picture, students must pick up the pen (PENUP) before giving a forward command so that the turtle "jumps" from the floor to the window.
4. Students can lift a flap only when the turtle is totally hidden behind it.
5. When students discover Mr. Bones, they record the number of open flaps.
6. At the end of a turn, the group hides Mr. Bones again under a different flap. The group then clears the screen and returns the turtle to the lower-left corner of the screen for the next group of players.
7. Winners are the groups who opened the least number of flaps to find Mr. Bones.

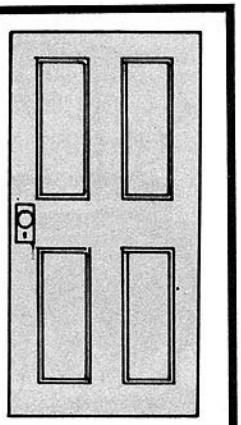
Thomas E. Boudrot



GAME FLAPS

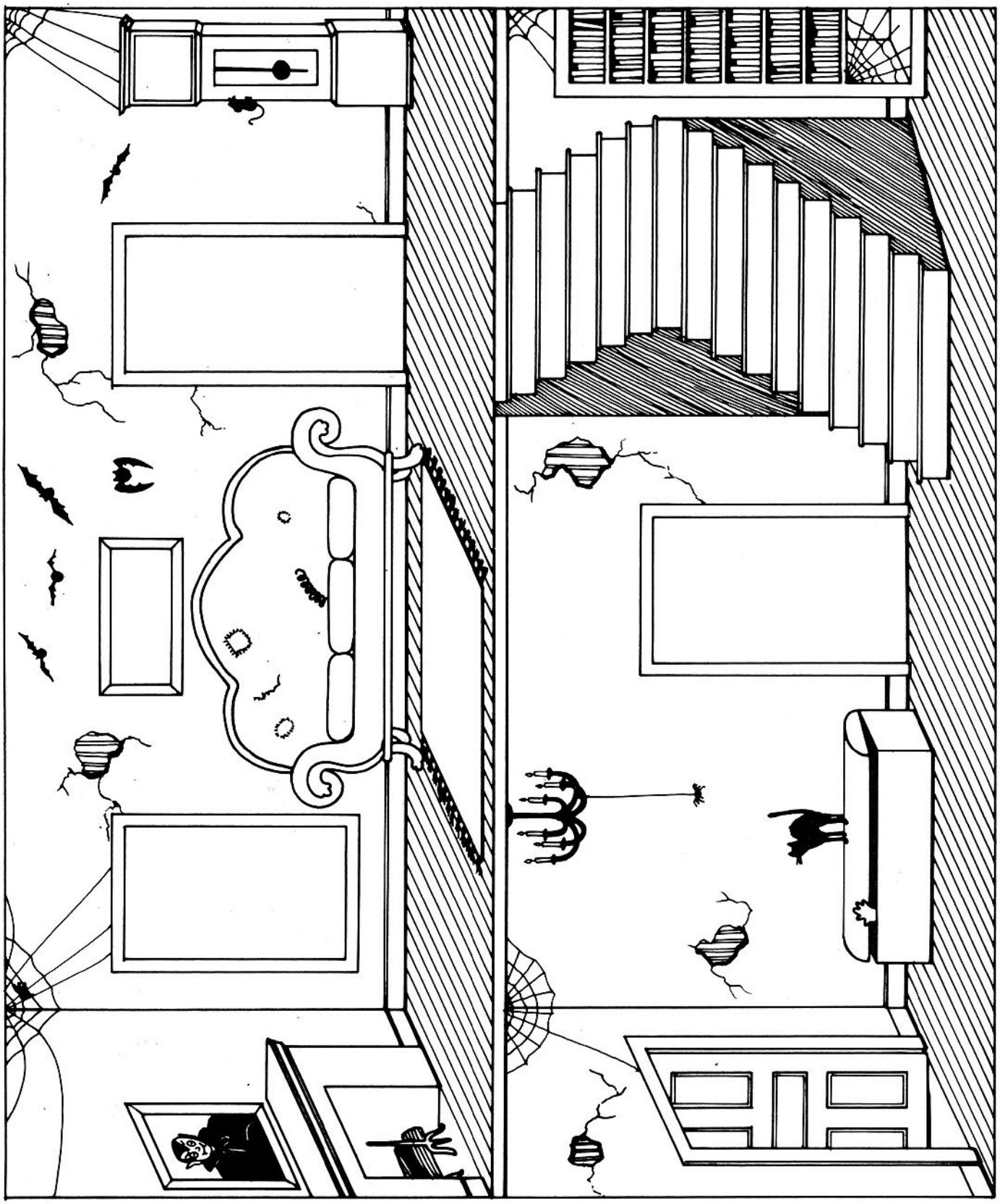
Cut out the objects (flaps). Tape or glue Mr. Bones (the skull and crossbones) to the back of one flap. Tape the top of each flap to its corresponding part on the haunted house transparency.





MASTER FOR THE HAUNTED HOUSE TRANSPARENCY

Directions: Make a transparency of this gameboard. Tape it to the Logo screen.



PLAY THE LO-GHOST GAME

In this Halloween activity, players use Logo commands to move the Logo turtle through a maze filled with Lo-Ghosts (Logo Ghosts), skeletons, and secret passages. Players try to pass the turtle through the Lo-Ghosts and the secret passages to earn points. They also try to avoid contact with skeletons and walls because that will cause them to lose points. These movement objectives give students practice at estimating distances on the Logo screen.

Here are directions for setting up and playing the game.

PLAYERS

Two to four.

RECOMMENDED FOR:

Grades 3–6.

OBJECTIVES

Students practice using FORWARD, BACK, LEFT, RIGHT, HOME, CLEARSCREEN or CLEAN, PENUP, and PENDOWN commands and estimating distances.

PREREQUISITES

Students must be able to use the Logo commands listed above, estimate distances on the Logo screen, and read simple directions.

MATERIALS

Computer system with Logo software, a thermofax transparency of the Lo-Ghost master *(page 43)*, Lo-Ghost Game Cards *(page 44)*, scissors.

PREPARATION

1. Make a thermofax transparency of the Lo-Ghost master *(page 43)*.
2. Copy the Lo-Ghost Game Card page *(page 44)* and back the copy with sturdy white paper. Cut out each card along the dotted lines, write "Lo-Ghost" on the back of each, and laminate them. Shuffle the cards and stack them facedown near the computer.
3. Tape the Lo-Ghost transparency to the computer screen. Trim edges.
4. Boot Logo into the computer and clear the screen. The turtle should be at START with the pen down.

HOW TO PLAY

1. Players roll a die to determine the order of play. The highest number goes first, and so on.
2. Each player may use up to and including five commands to reach any one of the ghosts or secret passages on the screen. A typical turn might be:

```
FORWARD 50
RIGHT 90
FORWARD 10
LEFT 20
BACK 25
```

3. Each player tries to make the turtle draw its line inside a ghost's numbered circle. (The turtle does not have to land inside it.) If a player is successful, he or she takes a Lo-Ghost Game Card and follows its directions. On a piece of paper, a scorer tallies any points the card may award the player. The player then returns the card to the bottom of the pile.

If a player does not successfully draw through a ghost's circle in five moves, the scorer subtracts 20 points from that player's score. If the player does not have any points to subtract, he or she simply remains at 0 points.

Players also lose 10 points for bumping into a wall or a skeleton. They can add extra points by drawing through a secret passage. (Points for doing this are written on the transparency.)

4. At the end of a turn, the player clears the screen *without* returning the turtle to START. Use the CLEARSCREEN (CS) command for Commodore, Krell, and Terrapin Logo, and the CLEAN command for Apple Logo.
5. The next player begins play at the point where the turtle left off. Points cannot be earned by drawing through the same ghost's circle twice in a row.
6. The game ends after four rounds. The player with the most points wins.

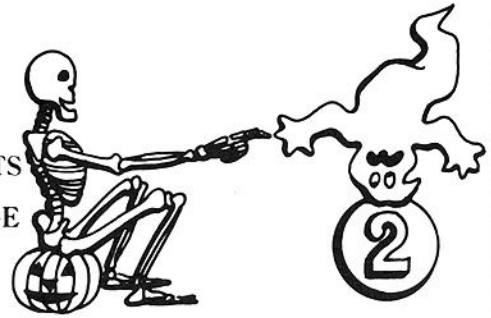
Thomas E. Boudrot

LO-GHOST

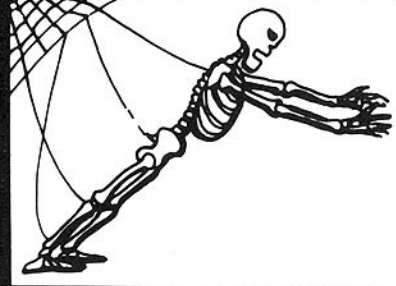
50 POINTS
SECRET PASSAGE

START

50 POINTS
SECRET
PASSAGE



50 POINTS
SECRET
PASSAGE



SECRET PASSAGE
50
POINTS

COPY

LO-GHOST

GAME CARDS

COPY
Use with Lo-Ghost Game, page 42.

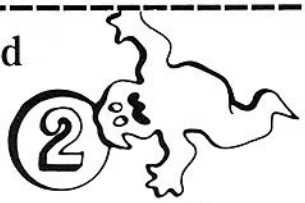
Lo-Ghost Card

Add 50 points to your score. If you scored these points on Ghost 1, add another 50 points.

Lo-Ghost Card

Add 50 points to your score. If you scored these points on Ghost 5, add another 50 points.

Lo-Ghost Card



Add 50 points to your score. If you scored these points on Ghost 2, add another 50 points.

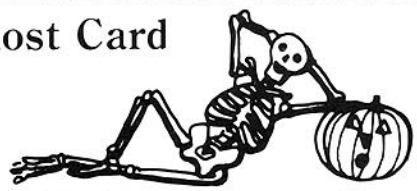
Lo-Ghost Card

Add 75 points to your score. On your next turn, you may walk through one wall without losing points.

Lo-Ghost Card

Add 50 points to your score. If you scored these points on Ghost 3, add another 50 points.

Lo-Ghost Card



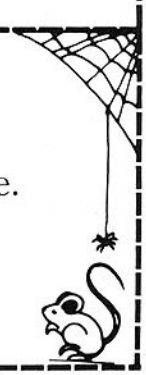
Add 75 points to your score. On your next turn, you may bump one skeleton without losing points.

Lo-Ghost Card

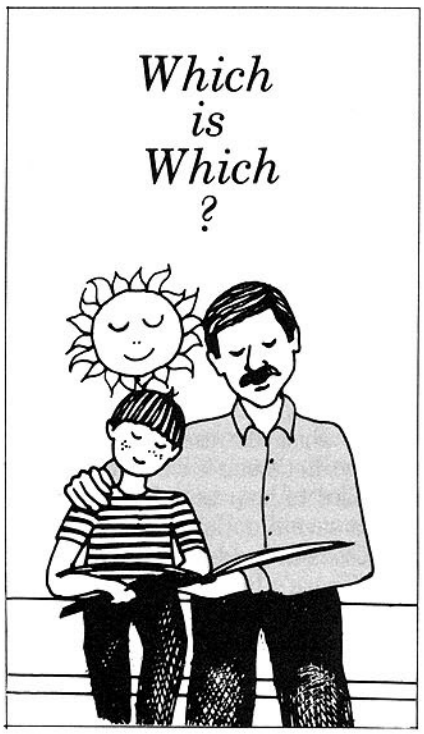
Add 50 points to your score. If you scored these points on Ghost 4, add another 50 points.

Lo-Ghost Card

Do not add points to your score. Take an extra turn.



HALLOWEEN HOMOPHONES



With the help of a word processing program, you can create an electronic worksheet that helps your students distinguish between homophone pairs. This exercise also helps students develop word processing skills.

The activity requires a data disk or cassette that contains the data file listed below, blank disks or cassettes, a dictionary, and any word processing program.

To create the data disk or cassette, boot your word processing program into the computer and type in the data file exactly as it appears on this page. Remove your word processing program and load a blank disk or cassette. Save the information on this disk or cassette under the file name WITCH.

Students must know how to use the DELETE command on their word processor and know what homophones are (words that are pronounced alike but that have different meanings).

The exercise presents students with a story that contains 17 pairs of homophones. Students must decide which word in each pair is not suitable for use in the story and then delete that word.

Boot up WITCH and have students work individually on the activity. Tell them to save their work on a blank disk or cassette.

After students have completed the exercise, provide them with a list of other homophones. Have them use the word processor to create their own homphone stories for friends to "fix" on the word processor.

DATA FILE:
WHICH WITCH IS WHICH?

Directions: Move the cursor to the homophone pairs in this story. Delete the incorrect word in each pair. Save your work on a blank disk or cassette.

Belinda is a WHICH/WITCH. She's not YOUR/YOU'RE ordinary WITCH/WHICH, however. FOUR/FOR example, Belinda eats only PEARS/PAIRS and READ/RED MEAT/MEET. Her HAIR/HARE is DIED/DYED purple and her skin is very PALE/PAIL.

When Belinda comes to visit, her pet BEAR/BARE, Jonathon, always tags along. THERE/THEY'RE quite a couple! My neighbors do NOT/KNOT believe the SIGHT/SITE—a BARE/BEAR and a WITCH/WHICH walking up to my door?! The SUN/SON must be too strong!

Thomas E. Boudrot

THE WITCH AND THE COMPUTER

Characters:

Jessy	Ms. Rabble
Lillie	Mr. Yunger
Bill	Mrs. Yunger
Pauline	Sam
Extra Kids	

Assign each student a part and perform the play for another class. You can adjust the size of the cast by increasing or decreasing the number of extra kids. *(See character list.)*

Props:

Table with papers on it, desk, chairs, notebook, notepad, teacup, teapot, crystal ball, a file box, a handkerchief, a list of disk care rules, a cardboard sign that says "Blanchard's Computer Store," two cardboard computers, and a cardboard heater.

To make each cardboard computer, use a shallow, rectangular box for the keyboard and a square box for the screen. Paint both boxes brown or white. Then paint keys on the keyboard and a black screen on the monitor. Stand the monitor behind the keyboard. Make slots on one side of the monitor where disks can be inserted. Make cardboard disks and disk jackets to store in the file box.

To make the heater, paint a small cardboard box brown and write the word "HEATER" on it.

Position the table with one paper computer and papers scattered on it at center stage. Hang the sign from the table. Place the other paper computer, the file box, the teacup, the teapot, the crystal ball, and the heater on the desk. Position the desk at stage left.

Costumes:

Dress Ms. Rabble in a long, ill-fitting black dress and a pair of boots. Have her wear a wristwatch. Other characters should wear contemporary clothes.

Time: October 30.

SCENE 1
Inside Mr. Blanchard's Computer Store

Jessy is examining a computer on the table. He looks up at the door (offstage right) as all the other kids enter.

Lillie: Who ever heard of doing research for a Halloween party? What a strange assignment our teacher, Ms. Wilson, has given us!

Sam: You've got to admit, it's a different kind of assignment... collecting information on witches, spells, and spooky stuff.

Bill: I can't wait to learn a real spell ...*(Turns to Pauline and raises his hands as if to cast a spell)*...to try it!

Pauline: *(Annoyed)* Give me a break, Bill! You're so corny.

Lillie: Stop it, you two! We've got a lot of work to do. Ms. Wilson said we have to finish the assignment by tomorrow. Let's see if we can find Mr. Blanchard to help us select the right disk to save our Halloween research on. *(Looks around the store and sees Jessy)* There's Jessy!

Jessy: *(Motions for them to come over)* Mr. Blanchard isn't here today. Wait until you see the salesperson he left in charge. You won't believe what she is doing to the computer equipment!
(Kids turn to see Ms. Rabble at desk. Her back is to audience. She turns around and pours tea from a teapot into a cup, using a disk as a saucer. Tea spills over the disk. She walks to heater and puts the disk on top to dry. She then takes other disks out of their jackets and treats them roughly.)

Extra Kids: *(One at a time, starting to notice what's going on)* She's no computer expert. She's breaking all the rules for taking care of computers and disks. How does she ever expect to sell any computer equipment after she's ruined it all?

Bill: She's doing everything Mr. Blanchard told us not to do.

Lillie: What a mess!

Pauline: This is awful. Mr. Blanchard would have a fit if he knew what was happening in his store.

Jessy: *(Excited)* I could hardly wait for you to get here to see what's going on. She's been breaking all the rules that we've been taught.

Bill: Oh, no. If she destroys all the disks, we won't be able to save any of our work, and we'll have to do the Halloween assignment without the computer.

Lillie: I can't stand it. Let's go pick them up. *(Runs to pick up disks, with others right behind)*

Ms. Rabble: *(Nastily)* What do you think you're doing?

Lillie: Um...Mr. Blanchard said...

Ms. Rabble: *(Annoyed)* Mr. Blanchard, Mr. Blanchard, Mr. Blanchard! *(Pointing to herself)* Ms. Rabble is in charge of this store now. *(Sweetly)* What can I do for you, children?

Lillie: Well...um...we're working on a Halloween assignment. We'd like to buy a disk to save our Halloween research on. Do you have any blank disks for sale?

Ms. Rabble: *(Looks through file box, tossing the disks, one by one, on the floor behind her)* Don't move! There may be some blank disks in the stockroom. *(She exits stage left to go to the stockroom. Other kids gather around the display table.)*

Sam: It's hard to believe she's a computer expert. She looks more like a Halloween expert. She looks like a witch.

Bill: A witch? Don't be silly!

Lillie: I can't believe Mr. Blanchard would put someone like Ms. Rabble in charge of his store.

Bill: She probably didn't act that way when Mr. Blanchard hired her.

Pauline: It's getting late and it looks like Ms. Rabble has forgotten about us.

Sam: We'd better leave and come back tomorrow.

Lillie: Let's go plan our costumes for the Halloween party.

Bill: Good idea. Why don't we meet at my house?

Pauline: Okay. Great.

Extra Kids: See you later. So long. Bye. *(All the kids exit stage right except Jessy and Bill.)*

Bill: Coming, Jessy?

Jessy: Go ahead. I'll stay and wait for Ms. Rabble to come back. I wanted to ask her some questions about this computer. If she finds any disks, I'll bring them to your house. *(Pretends to be interested in the computer on the table.)*

Bill: Okay, Jessy. See you later. *(Bill exits.)*

Jessy: *(To himself)* I wonder what that Ms. Rabble is up to. I think I'll find out. *(Hides behind the display table. Ms. Rabble enters stage left with some paper disks and sits at the computer on the desk.)*

Ms. Rabble: Good; those kids left. Now I can complete my mission.

Jessy: *(Jessy is watching as she destroys disks, bangs the computer keys, and makes a huge mess. He says to himself)* Boy, she's really wrecking the computer. She's going to be in *big trouble* when Mr. Blanchard comes back.
(Curtain)

SCENE 2
At Bill's house

Bill's living room is in front of the closed curtain. Bill, Pauline, Sam, Lillie, and the extra kids are sitting in a circle on the floor.

Lillie: *(Reading from a notepad)* Okay, Bill is going to be a skeleton. Sam is going as a pumpkin, and Pauline, as a robot. Everyone set?

Bill, Sam, Pauline, and Extra Kids: Yeah. Okay. Sure.

Sam: Gee, I wonder where Jessy could be.

Bill: It shouldn't take Ms. Rabble an hour to find a couple of blank disks.

Pauline: Maybe he stopped off at his house to get something.

Sam: I think Ms. Rabble, the witch, put a spell on him!

(The others chuckle.)

Bill: Don't be so silly, Sam. I keep telling you, there's no such thing as a witch. *(Turns to Pauline and raises his arms)* Boo!

Pauline: *(Mad)* Cut that out!

(The other kids laugh. Mr. and Mrs. Yunger enter stage left.)

Mrs. Yunger: We just got a call from Jessy's parents. They say he hasn't come home yet.

Mr. Yunger: Do you kids know where he might be?

Bill: Well, he was supposed to come over here with us. He might still be at the computer store.

Mrs. Yunger: But the store closed half an hour ago.

Lillie: Maybe we should go over to the store and check it out.

Mr. Yunger: Okay. You kids run over there. Let us know if you find Jessy.

(Kids stand up.)

Sam: We will. See you later.
Mr. and Mrs. Yunger: Goodbye! So long! *(Kids exit stage right. Blackout.)*

SCENE 3
Outside Mr. Blanchard's Computer Store

Kids enter stage left. They remain outside the curtain, which is partly open. They look inside.

Sam: Look! There's a light in the store. *(Curtain opens more. Ms. Rabble sits at desk looking into a crystal ball.)*

Lillie: There's Ms. Rabble!

Pauline: Sam's right. Ms. Rabble *is* a witch!

Bill: But there's no such thing as a witch.

Pauline: *(Points to Ms. Rabble)* Then what's that?

Sam: A witch! *(Starts to run away, but Bill pulls him back)*

Bill: C'mon, let's see if we can get into the store. We've got to find out what's going on.

(Kids exit stage left. Curtain opens full. Jessy, who is still hiding, accidently makes some papers fall from the display table.)

Ms. Rabble: *(Startled)* What's that? *(Turns and sees Jessy)* What are you doing here, you little brat?

Jessy: I...

Ms. Rabble: Never mind! *(Laughs wildly)* We'll see just how smart you are when I destroy these precious computers and blame you.

Jessy: Why do you want to destroy them?

Ms. Rabble: Those horrible computers are ruining my life. Because of them, no one is interested in my powers anymore. Destroying all computer equipment will put an end to that. *(Laughs wildly and picks up the crystal ball from desk)* No computer can ever replace my beautiful crystal ball. *(Takes out a large handkerchief and polishes it)*

Jessy: Even if you destroy these computers, there are lots of others in the world.

Ms. Rabble: I'll get them all, and all the disks, too! If I don't, witchcraft will be a thing of the past.

Jessy: But I'll warn everybody. I'll tell them what you're up to.

Ms. Rabble: No you won't! I'll show you how powerful my magic is. I'm going to erase your memory with a spell. You won't be able to tell anyone anything. *(Laughs wildly. Kids enter stage right.)*

Ms. Rabble: It's those kids again!

Lillie: We heard everything you said, you witch!

Ms. Rabble: Well, I'll fix that! I'm going to erase everyone's memory and then destroy all the computer equipment. No computer is going to interfere with my magic. *(Recites)*

This magic spell I cast on you will make you forget what I say and do! Dabra-ca-abra...no, that's not right-...cabra-ah-dabra...that's not it either...calabra-ba-rava...I can't remember it! *(Gets angrier and angrier and jumps up and down)* Rabra-da-cabra...no, no, no! *(Stamps her feet and throws a disk on the floor)* I can't remember the spell! It's all your fault!

Jessy: *(Thinks a second)* Wait a minute! The computer can help you.

Ms. Rabble: *(Suspiciously)* What do you mean by "help me"? Do you think you can trick me?!

Jessy: No, I'm telling you the truth. If you save your spells on disks, they would always be there whenever you needed them.

Lillie: You could print out the spells or call them up on the monitor whenever you needed them.

Ms. Rabble: Hmmm. How long would these disks keep my spells, anyway?

Jessy: As long as you take care of them properly.

Pauline: Here's a list of rules our teacher, Ms. Wilson, gave us. *(Hands her a piece of paper)*

Ms. Rabble: *(Reads)* "Keep the disks dry. Keep them in their jackets. Don't write on disks. Never put disks where they can get hot or cold. Keep them away from magnets. Handle disks carefully." Seems easy. But what about my crystal ball?

Jessy: You can use it as a fishbowl.

Ms. Rabble: That's an idea. You've convinced me. I'll buy one. I know a good thing when I see it. *(Looks at watch)* I can't stand here wasting time talking. Tomorrow's Halloween-...*(Waves her arms and disappears stage left)*

Jessy: Funny how she couldn't remember a simple word like Abracadabra! *(Everyone freezes for five seconds. Then the kids begin talking as if nothing unusual has happened.)*

Pauline: It's so late! We better lock up Mr. Blanchard's store. We've got a Halloween party to prepare for.

Sam: You're right. Let's get going. *(Kids exit. Curtain.)*

Ilene and Leah Roth

CARVE A PUMPKIN WORKSHEET

HALLOWEEN **OCTOBER 31**

NAME: _____

The Celts were people who lived more than 2,000 years ago in what is now Great Britain, Ireland, and northern France. The Celts believed that each year on the evening of October 31 souls of the dead could return to the homes where they had once lived.

To scare away these souls, or ghosts, the Celts carved faces in turnips, potatoes, and beets. They put candles inside these vegetables and lit them. They called them jack-o'-lanterns. This name comes from a story, or *legend*, about a ghost named Jack who carried a glowing lantern.

When descendants of the Celts, like the Irish, Scottish, and British, moved to America, they brought their jack-o'-lantern custom with them. But instead of carving potatoes or turnips, they decided to carve pumpkins. Ever since then, Americans have been carving pumpkins into jack-o'-lanterns on October 31.

This year carve a pumpkin on a computer! The *Pumpkin Carve* program listed on this page will get you started.

USING THE *PUMPKIN CARVE* PROGRAM

First, put your computer in BASIC and type NEW. Then enter the *Pumpkin Carve* program. Be careful to count all the spaces between the quotation marks. If you have an Atari, Commodore, Radio Shack, or TI computer, remember to make the changes listed for your machine.

RUN the program. A pumpkin will appear on the screen. In a few seconds, the computer will carve the top of the pumpkin.

PUMPKIN CARVE CHALLENGES

How many of these challenges can you do? If you do them all, take the *Pumpkin Carve* Superchallenge!

- LIST the second pumpkin on your screen. Change the program lines to give the pumpkin a face. Program two eyes, a nose, and a mouth. You now have a jack-o'-lantern!
- Can you make the jack-o'-lantern smile and then frown? (Hint: You will have to add a third pumpkin to the program listing.)
- Program the computer to print a greeting below the pumpkin.
- On Halloween, display your computer jack-o'-lantern in the window. Turn out the lights to make it look really scary!

PUMPKIN CARVE SUPERCHALLENGE

Another Halloween custom is bobbing for apples. Write a program that fills a tub with apples. Can you make the apples disappear, one by one?

PUMPKIN CARVE PROGRAM LISTING

```
10  HOME
20  PRINT "              ##"
30  PRINT "             ##"
40  PRINT "          000 ## 000"
50  PRINT "      000   0##0   000"
60  PRINT "   00                 00"
70  PRINT "  0                     0"
80  PRINT " 0                      0"
90  PRINT "0                       0"
100 PRINT "0                       0"
110 PRINT "0                       0"
120 PRINT "0                       0"
130 PRINT "0                       0"
140 PRINT "0                       0"
150 PRINT " 00                   00"
160 PRINT "   000              000"
170 PRINT "      00000000000000"
180 FOR D = 1 TO 3000
190 NEXT D
200 HOME
210 PRINT "              ##"
220 PRINT "             ##"
230 PRINT "          000 ## 000"
240 PRINT "      000   0##0   000"
250 PRINT " . + + + + + + + + + + +"
260 PRINT "  0                    0 "
270 PRINT " 0                     0"
280 PRINT "0                      0"
290 PRINT "0                      0"
300 PRINT "0                      0"
310 PRINT "0                      0"
320 PRINT "0                      0"
330 PRINT "0                      0"
340 PRINT " 00                   00"
350 PRINT "   000              000"
360 PRINT "      00000000000000"
370 END
```

Apple: No changes needed.
Atari: Change HOME in lines 10 and 200 to PRINT CHR$(125).
Commodore VIC-20, Pet, 64: Change HOME in lines 10 and 200 to PRINT CHR$(147). VIC-20 users must make the pumpkin smaller to fit on the screen.
TI: Change HOME in lines 10 and 200 to CALL CLEAR.
TRS-80 Model III and Color Computer: Change HOME in lines 10 and 200 to CLS.

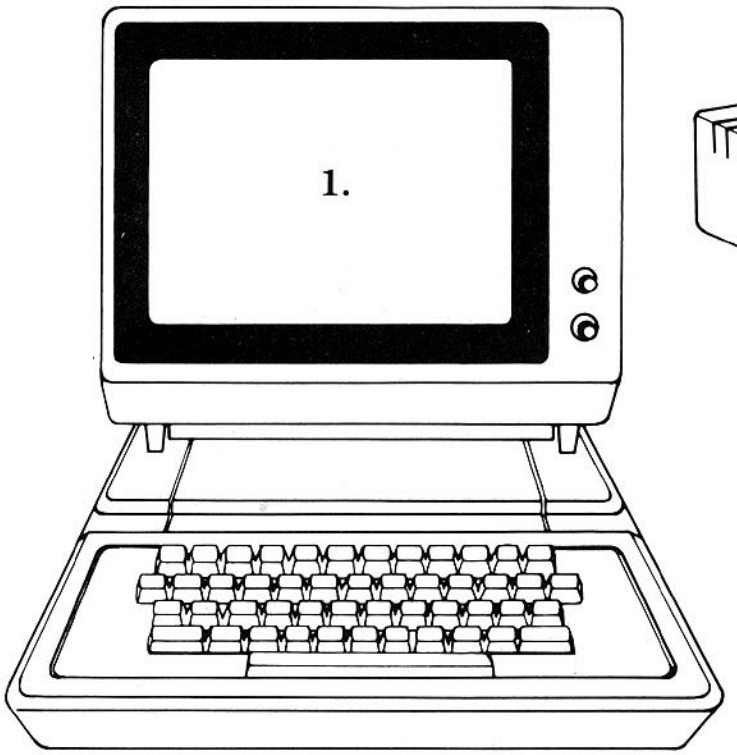
Answer: Your teacher has the answer. It is on page 156 of the book, **Holiday Computer Activities.**

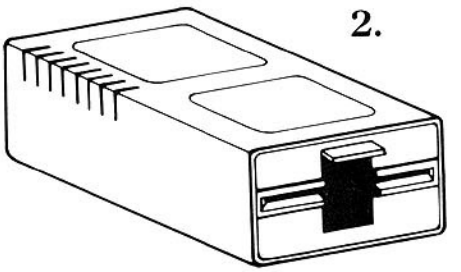
PARTS OF A COMPUTER
WORKSHEET 1

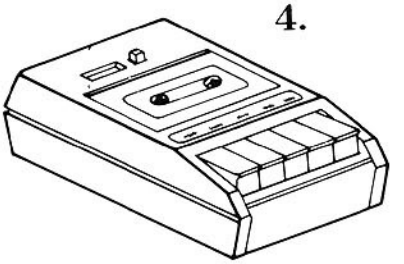
HALLOWEEN **OCTOBER 31**

NAME: _____

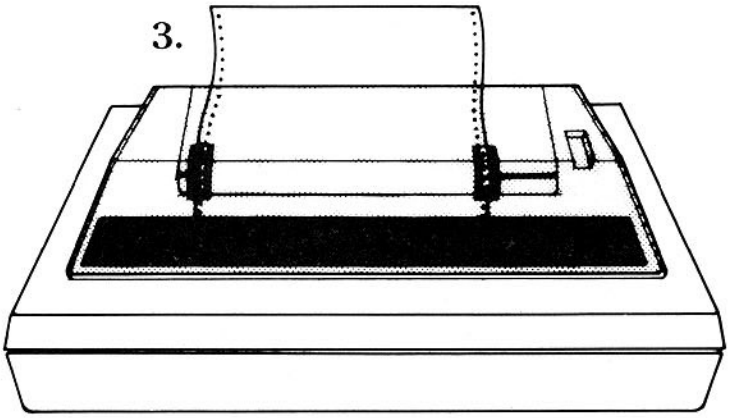
DIRECTIONS: Label the main parts of a computer system. Use these names: monitor, printer, disk drive, cassette recorder, keyboard.







5.



1. _____
2. _____
3. _____
4. _____
5. _____

Answer: Your teacher has the answer. It is on page 156 of the book. **Holiday Computer Activities.**

PARTS OF A COMPUTER
WORKSHEET 2

HALLOWEEN **OCTOBER 31**

NAME: _____

DIRECTIONS: There are five computer parts hidden in this picture. Put an X on each. Color the picture.

 Answer: Your teacher has the answer. It is on page 156 of the book. **Holiday Computer Activities.**

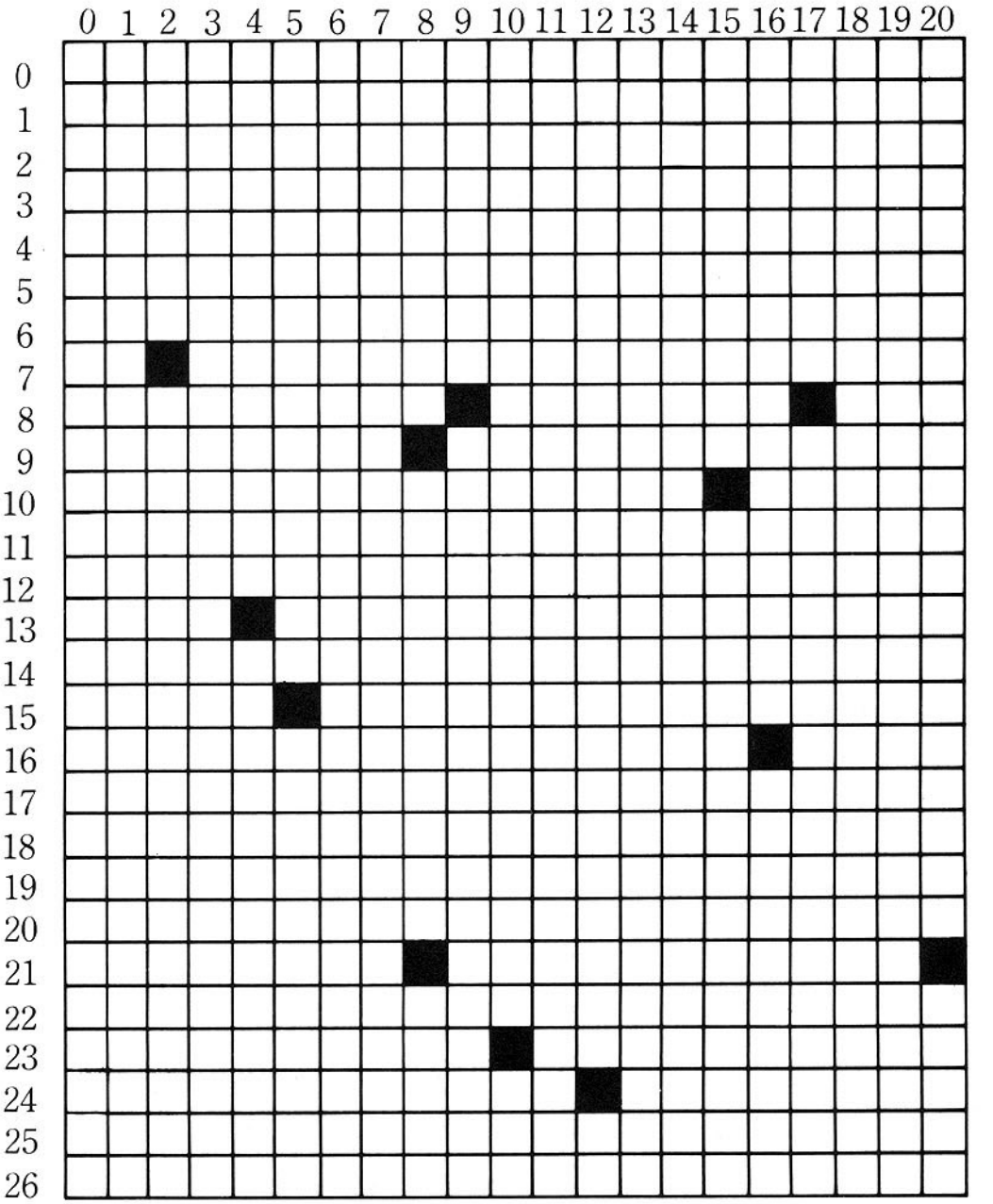
PLOTTING SQUARES
WORKSHEET 1

HALLOWEEN **OCTOBER 31**

NAME: _____

DIRECTIONS: Some of the squares on this graph have been filled in. Look at how the very top square is filled in. The plot statement for this square is PLOT 2,7. Fill in the squares for the rest of the plot statements listed below like the one for PLOT 2,7. You will get a Halloween picture.

PLOT 10,2
PLOT 14,2
PLOT 8,4
PLOT 10,4
PLOT 13,4
PLOT 15,4
PLOT 3,5
PLOT 2,6
PLOT 4,6
PLOT 8,6
PLOT 15,6
PLOT 1,7
PLOT 5,7
PLOT 11,7
PLOT 12,7
PLOT 18,7
PLOT 14,8
PLOT 19,8
PLOT 1,9
PLOT 6,9
PLOT 16,9
PLOT 13,10
PLOT 19,10
PLOT 2,11
PLOT 18,12
PLOT 17,14
PLOT 16,18
PLOT 6,19
PLOT 18,20
PLOT 14,25
PLOT 16,26
PLOT 18,26
PLOT 20,25



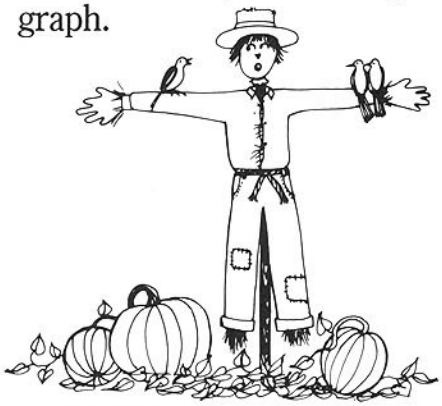
Answer: Your teacher has the answer. It is on page 156 of the book, **Holiday Computer Activities.**

PLOTTING SQUARES
WORKSHEET 2

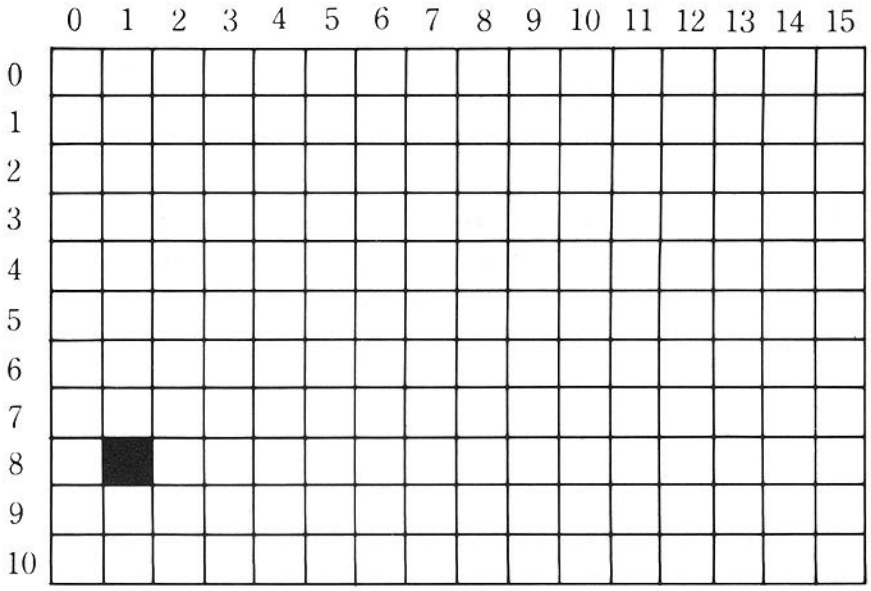
HALLOWEEN **OCTOBER 31**

NAME: _____

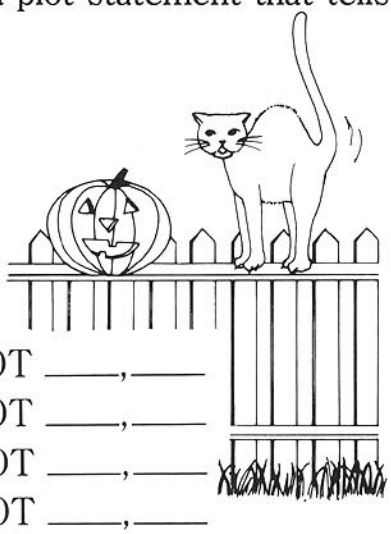
DIRECTIONS: Look at the colored square on the graph. This square is called PLOT 1,8. Can you tell why? Now find the squares listed below. Color each one on the graph.



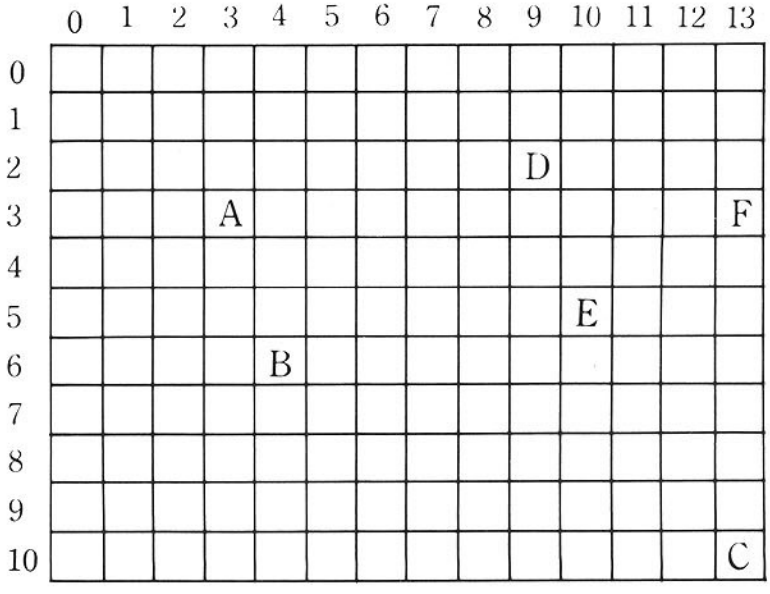
1. PLOT 14,2
2. PLOT 5,5
3. PLOT 3,10
4. PLOT 7,3
5. PLOT 12,9
6. PLOT 4,6



DIRECTIONS: Look at the six lettered squares on the graph. Write a plot statement that tells where each one is.



A. PLOT ____,____
B. PLOT ____,____
C. PLOT ____,____
D. PLOT ____,____
E. PLOT ____,____
F. PLOT ____,____



Answer: Your teacher has the answer. It is on page 156 of the book, **Holiday Computer Activities.**

HALLOWEEN GRID WORKSHEET

HALLOWEEN **OCTOBER 31**

NAME: _____

Each square in the grid below contains a word. If you put the words in the correct order, they will make up a Halloween joke.

Here is how to get the words in the correct order:

1. Look at the blanks below the grid. Under each blank, find a pair of numbers. The numbers tell you which square contains the word for that blank.

2. Under the first blank is 2,1. To get to square 2,1, go to the upper left-hand corner of the grid. Move two squares *across*; then move one square *down*.

3. This square says "WHAT." "WHAT" is the first word of the joke.

4. Use the numbers under the next blank to find the next word of the joke. Once again, start in the upper left-hand corner of the grid. Use the first number in the pair to count across and the second number to count down. The word that appears in the square you reach is the next word in the joke. Write it in its blank.

5. Keep going until you have written down the whole joke.

Happy howling!

	0	1	2	3
0	THE	ROBOT	AS	DRESS
1	UP	HALLOWEEN?	WHAT	ON
2	BOO	DID	BEEP!	LITTLE

Write the words to the joke in these blanks:

_____	_____	_____	_____
2,1	1,2	0,0	1,0
_____	_____	_____	_____
3,0	0,1	2,0	3,1
_____	_____	_____	_____
1,1	3,2	0,2	2,2

Answer: Your teacher has the answer. It is on page 156 of the book, **Holiday Computer Activities.**

OCTOBER

QUICK TIPS

CELEBRATE COMPUTER LEARNING MONTH WITH A WEEKLY COMPUTER CONTEST

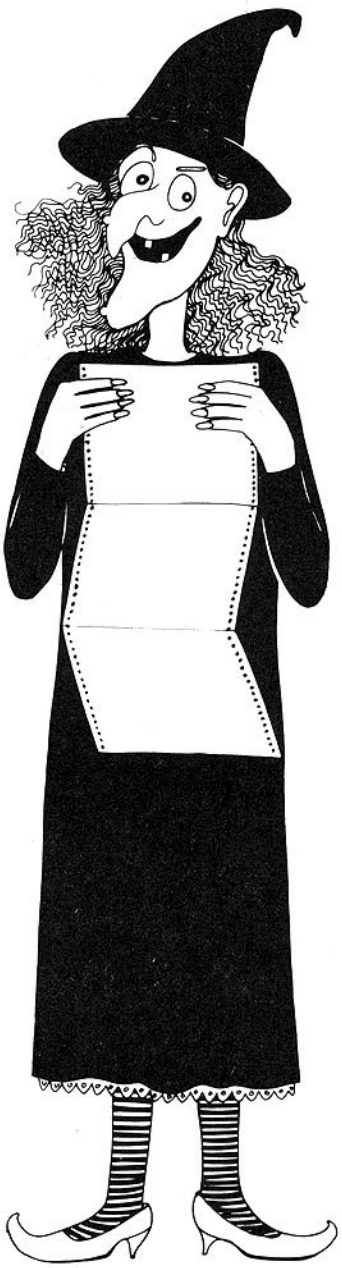
October is Computer Learning Month. Celebrate by conducting a weekly computer contest.

Select a corner in a well-traveled hallway and make it the Computer Contest Corner. On the top of a 2-by-3-foot piece of cardboard, write "Name the Computer." Leave enough room on the cardboard to place an 8-by-10-inch photograph.

Next to the poster, hang a box with a slot in the top. Label the box "Top Secret Computers." Each Monday in October, tack a picture of a robot or a special computer on the poster. Encourage children to research the name of the robot or computer and to place their answers in the slot of the Top Secret Computer Box. Each entry should also include the student's name and grade. The contest lasts a week, so students have five days to research the question before they submit their entries.

The following Monday, make a list of the winners' names and grades, and hang it up in the corner. At the bottom of the winners' list, place the correct answer to the contest question. Then place a new picture under "What Is This?" to challenge your students again.

Suzanne Prebish



PLAY THE LOGO WORLD SERIES

The World Series is conducted in October. Baseball fans in your class will enjoy playing the Logo World Series game.

To play the Logo World Series, boot Logo into your computer system and type the program listed below into your computer. The program creates a baseball diamond on the screen.

```
TO BASEBALL
  FULLSCREEN
  PU BK 80 PD
  BASES
  FOUL.LINES
  BATTER.BOX
END
TO BASES
  RT 45
  REPEAT 4[FD 80 LT 90 REPEAT 4[FD 10
LT 90]]
END
TO FOUL.LINES
  FD 155 LT 60
  REPEAT 75[FD 4 LT 2]
  LT 60 FD 155 LT 90
END
TO BATTER.BOX
  LT 45 PU BK 15 PD
END
```

This program can be used with Apple Logo and MIT Logo. For TI Logo, omit the FULLSCREEN command.

When the program has been typed into the computer, divide the class into two teams. Each team member gets a turn at bat. While at bat, the player must get the turtle out of the batter's box behind home plate and, using as few commands as possible, make the turtle round all the bases. The teams alternate sending a player to bat, making sure each member gets a turn. The teams tally the number of commands used by each batter. After everyone has had a turn at bat, the team adds all the players' tallies together to get a team total. The team with the least number of commands wins.

Gina Shimabukuro

CREATE TYPEWRITER ART

Students can create attractive Halloween art as they practice keyboarding skills. Here's how.

First, on a piece of typing paper have kids draw or trace a simple picture or pattern of the character they plan to dress up as on Halloween. Instruct students to place the paper in the typewriter and type a set of words or letters to fill the design. Tell them to try to stay within the outline of the drawing as best they can. The words or letters they choose to type should relate to the design in some way. For instance, last Halloween one of my students planned to dress up as butterfly. She drew a butterfly on her paper and filled in each section of the butterfly with the word for the color of that particular section of her costume. Another student planned to be a ghost and drew a picture of ghost. This student typed in the words "Casper the Friendly Ghost" throughout his design. After the drawings are filled with typed words, have students color them in.

Now display the typewriter art on a bulletin board and label it "The Typewriter Halloween Parade."

COMPUTER BINGO

One of our favorite classroom games is Computer Bingo. We often play it during our class Halloween party. It's played very much like regular Bingo, except the squares on the Bingo cards contain computer words, statements, or commands. Instead of calling letters and numbers, I ask a computer question and have the students see if the answer is on their card. A sample question might be, "What's the name of the flashing square that appears on the monitor and marks the next spot where a symbol will appear if a key is pressed on the keyboard? If students have the word "cursor" on their card, they cover that square with a chip. Play continues until someone's chips cover an entire card. It's a great way to reinforce computer vocabulary!

Veronica Ferrel

CREATE A DISK GRAVEYARD

This Halloween bulletin board provides an amusing lesson on disk care.

At the top of your board tack up paper letters that say: "DISK GRAVEYARD." From white construction paper, cut out two headstone shapes and tack them on the board. Also cut out two five-inch sqaures from black paper to represent disks.

On one black disk write: "HERE LIES DELILA DISK, WHO CRUMBLED FROM AN OVERDOSE OF COOKIE CRUMBS." On the other put: "HERE LIES FLOPPY FRED, WHO SUCCUMBED TO OVEREXPOSURE FROM THE SUN." Tape one of the disks to each headstone on the display.

Have students think of other ways disks might be destroyed if improperly handled and make up their own epitaphs reflecting these ways. Put the epitaphs on "disk" headstones and tack them on the bulletin board, too.

Craig Dickinson

HALLOWEEN HOWLERS

Q: What do you get when you cross a computer with a ghost?
A: The start of a *boot*-iful friend*chip*.

Q: Why did the robot dress as a clown on Halloween?
A: It wanted to join the *circuit*.

TRICKY SPEED DRILL

This activity helps students increase their typing speed. To begin, write the phrase "Trick or Treat" on the chalkboard. Tell students to type the phrase (without looking at the keyboard) as many times as they can in three minutes. Now have them count the number of times they typed the phrase correctly. Run through the drill again and encourage students to try to increase their speed.

Mary Ellen Switzer

GREAT PUMPKIN SAYS

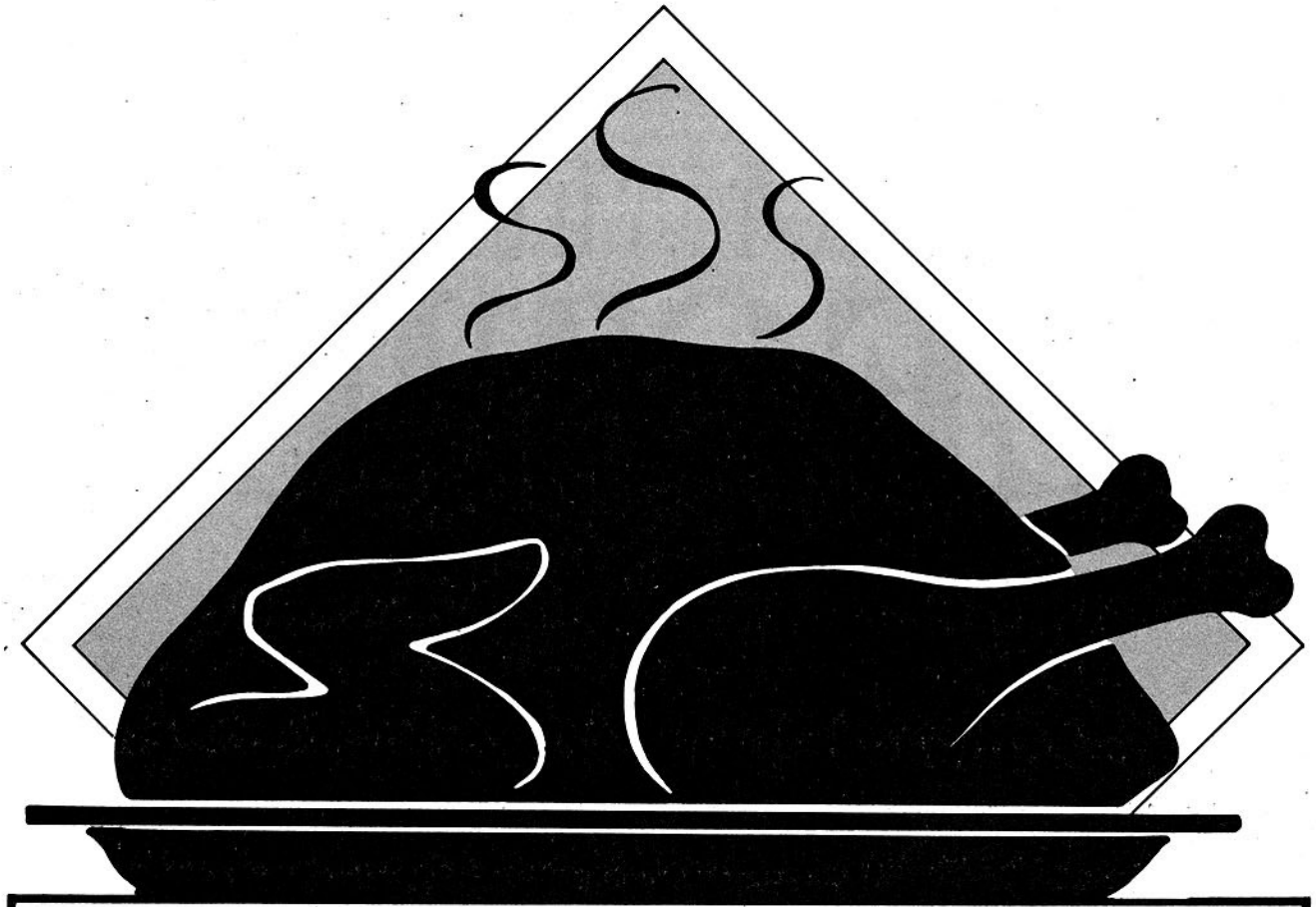
In this Halloween version of Simon Says, kids work on keyboard accuracy, listening skills, and proper spelling. Call out spelling words from the class's weekly list, preceding some of the words with phrase "The Great Pumpkin says." Tell students to type only those words that follow the saying. A child is out of the game and must stop typing if he or she types a spelling word that the Great Pumpkin did not say to type. After you have called out the entire list, give students one point for each "Great Pumpkin word" they typed correctly. The highest score wins.

DISPLAY HALLOWEEN WORD PROCESSING

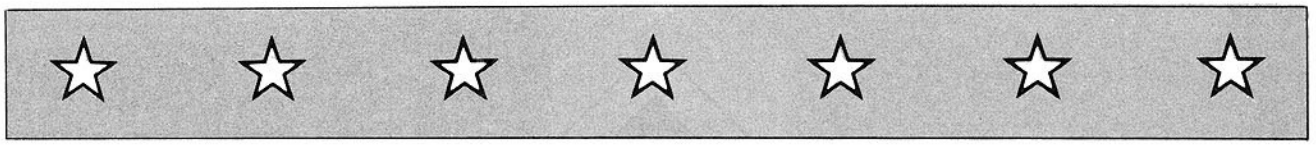
My students wrote Halloween stories with the help of our word processing software. I displayed the printouts on the bulletin board above.

To make this display, cut out a Dracula figure from black and white construction paper and tack him to the center of the bulletin board. At the top, left corner of the board, tack paper letters that say "Halloween Stories." Tack paper letters for "To Sink Your Teeth Into!" at the bottom of the board. Fill in the remaining space with sheets of black and orange paper. Tape students' Halloween stories on the top of these sheets.

Christine Hines



NOVEMBER



CONDUCT YOUR OWN ELECTION

Every four years, millions of Americans vote for a president and a vice-president of the United States. The election takes place on the first Tuesday following the first Monday in November. Many state elections are also held on this day. Students in your school can share the excitement of Election Day and come to appreciate the true meaning of democracy through the following unit on elections.

The unit provides background information on presidential elections and tells how you can organize a mock election in your school. Included in the election material is a computer program listing that counts students' votes and organizes data so that kids can graph their returns.

If this isn't the year of a presidential election, don't let that stop you from holding a mock election. The program allows you to enter the names of up to four candidates, including candidates for local office or even students running for a student government position.

The unit is designed as an all-school event, but you can modify it to become a class event only.

PROVIDE BACKGROUND ON THE PRESIDENTIAL ELECTION

A few weeks before Election Day, you and other teachers may wish to provide students with a little background on the presidential election.

Start by telling kids that the Constitution of the United States requires that an election be conducted every four years to decide who the country's president and vice-president should be. Federal law states that the election should take place on the first Tuesday following the first Monday in November. In a recent presidential election, Americans had a choice between two political tickets: Ronald Reagan for president and George Bush for vice-president, or Walter Mondale for president and Geraldine Ferraro for vice-president.

Students may ask you how these persons became presidential and vice-presidential candidates. Explain to them that in this country there are two major groups, or *parties*, the Democrats and the Republicans. Both parties conduct conventions in which they select one of their members to run for president and another member to run for vice-president. Voters can choose the Republican candidates for president and vice-president or the Democratic candidates for these offices.

Older students may wish to report on this process in greater detail by doing research on primary elections and caucuses.

Explain to students also that the Republican and Democratic parties dominate presidential elections, but other parties nominate, or propose, candidates for executive office, too. Voters may also write in the name of a candidate not nominated by a party. In the all-school election, students can enter up to four candidates for president.

Tell older students that although the media announce the winners of the election on Election Day, a president and vice-president aren't officially elected until January, when the electoral votes of all the states are counted. Explain that it is not the popular

vote, but the vote by an electoral college, that actually elects a president and vice-president. (Usually the results are the same.)

Here's how the electoral college works. Each state gets one elector for each member it has in Congress. The District of Columbia gets three electors. In total, there are 538 electors in the electoral college.

The candidate who wins the most popular votes in a state wins all of that state's electoral votes. At a joint session of Congress in January, the electoral votes are counted. The candidate who wins a majority of the electoral votes is officially elected.

Activities

Following are a few activities that will introduce students to the election process.

Prepare a Bulletin Board. Set up a bulletin board titled "Meet the Candidates," where students can tack up newspaper and magazine clippings on presidential candidates or on candidates for other offices in a local election (whichever candidates you decide to insert into the election program listing).

Research the Issues. On a large piece of butcher paper, list major election topics. For example, topics for a national election might include economy, environment, education, foreign policy, and nuclear weapons. Topics for a state or city election might include other issues particular to your area. Next to the list of election topics, draw two vertical columns. Label one with the Republican candidate's name. Label the other with the Democratic candidate's name. Have children research the candidates' stands on the issues, and write them down in their respective columns.

Make Campaign Buttons. A few days before Election Day, encourage students who have decided who they will vote for to make and wear paper buttons promoting their candidates.

Stage a Debate. Older students may wish to stage a debate before the election. Have these students form Democratic and Republican teams. Decide upon the issues to discuss. Then assign each issue to one or two students from each team. Each student is to discuss his or her party's view of a particular issue for about five minutes (using prepared notes). Have one student act as mediator and timekeeper.

ORGANIZE ELECTION COMMITTEES

At least two weeks before Election Day, call a meeting of all teachers interested in working on the school election. Appoint at least one teacher to chair each of the following committees. Make it the responsibility of each chairperson to recruit student committee members (probably his or her own students) to carry out the duties outlined below.

1. Publicity Committee

These committee members will serve as public relations directors for the election. During the two weeks before Election Day, they will be responsible for posting signs in the halls to build election excitement. Posters should not promote specific candidates. Instead, they should notify students that like the adults they know they will be voting for a president, vice-president, or other political officer on Election Day. Encourage kids to think up voting slogans for their posters, such as "Every Vote Counts," "Poll Power," and "Vote, America."

Committee members should also let community newspapers and radio and television stations know about the election. They may wish to report on the candidate young people support.

2. Scheduling Committee

The first job of this group should be to choose an area in your school to be the polling place. Members should select a location where there is room to direct the flow of traffic to and from a private voting area.

Once the site is chosen, the chairperson should obtain official permission to reserve the location for the election.

Students should also work with the chairperson to schedule a voting time for each class in school. You may wish to make these times coincide with recreation periods or social studies classes. (Note: The computer will have to remain on during the entire voting period. Once the computer is turned off, all previously recorded votes will be erased from memory.)

Members should type the assigned times and the location of the polling place on a sheet of paper and give each teacher a copy.

3. Computer Committee

This group should supervise all computer operations. A week before Election Day, have members type in the voting program, page 61, and save it on a disk or cassette. (They may need to make copies of this disk or cassette, depending on how many students are voting. For example, the Apple program listing holds a maximum of 650 votes. If more students are voting, you will need to use additional computers.)

On Election Day, these kids should set up the computer(s) that will be used for voting. They should boot up the voting program in each computer and make sure everything works.

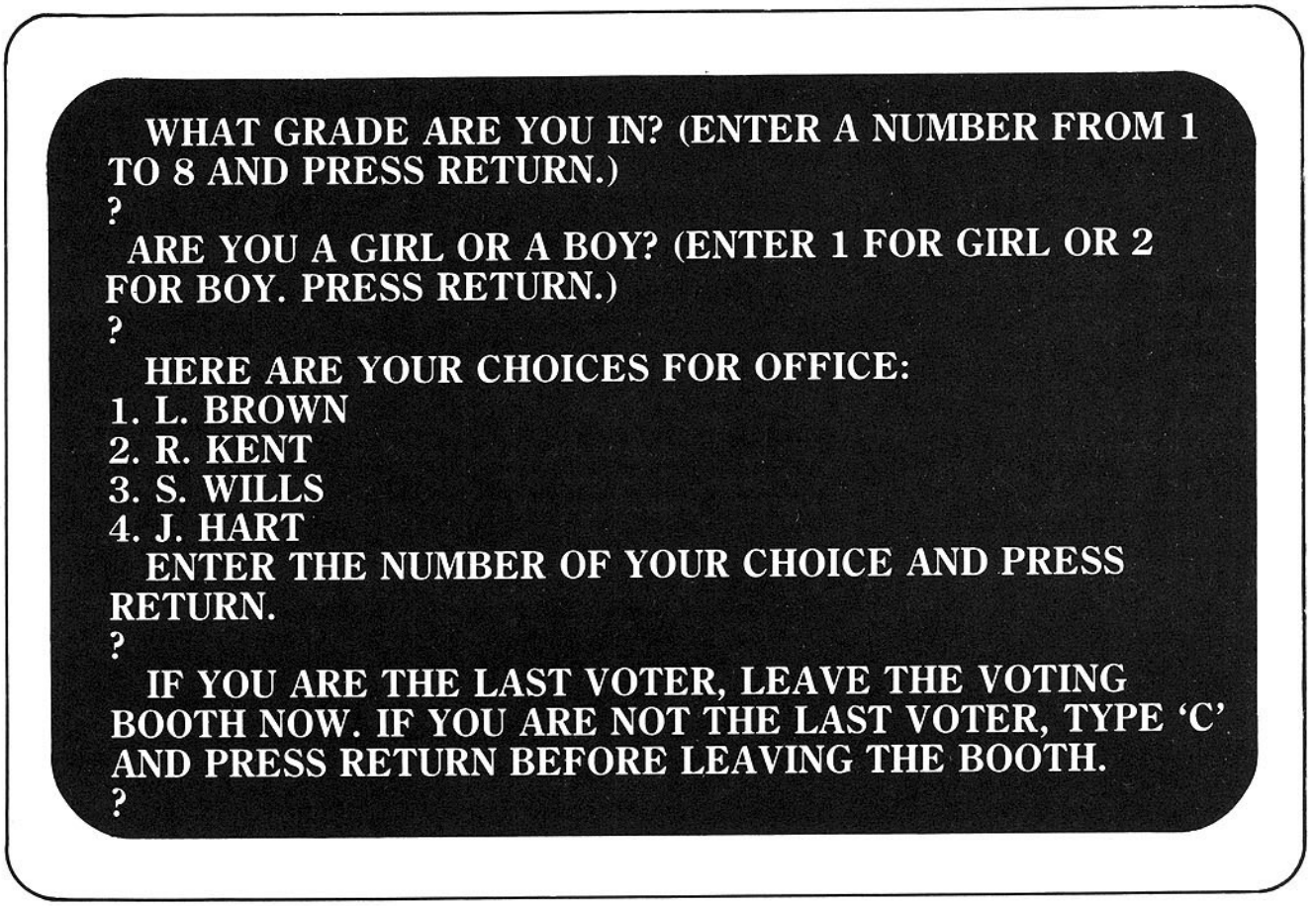
One committee member should be responsible for entering the amount (up to four) and names (up to eight characters each) of the candidates that are running for office in the computer(s).

Have committee members take turns being on call throughout the day, in case there is any computer trouble.

4. Registration Committee

These students should check off voters' names from a registration list as they enter the polls on Election Day. (Have students sign up to work on shifts for this.) Use class attendance records (you can get them from office personnel) as registration lists. Checking off names insures that students don't vote more than once.

Members of the registration com-



Here are the instructions that appear on the computer screen when students vote in the election.

mittee should also remind voters that once they have made their selections, they cannot be changed.

5. Traffic Committee

Members of this committee will be responsible for directing traffic to and from the voting booth(s).

About a week before the elections, students, with the help of the chairperson, should design a map that shows where the voting area will be, where students waiting to vote should stand (at least 25 feet from the voting machine), as well as where students should enter and leave the area. On Election Day, committee members should be stationed at key spots to keep the traffic flowing. Students should sign up to work on shifts for this.

6. Accounting Committee

Assign one person on this committee to be the last student to vote. After that person selects a presidential ticket, he or she types "STOP" instead of "C." That signals the computer to count the votes. The computer takes several minutes to tally the votes (the amount of time depends on the number of voters). Instruct the students not to touch the keyboard while the computer is counting the votes.

The total votes for each candidate will appear on the screen, along with a breakdown of the vote by grade level (1–8) and sex. (If you use more than one computer, be sure to add the totals from all of the computers together.) Results are displayed on the screen only. The program does not allow you to print them or save them on disk or cassette. It does allow you to review the breakdowns as many times as you wish, though.

Over the address system, members of the committee should announce the winners and the information breakdown provided by the computer.

RECORD THE VOTE

On the morning of Election Day, have teachers give each of their students a paper ballot like the one in the box on page 60. Tell students that the questions on the paper ballot are the questions the computer program will ask.

Have students mark the ballot with numbers for their grade level (1–8), sex (1 for girls, 2 for boys), and choice of candidate (1–4 depending on how many candidates are running in your election). Also have students write "C" on the paper ballot. Explain that this final step will clear the computer screen for the next voter.

Students take these ballots to the polls and use them as a reference. It is important that students enter the correct information because votes cannot be changed once cast.

PROGRAM LISTING FOR *COMPUTERIZED VOTING BOOTH*

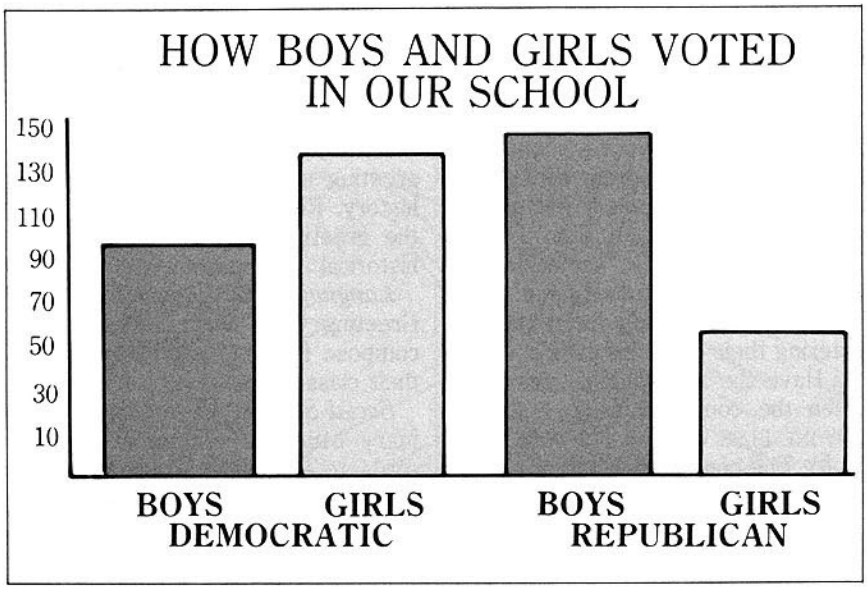
Who says 10-year-olds are too young to vote? With this simple voting program, your school can become a computerized polling place where *everyone* can vote. The program was written for students in first to eighth grade. You can also use it for a single class election.

The program listing is for use on Apple II series computers. To convert the program for use on other computers, see Program Conversions, page 153.

By Richard Devir

```
10  REM    COMPUTERIZED VOTING BOOTH ©1984 SCHOLASTIC INC.
20  HOME : CLEAR
30  DIM G(650),BG(650),CND(650),C(650)
40  DIM GC(650),BC(650),G1(650),G2(650),G3(650),G4(650)
50 CODE$ = "STOP":V = 0
60  PRINT "  WELCOME TO THE..."
70  PRINT : PRINT "*************************************"
80  PRINT "*     COMPUTERIZED VOTING BOOTH       *"
90  PRINT "*************************************"
100  PRINT : PRINT "  HOW MANY CANDIDATES ARE RUNNING?": INPUT NC
110  IF NC > 4 THEN  PRINT "  YOU CAN ONLY HAVE UP TO 4
     CANDIDATES.": GOTO  100
120  FOR X = 1 TO NC
130  PRINT "  ENTER THE NAME OF CANDIDATE #";X
140  PRINT "AND PRESS <RETURN>."
150  INPUT CN$(X)
160  PRINT "  IS ";CN$(X);" CORRECT (Y/N)?": INPUT Z$
170  IF Z$ = "N" THEN 130
180  IF Z$ <  > "Y" THEN 160
190  NEXT X
200  HOME : PRINT "  YOU ARE NOW READY TO BEGIN VOTING."
210  PRINT "AFTER THE LAST VOTER HAS CAST HIS OR"
220  PRINT "HER VOTE, ENTER THE CODE (";CODE$;")"
230  PRINT "IN PLACE OF 'C'."
240  PRINT "  THE COMPUTER WILL THEN AUTOMATICALLY"
250  PRINT "TALLY THE VOTES AND GIVE THE RESULTS."
260  PRINT : PRINT "  PRESS <RETURN> TO BEGIN VOTING.": INPUT Z$
270  HOME :V = V + 1: REM  V=VOTER NUMBER
280  PRINT "     ***** VOTER #";V;" *****"
290  PRINT : PRINT "  WHAT GRADE ARE YOU IN?"
300  PRINT : PRINT "  (ENTER A NUMBER FROM 1 TO 8 AND"
310  PRINT "PRESS <RETURN>.)"
320  INPUT G(V): IF G(V) > 8 OR G(V) < 1 THEN 320
330  PRINT : PRINT "  ARE YOU A GIRL OR A BOY?"
340  PRINT : PRINT "  (ENTER 1 FOR GIRL OR 2 FOR BOY."
350  PRINT "PRESS <RETURN>.)"
360  INPUT BG(V): IF BG(V) <  > 2 AND BG(V) <  > 1 THEN 360
370  HOME : PRINT "  HERE ARE YOUR CHOICES FOR OFFICE:"
380  FOR X = 1 TO NC
390  PRINT : PRINT "  ";X;". ";CN$(X)
400  NEXT X
410  PRINT : PRINT "  ENTER THE NUMBER OF YOUR CHOICE AND"
420  PRINT "PRESS <RETURN>."
430  INPUT CND(V): IF CND(V) > NC OR CND(V) < 0 THEN 430
440  PRINT : PRINT "  IF YOU ARE THE LAST VOTER, LEAVE THE"
450  PRINT "VOTING BOOTH NOW."
460  PRINT "  IF YOU ARE NOT THE LAST VOTER, TYPE"
470  PRINT "'C' AND PRESS <RETURN> BEFORE LEAVING"
480  PRINT "THE BOOTH."
490  INPUT Z$: IF Z$ = "C" THEN 270
500  IF Z$ <  > CODE$ THEN 490
510  REM  TALLY VOTES
520  PRINT "  ONE MOMENT, PLEASE...."
530  FOR Y = 1 TO V
540  FOR X = 1 TO NC
550  IF CND(Y) = X THEN C(X) = C(X) + 1
560  IF BG(Y) = 1 AND CND(Y) = X THEN GC(X) = GC(X) + 1
570  IF BG(Y) = 2 AND CND(Y) = X THEN BC(X) = BC(X) + 1
580  NEXT X
590  FOR W = 1 TO 8
600  IF G(Y) = W AND CND(Y) = 1 THEN G1(W) = G1(W) + 1
610  IF G(Y) = W AND CND(Y) = 2 THEN G2(W) = G2(W) + 1
620  IF G(Y) = W AND CND(Y) = 3 THEN G3(W) = G3(W) + 1
630  IF G(Y) = W AND CND(Y) = 4 THEN G4(W) = G4(W) + 1
640  NEXT W
650  NEXT Y
660  HOME : REM  BREAKDOWN BY CANDIDATE
670  PRINT : PRINT "CANDIDATE","VOTES"
680  PRINT "------------------------"
690  FOR X = 1 TO NC
700  PRINT : PRINT X;". ";CN$(X),C(X)
710  NEXT X
720  PRINT : PRINT "------------------------"
730  PRINT : PRINT "TOTAL VOTES CAST: ";V
740  PRINT : PRINT "  PRESS <RETURN> FOR THE BREAKDOWN"
750  PRINT "BY GRADE.": INPUT Z$: HOME
760  REM  BREAKDOWN BY GRADE
770  PRINT "GRADE   CND #1  CND #2  CND #3  CND #4"
780  PRINT "---------------------------------------"
790  FOR W = 1 TO 8
800  PRINT : PRINT "  ";W;"       ";G1(W);"       ";G2(W);"
       ";G3(W);"       ";G4(W)
810  NEXT W
820  PRINT : PRINT "  PRESS <RETURN> FOR BREAKDOWN BY SEX."
830  INPUT Z$: HOME
840  PRINT "CANDIDATE","BOYS","GIRLS"
850  PRINT "---------------------------------------"
860  FOR X = 1 TO NC
870  PRINT : PRINT CN$(X),BC(X),GC(X)
880  NEXT X
890  PRINT : PRINT "  TYPE 'R' TO REVIEW RESULTS OR PRESS"
```

*see PDF page 163



Sample graph of election results.

GRAPH THE RESULTS

Have students graph elements of the vote breakdown, either by hand or by using a simple computer graphing program. *(See sample bar graph, this page.)*

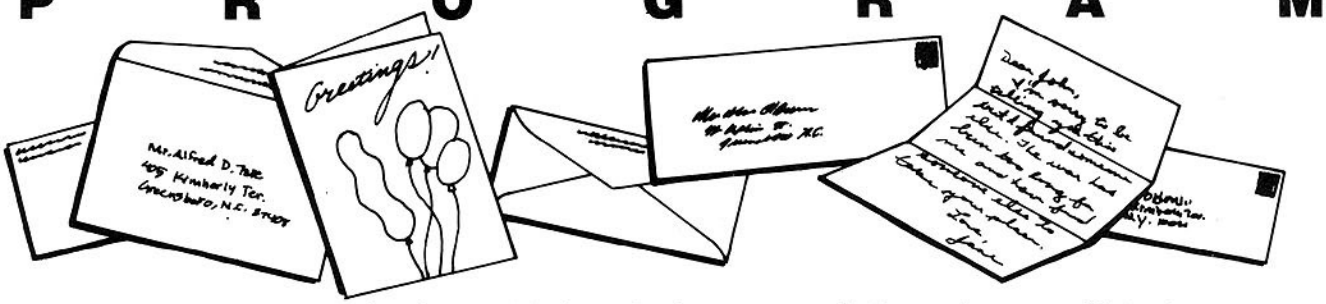
Kids can also graph how each grade voted.

Display students' graphs on a bulletin board titled "Election Central." Use the graphs to ask questions about the voting population. For example, does your school have a gender gap (a marked difference between the way males and females vote)? Are eighth grade students more conservative than fourth grade students?

Have students form hypotheses about the results.

Lesli Rotenberg

ELECTRONIC MAILBOX PROGRAM



Everyone loves to send and receive greeting cards. To celebrate National Card and Letter Writing Week, why not show your students a new way to send and receive them? Show them how to do so electronically. The following program listing is all you need.

HOW THE PROGRAM WORKS

The *Electronic Mailbox* program allows students to send greetings to their friends via computer. When a student runs the program, it asks how many cards the student wants to send. The student types in a number.

Next, the program asks who should receive the first card, what the card should say, and how the card should be signed. (Note: Students cannot use commas in their responses.) The program stores the student's answers in its memory. It continues in this way until the student has sent all the cards he or she wanted to send.

Then the program asks if anyone else wants to send a card. If the student types "Y" for yes, another student can enter cards in the computer.

After all of the students have entered their cards, the computer displays the name of the first person to receive mail. That student presses the RETURN key to see a display of the first card that was sent to him or her. The program continues displaying the cards, one at a time, in the order that they were entered into the computer.

HOW TO USE THE PROGRAM

The program is designed to be used in a number of different ways with both primary and upper elementary students.

1. You or one of your students can simply type the program listing into the computer, and then save the program on a cassette or disk. During Letter Writing Week, set aside one day for electronic card sending. Allow students to take turns during the day entering their cards into the computer. Have the last student press "N" when the computer asks, IS THERE ANYONE ELSE WHO WANTS TO SEND A CARD? The computer will then display messages for students, one at a time. As their names are displayed, let kids come up and read their electronic messages. (Note: In order to insure that all students receive at least one greeting, you might enter your own messages to each of your students.)

2. You can challenge your students to modify the program for other *Electronic Mailbox* applications. For example, students might modify the program so that it is designed specifically for sending monthly birthday greetings to classmates.

3. Suggest that your more advanced students create some graphics for the greeting card program.

4. Here are some ideas for using the program to reinforce some of your basic curriculum objectives.

History: Have your students send greeting cards to famous people in history. Remind them to comment in the greeting card on each person's historical accomplishments.

Language Arts: Organize a Poetry Greeting Card Day. Have students compose four-line poems to send to their classmates.

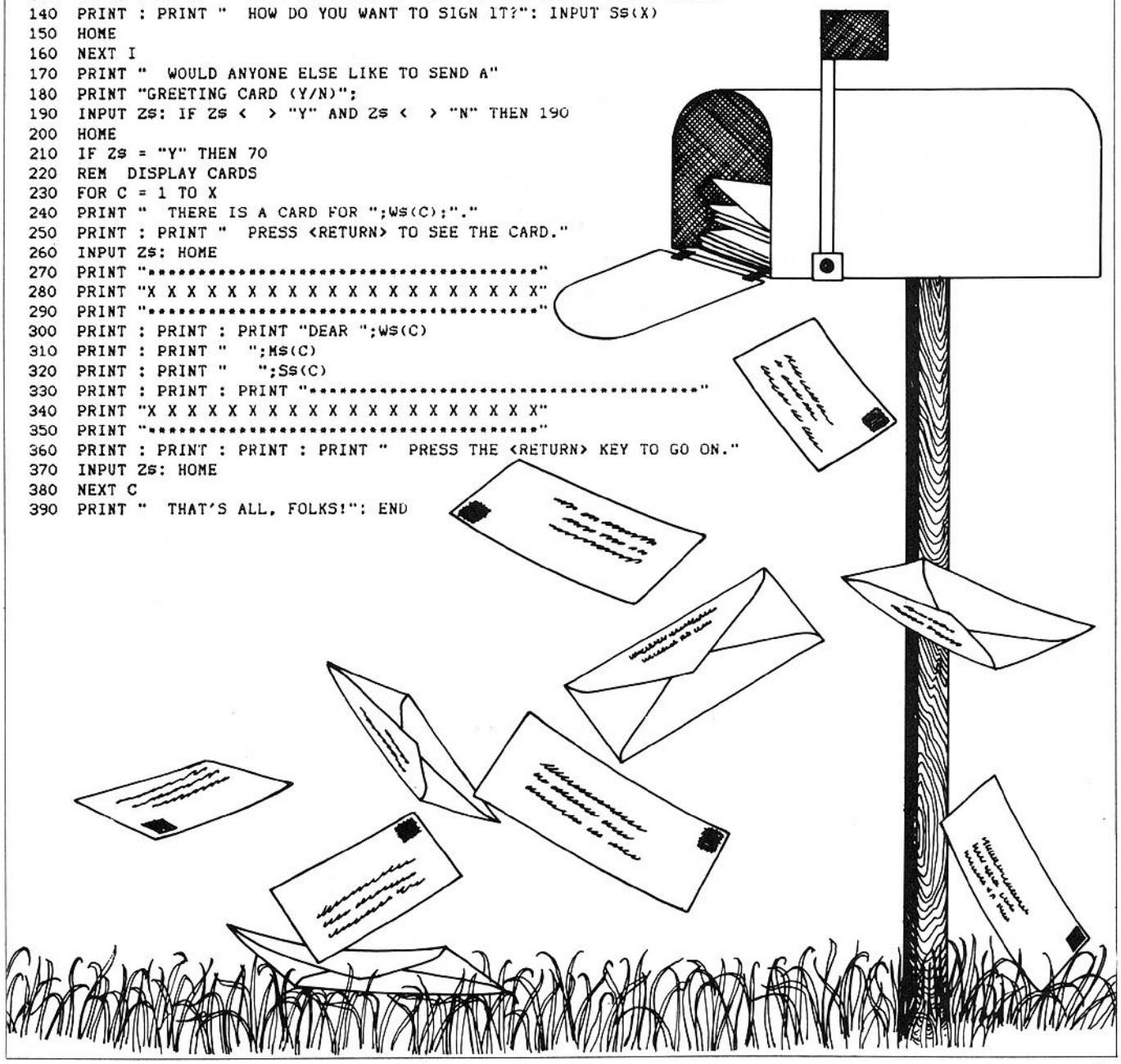
Social Studies: Have teams of primary students compose greeting cards to leaders in the community. Each greeting card should identify how that leader contributes to the community.

Bob Muller and Debbie Kovacs

PROGRAM LISTING FOR *ELECTRONIC MAILBOX*

This program listing is for use on Apple computers. To convert the program for use on other computers, see Program Conversions, page 153.

```
10  REM  ELECTRONIC MAILBOX
20  HOME : CLEAR
30  DIM W$(300),M$(300),S$(300)
40  PRINT "  WELCOME TO ELECTRONIC MAILBOX!"
50  PRINT : PRINT "  THIS PROGRAM LETS YOU SEND GREETING"
60  PRINT "CARDS ON THE COMPUTER."
70  PRINT : PRINT "  HOW MANY GREETING CARDS WOULD YOU"
80  PRINT "LIKE TO SEND?"
90  INPUT N
100  FOR I = 1 TO N
110 X = X + 1
120  PRINT : PRINT "  WHOM IS CARD #";I;" FOR?": INPUT W$(X)
130  PRINT : PRINT "  WHAT DO YOU WANT THE CARD TO SAY?": INPUT M$(X)
140  PRINT : PRINT "  HOW DO YOU WANT TO SIGN IT?": INPUT S$(X)
150  HOME
160  NEXT I
170  PRINT "  WOULD ANYONE ELSE LIKE TO SEND A"
180  PRINT "GREETING CARD (Y/N)";
190  INPUT Z$: IF Z$ <  > "Y" AND Z$ <  > "N" THEN 190
200  HOME
210  IF Z$ = "Y" THEN 70
220  REM  DISPLAY CARDS
230  FOR C = 1 TO X
240  PRINT "  THERE IS A CARD FOR ";W$(C);"."
250  PRINT : PRINT "  PRESS <RETURN> TO SEE THE CARD."
260  INPUT Z$: HOME
270  PRINT "****************************************"
280  PRINT "X X X X X X X X X X X X X X X X X X X X"
290  PRINT "****************************************"
300  PRINT : PRINT : PRINT "DEAR ";W$(C)
310  PRINT : PRINT "  ";M$(C)
320  PRINT : PRINT "   ";S$(C)
330  PRINT : PRINT : PRINT "****************************************"
340  PRINT "X X X X X X X X X X X X X X X X X X X X"
350  PRINT "****************************************"
360  PRINT : PRINT : PRINT "  PRESS THE <RETURN> KEY TO GO ON."
370  INPUT Z$: HOME
380  NEXT C
390  PRINT "  THAT'S ALL, FOLKS!": END
```



LETTER FROM A STAR
WORKSHEET

NATIONAL LETTER WRITING WEEK **FIRST FULL WEEK OF NOVEMBER**

NAME: _____

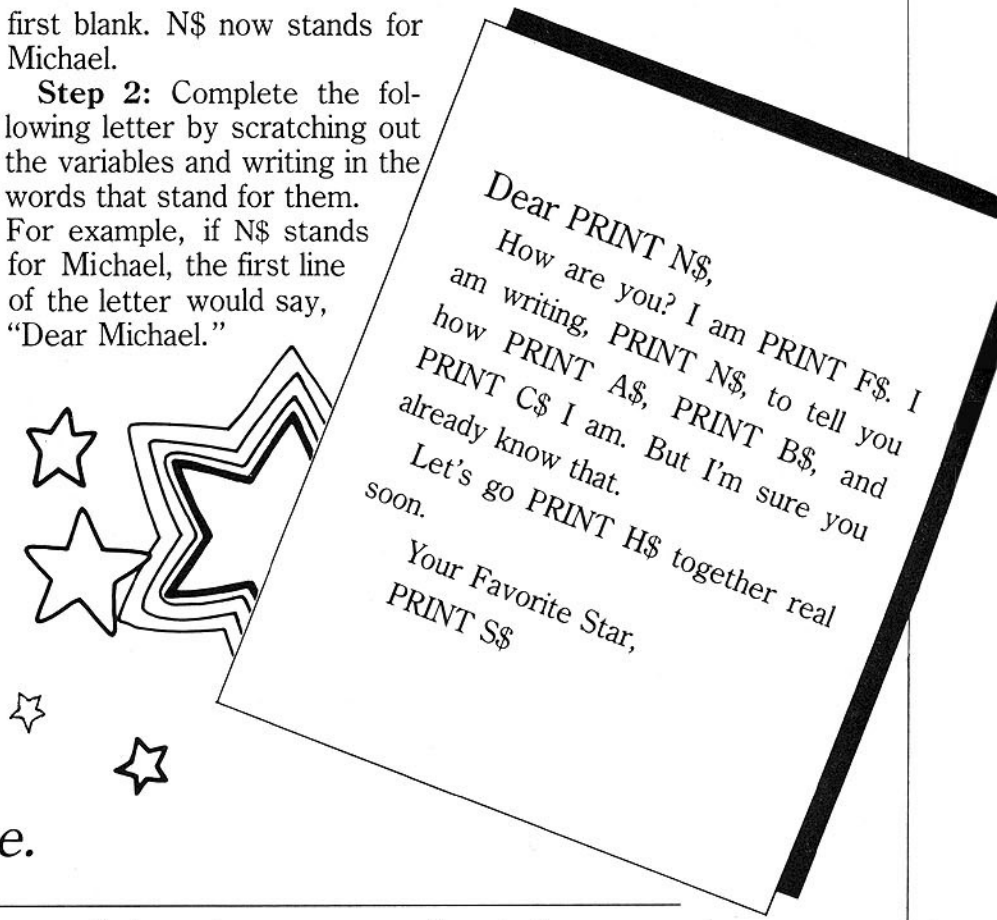
You just received a letter from your favorite star. "Great!" you think. But then you notice the letter uses *variables*. *String* variables, to be exact.

What are string variables? They're letters followed by a $ (called a *string*). In BASIC programming, string variables stand for words. For example, N$ (pronounced *en string*) can stand for your name.

To read the letter from your favorite star, you will need to know the words that the string variables stand for. Follow Steps 1 and 2 to find out.

Step 1: Fill in each of the blanks below. For example, if your name is Michael, you would write "Michael" in the first blank. N$ now stands for Michael.

Step 2: Complete the following letter by scratching out the variables and writing in the words that stand for them. For example, if N$ stands for Michael, the first line of the letter would say, "Dear Michael."



1. Write your name.

N$ = _____

2. Write a word describing how you feel (example: happy).

F$ = _____

3. Write three words describing your favorite star.

A$ = _____

B$ = _____

C$ = _____

4. Write the name of your favorite hobby.

H$ = _____

5. Write the name of your favorite star.

S$ = _____

COMPUTER BOOKS FOR CHILDREN

Check the following computer books into your library, so they'll be available for your students to check out during National Children's Book Week. The books were recommended by librarian Judy Simmons and media specialist Candy Colburn.

FICTION BOOKS

CHIP MITCHELL: THE CASE OF THE STOLEN COMPUTER BRAINS

Fred D'Ignazio has written a delightful collection of computer capers. They are published together under the title *Chip Mitchell: The Case of the Stolen Computer Brains* (E.P. Dutton; 1982; $8.69).

In the book, Charlie "Chip" Mitchell is a seventh grade computer whiz who uses his computer prowess to solve 10 mysteries.

For example, in "The Case of the Killer Robot," Chip and his dad are visiting a computerized factory, when one of the employees is discovered to be fatally injured, presumably by a killer robot. Chip uses logic and computers to discover the true identity of the guilty party.

THE COMPUTER THAT SAID STEAL ME

In *The Computer That Said Steal Me* (Four Winds Press; 1983; $8.95), by Elizabeth Levy, Adam, a sixth grader, is so obsessed with wanting to own a computer chess game that he steals one. When he gets the computer home, fear and guilt begin to haunt him. To ease his conscience, Adam tries to slip the computer back into the store, but he is caught and must face the consequences. The fast moving plot makes this book popular reading for sixth and seventh graders.

CUPID COMPUTER

Cupid Computer (Atheneum; 1981; $8.95), by Margie Milcsik, is a computer-related story with a female lead. When her junior high school announces that dates for the Valentine's Day dance will be matched by computer, Toni Moretti tries to answer the computer questionnaire so that she will be matched with Kevin, her current dreamboat. Instead, she is matched with a boy she thinks she has nothing in common with and who, of course, turns out to be the perfect match.

THE GREAT GRADEPOINT MYSTERY

This book is part of a series for middle graders called MICROkid Mysteries. In *The Great Gradepoint Mystery* (Macmillan; 1983; $9.95), by Barbara Bartholomew, 12-year-old Ricky Foster meets ALEC, a computer with a personality, at the Schlieman Institute. The fact that ALEC has a personality might make this sound like fantasy, but once the reader accepts ALEC's personality quirks, such as its habit of making bad puns, the story reads like a solid mystery. In this particular adventure, ALEC's access to thousands of data bases helps Ricky identify the person who has been tampering with the report card grades for two junior high schools.

THE MARK OF CONTE

Sixth graders should find interesting Sonia Levitin's book, *The Mark of Conte* (Atheneum; 1980; $8.95). The book is about Conte Mark, a student whose name also appears in the school computer as both Conte Mark and Mark Conte. The error allows Conte to assume a double identity and earn twice the credits in half the time! With a little clever scheming, ingenious scheduling, and covert computer manipulation, Conte manages to "leave his mark" on the school.

MY TRIP TO ALPHA I

Stories from well-known author Alfred Slote help to fill the never-large-enough collection of science fiction for seven- to 10-year-olds. In *My Trip to Alpha I* (Lippincott; 1978; $9.95), Jack Stevenson takes a trip to visit his Aunt Katherine on the planet Alpha I. He travels to Alpha I via VOYA-CODE, a process in which the body stays in one place while the mind is sent to a duplicate body at the new destination. The trip's purpose is to help Aunt Katherine move back to earth. When he arrives, she has changed her mind about returning to earth. Disturbed by his aunt's sudden change in plans, Jack sets out to uncover her reasons. With quick action and clever thinking, Jack unravels the mystery.

NEXT STOP, EARTH

Third or fourth grade science fic-

tion fans will love William E. Butterworth's *Next Stop, Earth* (Walker and Company; 1978; $5.95).

In this short novel, 12-year-old Charley Wilson awakens to find that his space ship has been obstructed by a robot and is speeding back toward earth, out of control. Charley finally manages to use the ship's computer to summon help.

OLLIE'S TEAM AND THE BASKETBALL COMPUTER

This book by Clem Philbrook is a typical sports story with a computer twist that readers in grades five to eight will enjoy. *Ollie's Team and the Basketball Computer* (Hastings House; 1969; $5.95) tells about Ollie Scruggs' struggle on a failing basketball team and the team's eventual success—thanks to the IDIOT (International Data Integrating Organization Tabulator).

PRINT OUTS: THE ADVENTURES OF A REBEL COMPUTER

One of the most unusual fiction books that I have seen is *Print Outs: The Adventures of a Rebel Computer* (Nerve Press; 1982; $5.95), by Claudia Cornwall. Talk about computer oriented—the print is computer type on pin feed paper!

Written for nine- to 12-year-olds, the book details the adventures of Edgar, a personable computer who finds ways to express himself, much to the dismay of his programmers. Computer concepts abound, and there is a handy glossary of terms and definitions.

THE ROBOT AND REBECCA AND THE MISSING OWSER

For third and fourth graders who love science fiction, consider *The Robot and Rebecca and the Missing Owser* (Knopf; 1981; $4.99), by Jane Yolen. Owsers are rare pets that are being stolen more and more frequently. Rebecca and her pet robot, Watson II, set out to capture the owse-napper. Although the plot is somewhat contrived, there is plenty of action.

THE VIDEO AVENGER

This book by Douglas Colligan is part of Scholastic's Twistaplot series, in which the reader becomes actively involved in a story by choosing the direction it will take. More than 20 different endings are possible for one story.

In *The Video Avenger* (Scholastic; 1983; $1.95), the reader has just won an ME-II computer. All of a sudden, the reader is trapped inside the machine with electronic dinosaurs and video warriors. He or she must decide whom to trust and which way to turn. The book is suitable for intermediate grade children.

NONFICTION BOOKS

COMPUTERS IN THE HOME

The primary graders in your school will enjoy *Computers in the Home* (Franklin Watts; 1984; $9.90), by Nigel Hawkes. This book is chock-full of appealing, color photos and diagrams that demonstrate the current and potential uses of computers in the home. Home uses involving medicine, entertainment, and telecommunications are explained in large, bold print.

COMPUTERS IN YOUR LIFE

Melvin Berger documents the impact of computers in everyday life in *Computers in Your Life* (Harper & Row; 1981; $4.95). Emphasizing events of special interest to children, he discusses the use of computers in medicine, government, law enforcement, communication, and transportation. For example, in the chapter on medicine, Berger tells the story of an eight-year-old girl who uses a computer to overcome a speech disability. The book has attractive black-and-white photos and is suitable for upper grade children.

MESSNER'S INTRODUCTION TO THE COMPUTER

The lively writing style of *Messner's Introduction to the Computer* (Simon and Schuster; 1983; $10.29), by Fred D'Ignazio, can draw junior high readers into the world of computers. D'Ignazio describes the history of computers in an unusual way. He acquaints readers with computer pioneers through short biographies that include information on their personal lives, dreams, and accomplishments. He also predicts the future of computers by introducing readers to today's computer leaders and explaining what they are up to.

THE STAR WARS QUESTION AND ANSWER BOOK ABOUT COMPUTERS

Frank D'Ignazio has combined the popularity of the *Star Wars* movies and the growing interest in computers in a manual for children in intermediate grades called *The Star Wars Question and Answer Book About Computers* (Random House; 1983; $7.99). Throughout the book, C3PO and R2D2, the famous *Star Wars* robots, give brief, easy-to-understand answers about computers. Photographs enliven every page, so kids will love thumbing through the book.

PUBLISHERS' ADDRESSES

Atheneum, 597 Fifth Ave., New York, NY 10017.
E.P. Dutton, 2 Park Ave., New York, NY 10010.
Four Winds Press, 730 Broadway, New York, NY 10003.
Franklin Watts, 387 Park Ave. South, New York, NY 10016.
Harper & Row, 10 E. 53rd St., New York, NY 10022.
Hastings House, 10 E. 40th St., New York, NY 10016.
Knopf, 201 E. 50th St., New York, NY 10022.
Lippincott, 10 E. 53rd St., New York, NY 10022.
Macmilan, 866 Third Ave., New York, NY 10022.
Nerve Press, 5875 Elm St., Vancouver, BC, Canada, V6N 1A6.
Random House, 201 E. 50th St., New York, NY 10022.
Scholastic, 730 Broadway, New York, NY 10003.
Simon and Schuster, 1230 Ave. of the Americas, New York, NY 10020.
Walker & Co., 720 Fifth Ave., New York, NY 10019.

NATIONAL CHILDREN'S BOOK WEEK

QUICK TIPS

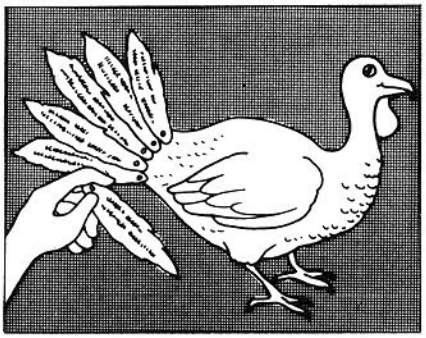
GOBBLE UP THOSE COMPUTER BOOKS

Encourage students to read computer books during National Children's Book Week with this display idea.

On a bulletin board entitled "Books to Gobble About," tack a simple turkey shape made from brown construction paper. *(See illustration.)*

Each time a student reads a computer book, give him or her a bright colored paper feather. Each child should write on the feather his or her name and the name of the book and its author. Let students attach the feather to the turkey on the bulletin board. You'll have one gorgeous gobbler by the end of the week!

Doug Hanson



"Books to Gobble About" board.

STORE COMPUTER BOOKS IN THE GUTTER

Now this doesn't mean throw your books into the sewer! It means to use aluminum rain gutters as display racks in your classroom for computer books and manuals. Rain gutters are cheap, easy to install, and are great space savers.

We've placed two gutters in our computer corner, one above the other, approximately one foot apart. Not only do the gutters make an attractive display, but they also save time. Rather than hunt through a stack of computer books, kids can skim the gutters quickly for material they need.

Joan Lippman

ALPHABETIZE A BOOK LIST

This program helps you create your own electronic list of books on any Commodore computer and lets you print out a copy for each of your students.

To make the list, enter the following BASIC program into the computer. When you reach the data statements, starting with line 300, substitute for *Watership Down* the title of a book that you recommend. Enter the name of the book's author in the next data statement (line 310). Follow this two-line procedure for each book on your list.

When you run the program, the computer reminds you to turn on the printer. It then asks you to enter the number of books in your list. Next, it alphabetizes the book title statements. Finally, the computer prints out an alphabetical list of the titles. Each title on the printout is followed by the name of the book's author.

This listing is for the Commodore 64 and VIC-20 computers. Conversions for Apple II and Radio Shack computers follow the listing.

```
10 PRINT "TURN YOUR PRINTER ON AND
   PRESS RETURN.":INPUT A$
20 PRINT "HOW MANY BOOKS ARE IN
   THE READING LIST?":INPUT N
30 DIM B1$(N),W1$(N),B2$(N),W2$(N)
40 FOR C=1 TO N
50 READ B$,W$
60 B1$(C)=B$:W1$(C)=W$
70 NEXT C
80 W=1
90 FOR M=1 TO N
100 FOR D=1 TO N
110 IF B1$(D)<B1$(W) THEN W=D
120 NEXT D
130 B2$(M)=B1$(W)
140 W2$(M)=W1$(W)
150 B1$(W)="XXXXXXXX"
160 NEXT M
170 OPEN 99,4
180 PRINT#99: PRINT#99: PRINT #99,
   "SUGGESTED READING LIST"
190 FOR D=1 TO N
200 PRINT#99, "  ";B2$(D)
210 PRINT#99, "     "W2$(D)
220 NEXT D
230 CLOSE99:PRINT "DO YOU WANT TO
   PRINT OUT ANOTHER LIST? (Y/N)":IN-
   PUT Q$
240 IF Q$="Y" THEN 170
250 END
300 DATA "WATERSHIP DOWN"
310 DATA "RICHARD ADAMS"
```

Conversions

Apple II series: In line 170, change OPEN 99,4 to PR #1. In lines 180, 200, and 210, delete #99.
In line 230, change CLOSE99 to PR#0.

TRS-80 Model III: In line 170, change OPEN 99,4 to LPRINT. In lines 180, 200, and 210 change PRINT #99 to LPRINT. In line 230, delete CLOSE99.

David Kerwin

WORD PROCESSING TASK CARDS FOR THANKSGIVING

Create a festive writing environment in your classroom during Thanksgiving. All you need is a word processing program and the four task cards in this feature. The cards provide exercises in vocabulary enrichment, as well as practice in letter and diary writing. The exercises are not only instructive but are also fun. Each card has a Thanksgiving theme.

Students can use any word processing program to perform the writing activities. In the process, they'll find that word processing helps them become better writers. It makes correcting errors much easier, allowing them to do more revising and experimenting.

Before students use the task cards, they will need to know some basic word processing skills. They should know how to insert, delete, and replace text using word processing commands. Students should also know how to call up a file and how to save information on a blank disk or cassette. If you have access to a printer, show children how they can print their own copies of the files they create.

To prepare for this writing unit, photocopy and laminate the task cards on pages 69 and 70. Then review the Teachers' Notes. These notes discuss the learning objectives of each card and the materials and teacher preparation needed. In some cases you will need to type information on a disk or a cassette (referred to as a *data disk* or *data cassette*) for students to use with the task cards. This information is supplied under the "preparation" headings.

Place the task cards, word processing program, data disk or cassette, and some blank disks or cassettes in your computer center and encourage students to work on the cards individually or in pairs.

THANKSGIVING TASK CARDS 1–4

Word Processing Prerequisites: Students must be able to access and save data files and insert, delete, and replace words in text.

Teaching Objectives: Students practice inserting and deleting words, using a dictionary to define words, and writing a letter. They also learn a little history by tracing the Pilgrims' actions—from the day they set sail from England on the *Mayflower* to the day they celebrated their first Thanksgiving.

Materials: Data disk or data cassette and a blank disk or blank cassette.

Preparation: Using a word processing program, type the diary entry exactly as it appears below (capital letters and all) onto your data disk or cassette. Save the material under the name ALFRED.

Alfred's Diary
October 10, 1620
Dear Diary:

Last night we were in the middle of a huge storm. The whole ship rocked all night. It was awful. In the PART BELOW THE DECK, clothes, food, and boxes were sliding every which way. I walked to the FRONT OF THE SHIP and could barely hang onto the railing. The BACK OF THE SHIP was no better. The *Mayflower* seemed suddenly tiny in the huge Atlantic ocean.

Captain Jones was in his LARGE PRIVATE CABIN when suddenly there was a great boom, like the sound of a cannon. He rushed onto the UPPER DECK, and a sailor told him that a main beam had cracked near the STEERING EQUIPMENT. Luckily, the LEVER SAILORS USE TO STEER and the BLADE IN THE WATER were still working.

Some of the passengers thought we should return to England, but Captain Jones said no. He said the *Mayflower* was a strong, sturdy ship. Captain Jones and a few men repaired the cracked beam and we sailed on to the New World.
Signed,
Alfred

Photocopy and laminate Task Cards 1–4.

Activity: Have students read Task Card 1 for background information on the *Mayflower*. Then have them complete Task Cards 2, 3, and 4. Task Card 2 asks students to write definitions for the names of standard ship parts. Task Card 3 has kids substitute long phrases from a diary entry with single, succinct words. In Task Card 4, students use background material from the first three cards to write and edit a letter about the *Mayflower* voyage.

Beth Deardorff

COPY AND LAMINATE

HOLIDAY TASK CARD

Mighty Mayflower

1 *Read this card before you use task cards 2, 3, and 4.*

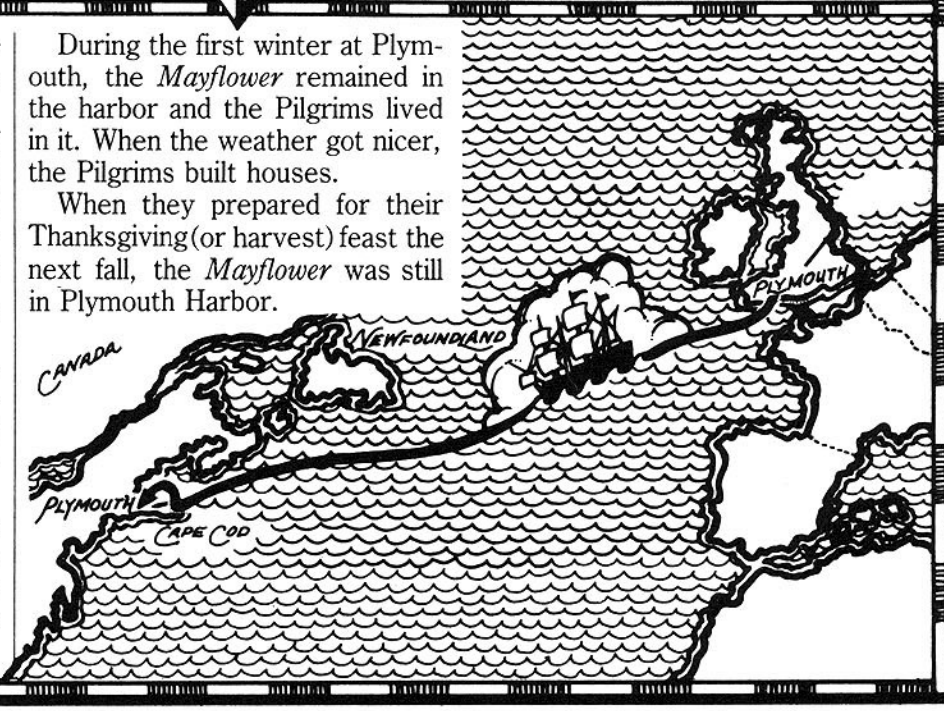
The *Mayflower* was the name of the ship that brought the Pilgrims to America. The trip took 66 days. There were 102 passengers. The passengers brought food, clothing, furniture, tools, seeds, and guns with them.

After more than two months, the Pilgrims landed at Provincetown Harbor at the end of Cape Cod, Massachusetts, but they decided not to build there.

They traveled north in the *Mayflower* until they came to another place. They called it Plymouth, after the English seaport from which they sailed.

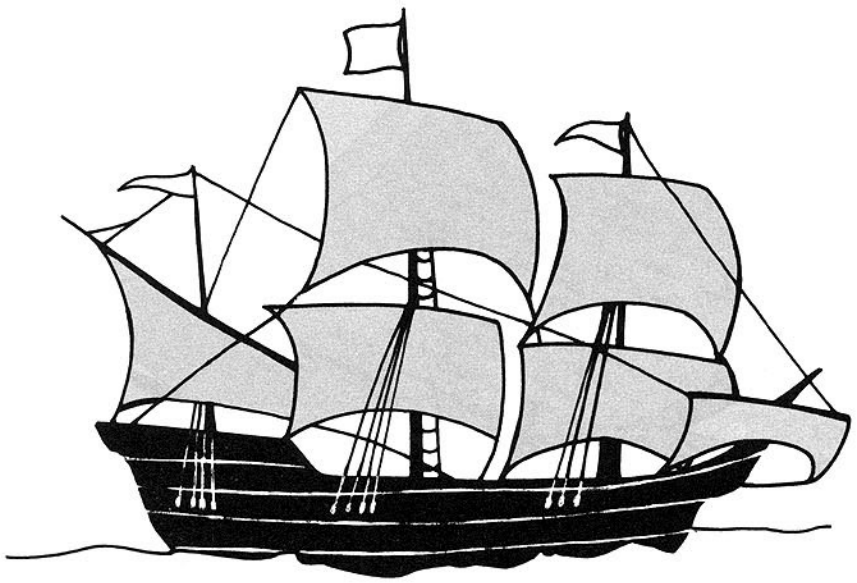
During the first winter at Plymouth, the *Mayflower* remained in the harbor and the Pilgrims lived in it. When the weather got nicer, the Pilgrims built houses.

When they prepared for their Thanksgiving (or harvest) feast the next fall, the *Mayflower* was still in Plymouth Harbor.



HOLIDAY TASK CARD

Ship Ahoy!



2 Here are some of the parts of the *Mayflower* that you may not know. Look up each of the words in the dictionary. Using a word processing program, type each word on the computer screen and write a short definition in your own words. Save the words and definitions on a blank disk or cassette.

bow
stern
hold
forecastle
steerage
tiller
rudder
stateroom

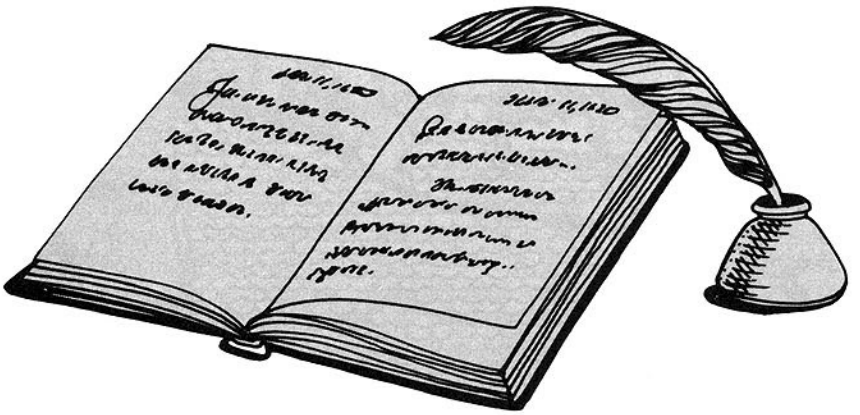
HOLIDAY TASK CARD

Alfred's Diary

3 *Complete Task Card 2 before you try this activity.*

Ask your teacher for the data disk or cassette that goes with this card. Load it and call up the file named ALFRED.

Pretend that a boy named Alfred was a young passenger on the *Mayflower* and that he kept a diary. On your screen is a possible page from that diary.



You'll see that Alfred didn't know the correct names for many parts of the ship. Help him out by replacing the phrases written in capital letters with the correct names for ship parts. (For help, see your word list from Task Card 2.) Here is how to replace the words:

1. Remove the data disk or cassette and load a blank disk or cassette.
2. Use INSERT, DELETE, and REPLACE, commands to change the diary page.
3. After you replace the words, read the page again. Does it sound better now?
4. Save the letter on a blank disk or cassette.

HOLIDAY TASK CARD

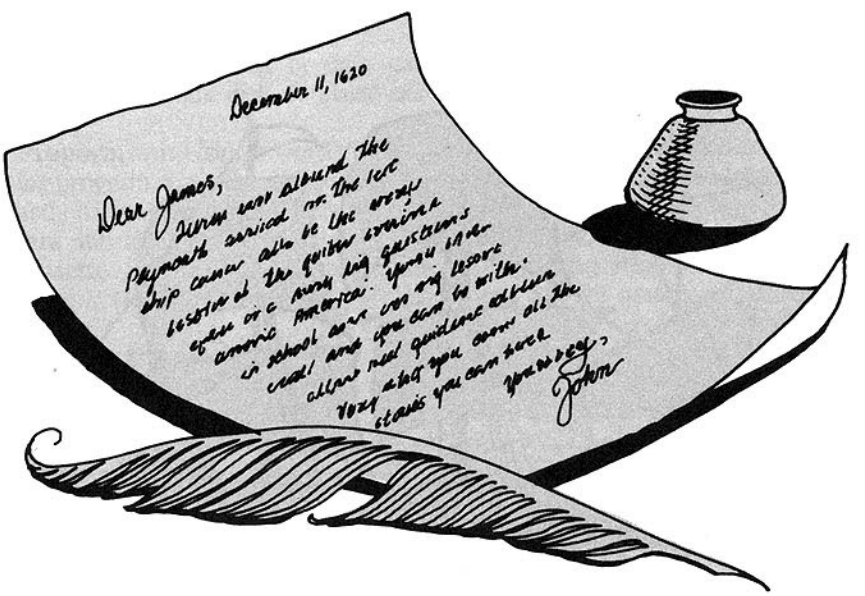
Letter Home

4 On December 11, 1620, the Pilgrims landed at the site of their new home in Plymouth. Pretend you were a passenger on the *Mayflower*. You have an older brother named James who stayed behind in England to work and go to school.

Write a letter to James, telling him about the trip across the Atlantic. Describe the wilderness land called Plymouth.

Don't forget to date the letter at the beginning and to put a closing like "Sincerely yours," or "Yours truly," followed by your name at the end.

Save the letter on a blank disk or cassette.

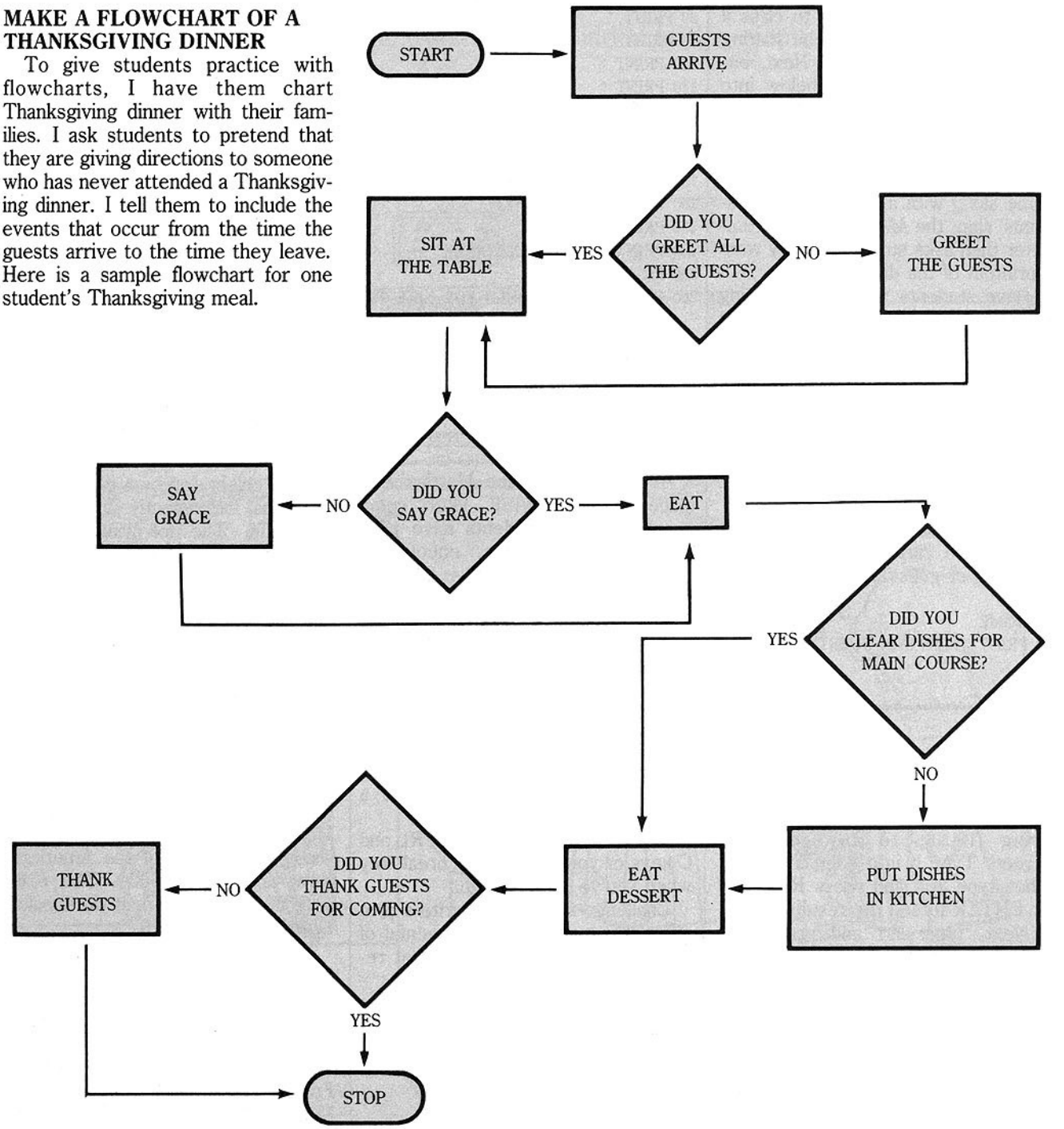


THANKSGIVING

QUICK TIPS

MAKE A FLOWCHART OF A THANKSGIVING DINNER

To give students practice with flowcharts, I have them chart Thanksgiving dinner with their families. I ask students to pretend that they are giving directions to someone who has never attended a Thanksgiving dinner. I tell them to include the events that occur from the time the guests arrive to the time they leave. Here is a sample flowchart for one student's Thanksgiving meal.



Sample flowchart of a Thanksgiving dinner.

MAKE THANKSGIVING PLACE CARDS

Here's how your students can use an Apple computer to make festive Thanksgiving Day place cards.

First, tell kids to bring to class a list of the people they will be sharing Thanksgiving dinner with. Next, enter the BASIC program below into the computer and have students run it. The computer will ask them to input the name of a Thanksgiving guest. The computer displays that name along with a picture of the Pilgrims' ship, the *Mayflower*. The computer then asks students if they want a printout of the display.

Have students take turns running the program and making a printout for each name on their guest lists.

Next, have children cut out four-inch squares from colorful construction paper, one square for each printout. Tell students to trim the printouts to fit on the four-inch squares, then tape one printout to each square and color it.

Voila! Students will have a personalized place card to set in front of each dinner guest's plate.

```
10 HOME
20 PRINT "TYPE IN A GUEST'S NAME."
30 INPUT A$
40 PRINT "HAPPY THANKSGIVING ";A$
50 PRINT:PRINT
60 PRINT "            XXXX"
70 PRINT "          X XX X"
80 PRINT "         X  XX  X"
90 PRINT "        X   XX    X"
100 PRINT "      X     XX     X"
110 PRINT "     X      XX      X"
120 PRINT "    XXXXXXXXXXXXXXXX"
130 PRINT "           XX"
140 PRINT "    XXXX   XX   XXXX"
150 PRINT "    X XXXXXXXX XX"
160 PRINT "     X MAYFLOWER X"
170 PRINT "      X           X"
180 PRINT "       XXXXXXXXX"
190 PR #0
200 PRINT:PRINT "WOULD YOU LIKE TO
    HAVE THIS PRINTED (Y/N)?"
210 INPUT Z$
220 IF Z$="Y" THEN 250
230 IF Z$="N" THEN HOME:PRINT TAB
    (17)"BYE":END
240 PRINT "TYPE 'Y' OR 'N'.": GOTO 200
250 PR#1:PRINT:PRINT:GOTO 40
```

As you can see, the *Mayflower* is made by using BASIC PRINT commands. If your students have programming experience, encourage them to program their own Thanksgiving designs using PRINT commands.

Mary Ellen Switzer

PROGRAM A SCREENFUL OF THANKS

Here's a program listing that will bring THANKS to any computer screen. Type it into your computer. Then type RUN and press RETURN or ENTER to see the results.

Next, type LIST and press RETURN or ENTER. Now add a GOTO statement that will make the program repeat over and over. To do this, type :GOTO 10 at the end of line 60. RUN the program again to see a screenful of THANKS.

Remember to press the CTRL and C keys or your computer's break key when you've seen enough.

Challenge students to write a program that gives them a screenful of TURKEY or some other dish that reminds them of Thanksgiving.

```
0 REM THANKS
10 PRINT "  XXXXXXX   X   X     X      X     X     X     X    XXXXX"
20 PRINT "     X      X   X    X X     X X   X     X   X     X"
30 PRINT "     X      XXXXX   X   X    X  X  X     X X X     X"
40 PRINT "     X      X   X   X X X    X   X X     X   X     X"
50 PRINT "     X      X   X   X   X    X    XX     X   X     X"
60 PRINT "     X      X   X   X   X    X     X     X     X    XXXXXX"
```

UNSCRAMBLE A TURKEY DAY RIDDLE

Q: What do you get when you cross a computer with a turkey?

The program below asks kids this riddle and shows the answer. To find the answer, have kids type in the program as it appears. Then tell them to type RUN and press RETURN or ENTER.

```
10 REM RIDDLE
20 PRINT "WHAT DO YOU":GOTO 40
30 PRINT "THANKSGIVING DINNER"
   :GOTO 50
40 PRINT "GET WHEN YOU CROSS":GOTO
   60
50 PRINT "ON THE MENU."END
60 PRINT "A COMPUTER WITH A TUR-
   KEY?":GOTO 30
```

SOFTWARE SUGGESTIONS

The first New England Thanksgiving was celebrated by a group of Pilgrims that had recently settled in the new land. The following software programs teach students about the difficult conditions explorers such as the Pilgrims experienced.

Geography Search

As crew members on ancient sailing ships, students simulate the search for a New World. They do this by navigating a ship into unfamiliar territory and planning a strategy for survival.

Apple II series; TRS-80 III, 4; Franklin 1000, 1200; grades 5—9; McGraw-Hill Book Co., Webster Division, 1221 Ave. of the Americas, New York, NY 10020. The $180 price includes 20 student workbooks.

Community Search

As members of an ancient civilization that has been driven from its homeland, students work as a group in this simulation to find a suitable place to live.

Apple II series; TRS-80 III, 4; Franklin 1000, 1200; grades 5—9; McGraw-Hill Book Co., Webster Division, 1221 Ave. of the Americas, New York, NY 10020. The $180 price includes 20 student workbooks.

FIND THE COMPUTERS
WORKSHEET

THANKSGIVING **FOURTH THURSDAY IN NOVEMBER**

NAME: _____

DIRECTIONS: There are nine computers hidden in this picture. Put an X on each. Color the picture.

 Answer: Your teacher has the answer. It is on page 156 of the book, **Holiday Computer Activities.**

THANKSGIVING MENU READER WORKSHEET

THANKSGIVING **FOURTH THURSDAY IN NOVEMBER**

NAME: _____

Many computer programs have menus. The menus list things that the user can do with the program. For example, a menu might ask you to choose between writing a story and reading a story that you already wrote.

Our Thanksgiving Menu Reader game works a lot like a computer program menu. Look at the Main Menu (on top). You can choose either A (turkey) or B (ham). Let's say a certain Mr. Gobble chooses A, turkey.

Because he chose turkey, Mr. Gobble then goes to the Turkey Menu (middle row). On this menu, he has a choice between dark meat and white meat. He picks B, white meat. That means Mr. Gobble goes to the White Meat Menu (bottom row). From this menu, he can choose A (no gravy) or B (gravy). He picks A.

Altogether, Mr. Gobble has chosen turkey, white meat, no gravy. Sound good? That's only one out of eight main courses he could have chosen from the Thanksgiving Menu Reader.

Each person below ate a different meal for Thanksgiving. We've told you what letters they chose from the Menu Reader. Match the letters with the choices on the menu to find out what each ate. The first one is done for you.

1. Mr. Gobble chose A, B, A.
He ate: Turkey, white meat, no gravy

2. Miss Piglet chose B, B, B.
She ate: _____

3. Mrs. Bird chose A, A, B.
She ate: _____

4. Mr. Pork chose B, A, A.
He ate: _____

5. Ms. Wing chose A, A, A.
She ate: _____

MAIN MENU

A. Turkey

B. Ham

Go to the next menu.

TURKEY MENU

A. Dark meat

B. White meat

Go to the next menu.

HAM MENU

A. Boiled

B. Roasted

Go to the next menu.

DARK MEAT MENU

A. Gravy
B. No gravy

WHITE MEAT MENU

A. No gravy
B. Gravy

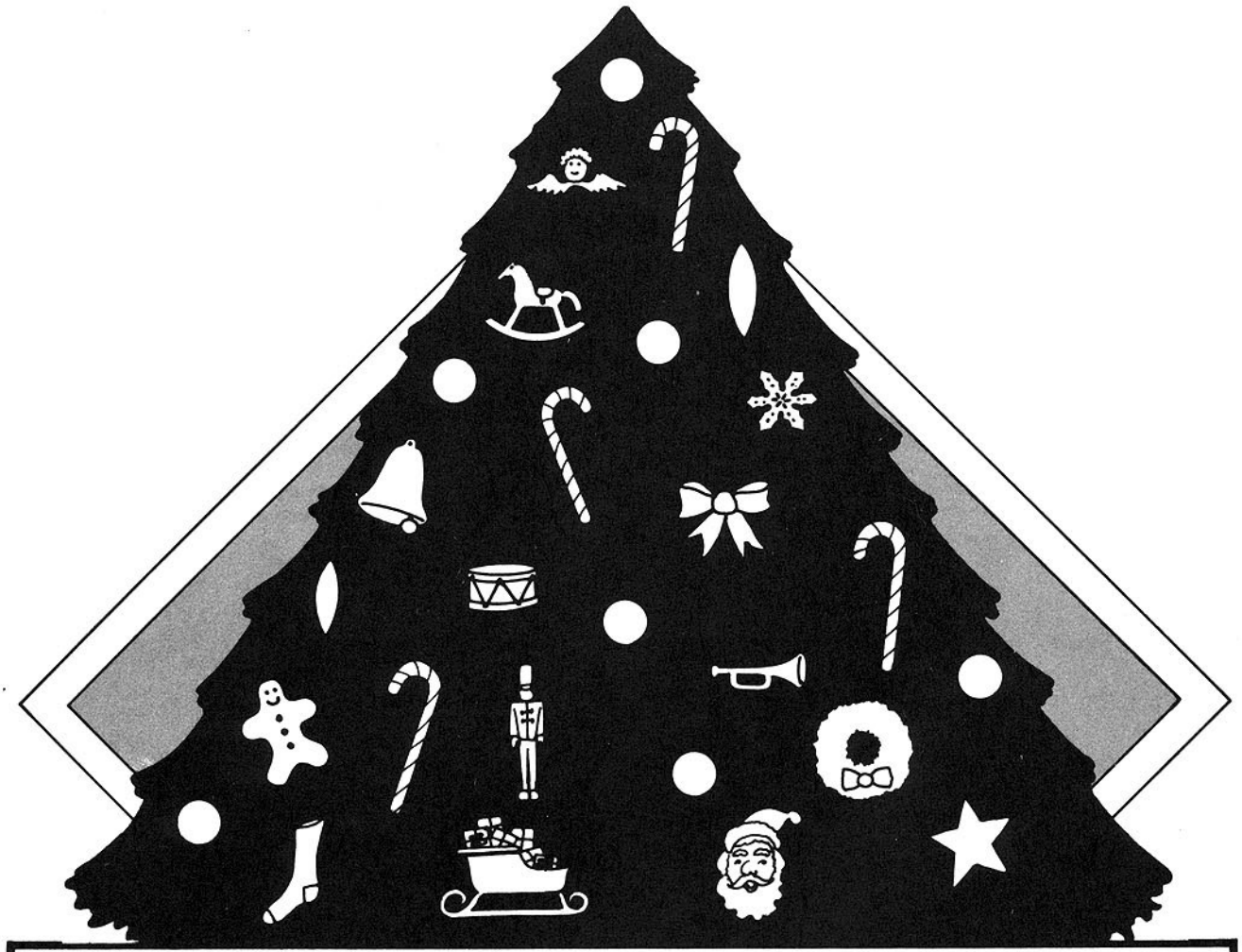
BOILED HAM MENU

A. Mustard
B. No mustard

ROASTED HAM MENU

A. Mustard
B. No mustard

Answer: Your teacher has the answer. It is on page 156 of the book. **Holiday Computer Activities.**



DECEMBER

Hanukkah
76, 87

Christmas
76, 81, 84, 86, 87

First Day of Winter
89, 90

WORD PROCESSING ACTIVITIES FOR HANUKKAH AND CHRISTMAS

Here's a lively language arts unit for the Hanukkah and Christmas holidays. All you need is a word processing program and the six task cards in this feature. The cards provide exercises in important writing skills, such as capitalization and proper grammar, as well as practice in recipe and poetry writing. The exercises are not only instructive but are also fun; in fact, they're downright jolly! Each card has a Hanukkah and/or Christmas theme.

Students can use any word processing program to perform the writing activities. In the process, they'll find that word processing helps them become better writers. It makes correcting errors much easier, allowing them to do more revising and experimenting.

Before students use the task cards, they will need to know some basic word processing skills. They should know how to insert, delete, replace, and move text using word processing commands. Students should also know how to call up a file and how to save information on a blank disk or cassette. If you have access to a printer, show children how to print copies of the files they create.

To prepare for this writing unit, photocopy and laminate the task cards on pages 78, 79, and 80. Then review the Teachers' Notes. These notes discuss the learning objectives of each card and the materials and teacher preparation needed. In some cases you will need to type information on a disk or cassette (referred to as a *data disk* or *data cassette*) for students to use with the task cards. This information is supplied under the "preparation" headings. Task cards are grouped according to Hanukkah and Christmas holiday themes.

Place the task cards, word processing program, data disk or cassette, and some blank disks or cassettes in your computer center and encourage students to work on the cards individually or in pairs.

TEACHERS' NOTES

HANUKKAH
TASK CARDS 1–2

Word Processing Prerequisites: Students must be able to access and save data files, insert, delete, and replace letters, and move words within a piece of text.

Teaching Objectives: Students practice moving words in text, spelling correctly, and putting instructions in correct order. They also learn the history of Hanukkah and how to make potato latkes, a traditional Hanukkah food.

Materials: Data disk or data cassette and a blank disk or cassette.

Preparation: Using a word processing program, type the potato latke recipe exactly as it appears below (misspellings and all) onto the data disk or cassette. Save the recipe under the file name LATKES.

Potato Latkes

Latkes are a favorite Hanukkah food. Some say that the oil used to fry latkes symbolizes (or stands for) the oil that burned for eight days and nights in the Temple of Jerusalem.

Ingredients:
3 larje potatoes
1 small oniun
3 eggz
1 teespoon salt
2 tablespoons flower
vegatable oil

Directions: Add the last ingredients, salt and flour. First wash, pare, and grate the raw potatoes. Serve them with sour cream or apple sauce for a tasty finishing touch. The third thing you do is beat the eggs well and add them to the potatoes and onion. Second, grate and add the onion to

the potatoes. Continue frying until the underside is golden brown. Start to fry the batter in the hot oil. Mix all the ingredients well. Then turn them over and fry the other side. The recipe makes about 18 pancakes. Remove the latkes from the pan and drain them on absorbent paper. Pour the batter in pancake-size portions into a frying pan.

Activity: Have students read about the story of Hanukkah on Task Card 1 first. Then have them try the activity in Task Card 2. The card contains a recipe for making potato latkes, a traditional Hanukkah food. Some of the ingredients in the recipe are misspelled, however, and the steps for making latkes are out of order. Students are to fix these errors in spelling and order.

CHRISTMAS
TASK CARDS 3–4

Word Processing Prerequisites: Students must be able to access and save data files and insert, delete, and replace words in text.

Teaching Objectives: Students practice inserting, deleting, and replacing words, and identifying parts of speech by reworking a famous Christmas poem.

Materials: Data disk or data cassette, a blank disk or cassette, pencil or pen, and paper.

Preparation: Using a word processing program, type the poem, written by Clement Moore, exactly as it appears below onto the data disk or cassette. Save the story under the file name ST.NICK.

A Visit From St. Nicholas

'Twas the night before (1).
When all through the (2)
Not a (3) was stirring, not even a (4);
The stockings were hung by the (5) with care,
In hopes that (6) soon would be there;
The (7) were nestled all snug in their beds,
While visions of (8) danced in their heads;
And, Momma in her (9), and I in my cap,
Had just settled our (10) for a long winter's nap,
When out on the lawn there arose such a (11),
I sprang from my (12) to see what was the matter.
Away to the window I (13) like a flash,
Tore open the (14) and threw up the sash.
The moon, on the breast of the (15) snow,
Gave a lustre of midday to objects (16),
When, what to my wondering eyes should appear
But a miniature (17) with eight tiny (18),
With a little old driver, so lively and (19),
I knew in a moment it must be (20).

Activity: Task Card 3 asks students to write down a word to fit each of the 20 categories (usually parts of speech) listed on the card. In Task Card 4, children create funny stories by substituting the words on their 20-word list for some of the words in Moore's poem.

HANUKKAH OR CHRISTMAS
TASK CARDS 5–6

Word Processing Prerequisites: Students must be able to access and save data files and to insert, delete, and replace words in text.

Teaching Objectives: Students practice inserting, deleting, and replacing words, and correcting spelling, punctuation, and structure by reworking a gift list and a thank-you letter.

Materials: Data disk or data cassette, a blank disk or cassette, pencil or pen, and paper.

Preparation: Using a word processing program, type the letters exactly as they appear below (misspellings, incorrect punctuation, capital letters, and all) onto a data disk or cassette. Save the first letter under the file name GIFT. Save the letter to Aunt Mabel under the file name THANKS.

Gift List

Deer .....;
Iv'e bin a reel good kid this year. Here are sum of the things I wouldn't mind gettin for .....
1. Purple goldfish
2. Free passes to the video arcade
3. Michael Jackson's glove
4. Empire State building
5. Robot that will do my homework

Thanks alot,
Sincerely:
.....

Thank-you Letter

Dear AUNT MABEL,
Sincerely,

Thank you for the PLASTIC RAIN BONNET you gave me for HALLOWEEN. I like it because IT KEEPS MY LARGE EARS DRY WHEN IT RAINS. It looks very STUPID on me.

Thanks again.
RICKY RELATIVE
AUNT MABEL
NEW YORK, NY
12 PARK PLACE 10128

Activity: Task Card 5 asks students to correct the spelling and punctuation in a holiday letter. It also asks them to substitute gifts they would like to receive for the gifts mentioned in the letter, and to personalize the letter by inserting the name of a recipient in the greeting, the holiday involved (Hannukkah or Christmas) in the body of the letter, and their own name in the closing.

In Task Card 6, children substitute their own words for the words that appear in capital letters in a thank-you note. They also make the following corrections in the letter's structure: Aunt Mabel's address must be moved to the beginning of the letter; the city and state should follow the street address and the zip code should follow the state; the closing, "Sincerely," must be moved to the end of the letter; and Ricky Relative's signature should follow the closing.

Beth Deardorff

Photocopy, cut out, and laminate the six Holiday Task Cards on pages 78, 79, and 80.

COPY AND LAMINATE

HOLIDAY TASK CARD

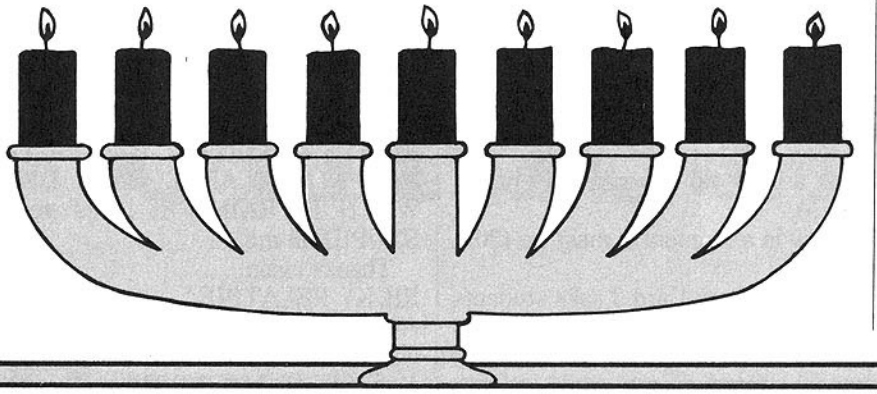
Hanukkah History

1 *Read this card before you try to do Task Card 2.*

Hanukkah is a Jewish holiday that lasts for eight days. During Hanukkah, Jewish people sing, play games, give gifts, and eat tasty food. It is a happy time.

The meaning behind this holiday all started in the Middle East, when the Jewish people freed themselves from rule by the Syrians in 164 B.C. The Jews decided to celebrate their new freedom by holding festivities in the Temple of Jerusalem. They found just enough oil to light the candles on the menorah (a branched candlestick like the one on this card) in the Temple for one night. But by a miracle, the menorah burned eight days and nights.

Today, Jewish people celebrate this miracle every year. They observe it by lighting a menorah that holds nine candles. One candle, called the shammash, is used to light the others. On the first evening of Hanukkah, someone lights one candle with the shammash. On the second night, two candles are lit with the shammash, and so on, until all the candles are lit on the eighth night.



HOLIDAY TASK CARD

Recipe Repair

2 Ask your teacher for the data disk or cassette that goes with this card. Load it and call up the file named LATKES. You will find a recipe for potato latkes, a favorite Hanukkah food.

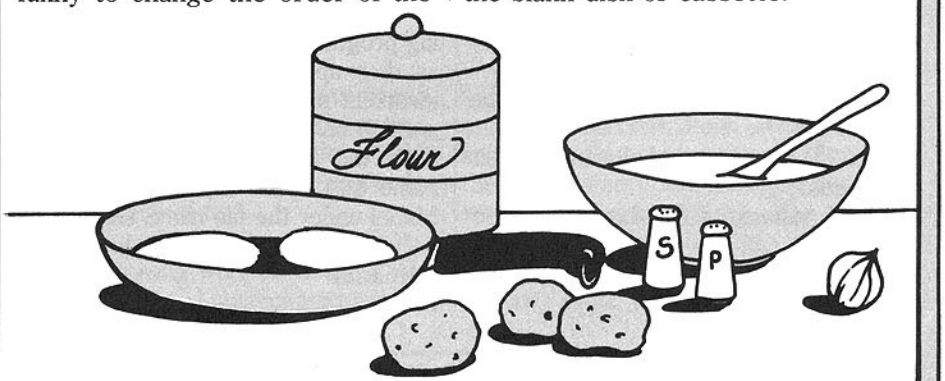
Pretend it is your job to make the potato latkes for a Hanukkah party. Unfortunately, your cousin Howie found the recipe and changed it to play a joke on you. Before you begin cooking, you must repair the recipe. Here is how:

1. Remove the data disk or cassette and load a blank disk or cassette.

2. Look at the recipe on the monitor. In its list of ingredients, six words are misspelled. Find the words and look up the correct spellings in a dictionary. Use REPLACE, INSERT, and DELETE commands to correct the list.

3. Howie thought it would be funny to change the order of the recipe directions, too. Use the MOVE command to put the directions in the correct order. Look for word clues like "first" and "then" to help you order the instructions.

4. Save the correct recipe on the blank disk or cassette.



COPY AND LAMINATE

HOLIDAY TASK CARD

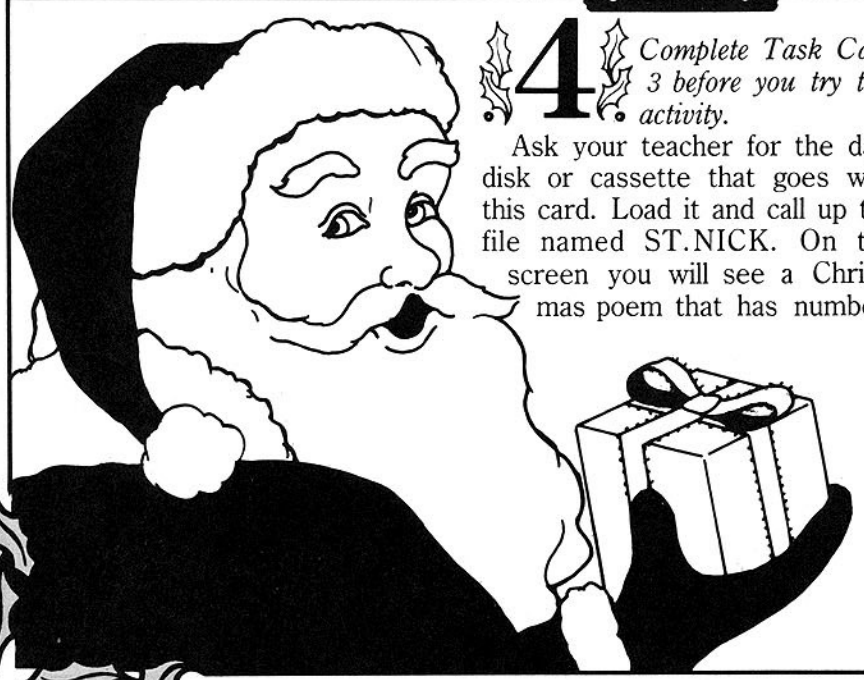
Wacky Words

3 Number a sheet of paper from 1 to 20. Next to each number, write a word for each of the 20 categories listed below.

1. holiday
2. noun
3. animal
4. another animal
5. part of a house
6. famous person
7. group of people
8. kind of candy
9. item of clothing
10. part of body
11. a noise
12. noun
13. verb
14. noun
15. adjective
16. adverb
17. vehicle
18. animal (plural)
19. adjective
20. famous person (same as 6)

HOLIDAY TASK CARD

Silly Poem



4 *Complete Task Card 3 before you try this activity.*

Ask your teacher for the data disk or cassette that goes with this card. Load it and call up the file named ST.NICK. On the screen you will see a Christmas poem that has numbers instead of words in several places.

Here is what to do next:

1. Remove the data disk or cassette and load a blank disk or cassette.

2. Replace each number in the poem with the word you wrote next to the same number on your sheet of paper in Task Card 3. Use INSERT, DELETE, and REPLACE commands to substitute the words on your paper for the corresponding numbers.

3. When you finish, read your poem. Compare your poem with your classmates'. Whose is the silliest?

4. Save your poem on a blank disk or cassette.

HOLIDAY TASK CARD 5

Gift List

5 Ask your teacher for the data disk or cassette that goes with this card. Load it and call up the file named GIFTS. On the screen you will see a letter that contains a list of gifts.

Here is what to do next:

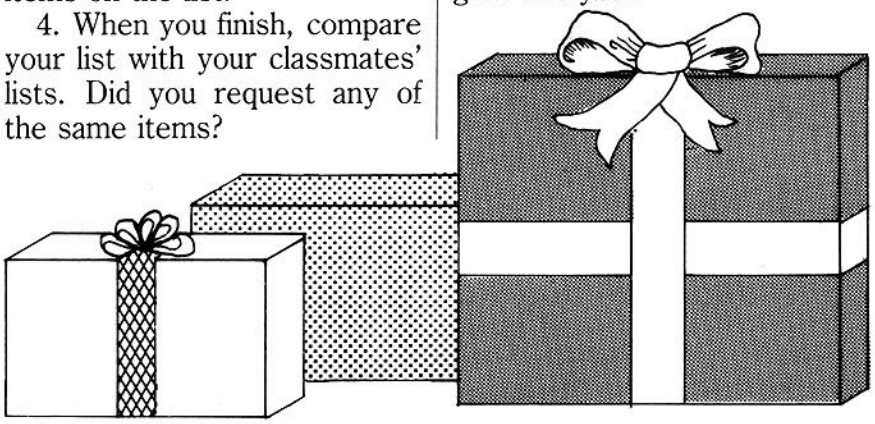
1. Remove the data disk or cassette and load a blank disk or cassette.

2. Use INSERT, DELETE, and REPLACE commands to correct the spelling and punctuation mistakes in the letter. There are six spelling mistakes and four punctuation mistakes.

3. Replace each item on the list with an item you would like to receive as a gift. Use INSERT, DELETE, and REPLACE commands to substitute the items you would like for the items on the list.

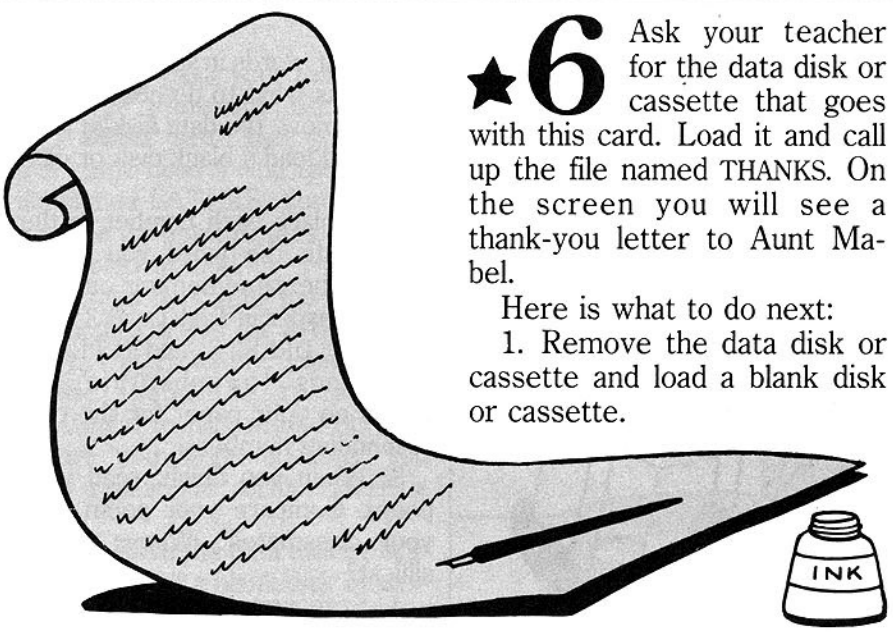
4. When you finish, compare your list with your classmates' lists. Did you request any of the same items?

5. Save your list on a blank disk or cassette. If your computer is attached to a printer, print your list and give copies to people who might buy you gifts this year.



HOLIDAY TASK CARD 6

Thank-you Letter



★**6** Ask your teacher for the data disk or cassette that goes with this card. Load it and call up the file named THANKS. On the screen you will see a thank-you letter to Aunt Mabel.

Here is what to do next:

1. Remove the data disk or cassette and load a blank disk or cassette.

2. Some of the letter's parts are out of order. Use the MOVE command to fix the mistakes. (Hint: The letter should start with Aunt Mabel's address.)

3. Replace the words in capital letters with your own words so you can use the letter to thank someone who gave you a gift for Hanukkah or Christmas. Use INSERT, DELETE, and REPLACE commands to make the changes.

4. Save your letter on a blank disk or cassette. If your computer is attached to a printer, print your letter and send it to a relative or friend.

A COMPUTER CAROL

Bah! Humbug. That's what Ebenezer Scrooge says about Christmas. Titus Grump says the same thing about computers in this takeoff on *A Christmas Carol,* by Charles Dickens—until Mr. Grump learns about the history of computers, that is!

This play is written for intermediate grade students. Assign each student a part and perform the play for another class. You can adjust the size of the cast by increasing or decreasing the number of doll characters. *(See the character list on this page.)*

If you wish to keep costumes for the play simple, dress Noel (a Christmas doll) in red, Micky Microwave (a robot) in silver, and Sandy Spaceshot (a video game character) in bright colors. Dress the others in a similar, simple fashion according to their nationality and time period. Performance time is 30 minutes.

To add to the production, ask your best artists to draw on posterboards the historical computers mentioned in the play. Set up an easel and appoint one student to post the picture of each machine as it is discussed.

Characters:

Titus Grump
Mrs. Moe Dern
Mr. Moe Dern
Noel
Mickey Microwave
Sandy Spaceshot
Blaise Pascal
Charles Babbage
Lady Ada Lovelace
Herman Hollerith
Howard Aiken
Dr. Presper Eckert
Ooga
Wama
Chinese person
Sally Ride
Dr. John Mauchly
Mr. Green
Mrs. Green
Gerta Green

Time: December 24, 4 p.m.

Setting:

The entire play takes place in a toy store. A table is stage right and a couch made of three chairs is center stage. The exit door is stage left. The entrance door is stage right.

SCENE 1
A Christmas Present for Lerna

Dolls are posed in horizontal rows upstage. Downstage, Mr. and Mrs. Moe Dern are speaking with Mrs. Dern's father, Titus Grump, owner of the toy store.

Grump: And what about a Christmas present for my granddaughter, little Lerna? How about a nice doll? Here's a new one: Sally Ride. She comes with a space shuttle and a space suit. *(He pulls Sally's string.)*

Sally Ride: Hi. My name is Sally Ride. I'm the first American woman astronaut.

Mrs. Dern: Actually, Dad, Moe and I want to buy Lerna a computer for Christmas this year.

Grump: Rubbish, garbage, and fiddlesticks. No granddaughter of mine will get a computer for Christmas, not if I can help it.

Moe: Why not, Mr. Grump?

Grump: Suddenly everyone is talking about computers. I just don't trust those new machines.

Moe: But Mr. Grump, computers are not new at all. Computers are tools for calculating. And people have been counting things for a very long time.

Grump: *(Laughs hysterically)* I've been around longer than you, sonny boy, *(getting louder)* and I can assure you that this computer rage is just another fad that's sure to fade away like pet rocks and disco. This year it's computers. Next year everyone will ask, "Remember that silly computer rage?"

Mrs. Dern: Don't get so excited, Dad. It's not good for your heart. *(To her husband)* I think we should go now, dear. *(To her father)* We'll see you at dinner tomorrow. Good-bye. *(They exit.)*

Grump: *(Out of breath, he sits on the couch.)* She's right. I am getting excited. I'd better rest. *(He falls asleep, snoring loudly.)*

SCENE II
The Dolls Teach Grump About Computers

While Grump sleeps, the dolls begin to look around. They slowly start to stir. Sally Ride and Noel (a Christmas doll) walk downstage center.

Sally Ride: I think it's time to teach ol' Grumpy a lesson about computers. And because it's Christmas and you're so wise, I think you should do it, Noel.

Noel: Okay, Sally. But I'll need some help.

Micky Microwave: *(Micky is a robot with very choppy speech.)* I'd love to help, No-el. I know all about com-puters.

Sandy Spaceshot: *(Sandy is a character from a video game and has a squeeky voice)* I can help, too.

Sally: Maybe all the dolls can help.

Everyone: *(Agreeing in a manner appropriate to each character)* Yes... Sure, we'll all help...Lovely *(A British doll)...(And so on)*

Noel: *(Shaking Grump)* It's time to wake up, Mr. Grump.

Grump: Who said that? *(He looks around at all the dolls. The dolls giggle.)*

Noel: I did, Grump.

Grump: Don't be ridiculous. Dolls can't talk. *(More laughter from the dolls)*

Noel: At Christmastime anything can happen. Something magical is going to happen right now. The dolls are going to teach you a lesson about computers, Grump. Just follow my assistants. *(Grump follows Micky and Sandy as they walk toward the Stone Age dolls.)*

Sandy: You see, Grump, even people in the Stone Age used tools to help them count things.

Ooga: Yah, I keep track of all the buffalo I see by carving notches on the side of our cave.

Wama: And I don't like it one bit. The cave looked much nicer when you counted things with your fingers and toes.

Ooga: *(With a big smile)* Yabba Dabba Do!

Noel: *(Leading Grump to a Chinese doll holding an abacus)* The Chinese invented the first machine for counting. It is called the abacus.

Chinese doll: To make an abacus, you string flat wooden beads onto wires. Then you attach the wires to a frame. We count numbers by moving the beads up and down, like this. *(Demonstrates counting with the abacus)*

Micky: That's how the Chi-nese count-ed. And it worked very well. Then, a-bout the time the pil-grims were having their first Thanks-giv-ing din-ner in A-mer-i-ca, a young man in France in-ven-ted a 'mach-ine for count-ing. *(Pascal enters stage right.)* Here he is now. *(To Pascal)* Hello, Blaise Pascal.

Pascal: Bonjour.

Noel: How old are you, young man?

Pascal: I'm 19 years old.

Sandy: Tell us about your machine.

Pascal: *(Displaying a picture of his calculating machine)* Instead of the beads on the abacus, I use a wheel that turns one notch for each number. When the wheel turns past nine, it hooks a second wheel and turns it one notch. *(He exits stage right.)*

Noel: You see, Grump, as time went on, man kept searching for a better tool for calculating. And all of his inventions led to the computer.

Sally: Wait a minute. What about women? Didn't women do anything to help create computers?

Sandy: Of course, they did. In fact, a woman helped design the first real computer in 1835. It was never built, but the plans for it were used to build other computers.

(Babbage and Lady Lovelace enter stage right.)

Sandy: *(Noticing Babbage)* Oh, excuse me, Mr. Babbage. I didn't know you were here.

Babbage: Not at all. I'd like you to meet my remarkable friend, Lady Ada Lovelace. Lady Lovelace helped me raise money and wrote about my work.

Lady Lovelace: Charles, I must interrupt. You've forgotten to tell them the most important thing I did. *(To others)* I convinced Charles to use the binary number system. That's a special number system that computers understand. *(They exit stage right.)*

Grump: I thought computers were made in America. But all of these inventors are from other countries.

Noel: Actually, Americans were the first to use a computer for a really big job. When it was time to take the census in 1890, the United States Census Office was still counting the people from the 1880 census. So the office held a contest to invent a faster way.

Hollerith: *(Enters stage right)* And I won! My name is Herman Hollerith and I'm from New York. I invented a machine to count 63 million Americans from information punched into cards. *(He exits stage right.)*

Grump: Wow! That's amazing. Imagine counting information about 63 million people. *(Everyone looks at Grump, and he puts his hand over his mouth, ashamed that he reacted. To cover up, he yawns as if he is bored. Eckert and Mauchly enter stage right.)*

Dr. Eckert: That's nothing. My computer can do five thousand calculations in a second.

Grump: Who are you?

Dr. Eckert: I'm Dr. Presper Eckert and this is Dr. John Mauchly. We created the first electronic digital computer at the University of Pennsylvania. We called the computer ENIAC.

Dr. Mauchly: It used vacuum tubes instead of mechanical switches. ENIAC weighed over 30 tons.

Grump: You two work well together. No wonder you made the computers we use today.

Sandy: But they didn't. *(Eckert and Mauchly exit.)* The computer changed even more in 1961 when the transistor was invented. The transistor took up less space than vacuum tubes.

Noel: So the new computers were smaller and cheaper.

Grump: Like the one my granddaughter wants for Christmas.

Noel: No. She wants a microcomputer. Micros use tiny things called integrated circuit chips. They are even smaller, faster, and cheaper than computers made with transistors.

Grump: So the computer I buy for Lerna won't be as big as a gymnasium or cost as much as a house?

Micky: Not at all. In fact, some micro-com-pu-ters are as small as school books, and you can learn from them, too.

Grump: Can my granddaughter learn to count with a computer?

Micky: Oh, yes. And she can learn read-ing, writ-ing, his-tor-y, ge-ogra-phy, sci-ence, and lots more.

Grump: What a practical toy!

Noel: Well, it's not really a toy. But it is fun to use. Banks use computers to manage your money. Hospitals use computers to care for sick people.

Sally: And astronauts use computers to explore space.

Sandy: You could use a computer in your store to help you run your toy business. *(There is a knock on the door. Suddenly the dolls freeze.)*

SCENE 3
Grump Teaches the Greens About Computers

Grump opens the door. A man, a woman, and a child enter stage left.

Mr. Green: Hello. We're looking for a doll for my daughter, Gerta.

Mrs. Green: Do you have the one that cries, takes a bath, and eats real food at the same time?

Grump: Oh, that's a silly doll. I have a better idea for a Christmas present. Why don't you buy Gerta a computer?

Mr. Green: A computer? Why?

Grump: Computers are wonderful tools. Did you know that people have been using tools to calculate since the Stone Age?

Mrs. Green: I didn't know that.

Grump: But computers have changed a lot over the years. Now we have microcomputers. They are much smaller and less expensive than the first computers. But they are more powerful.

Gerta: Oh, I would love to have a computer for Christmas. Would you buy one for me, Mommy and Daddy, please?

Mr. Green: It sounds like a wonderful idea. *(To Grump)* Thank you for helping us, sir.

Mrs. Green: Goodbye and Merry Christmas! *(They exit stage left.)*

Grump: *(Waving to them from the door)* Merry Christmas to you! *(The dolls giggle. Curtain.)*

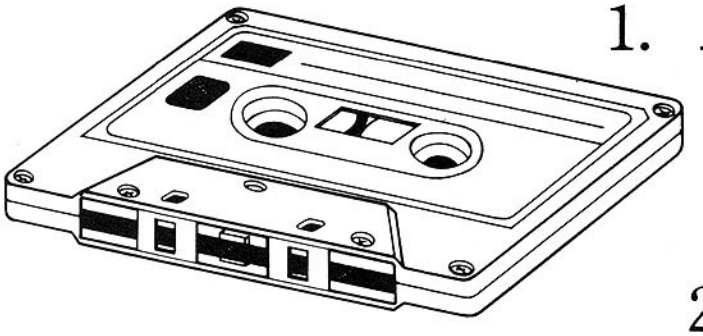
Lesli Rotenberg

SOFTWARE
WORKSHEET 1

HANUKKAH AND CHRISTMAS **HANUKKAH DATES VARY; DECEMBER 25**

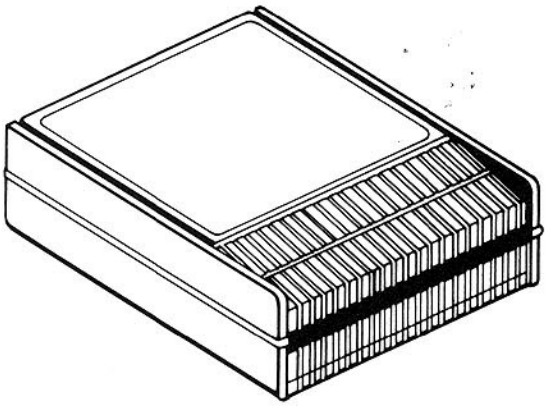
NAME: _____

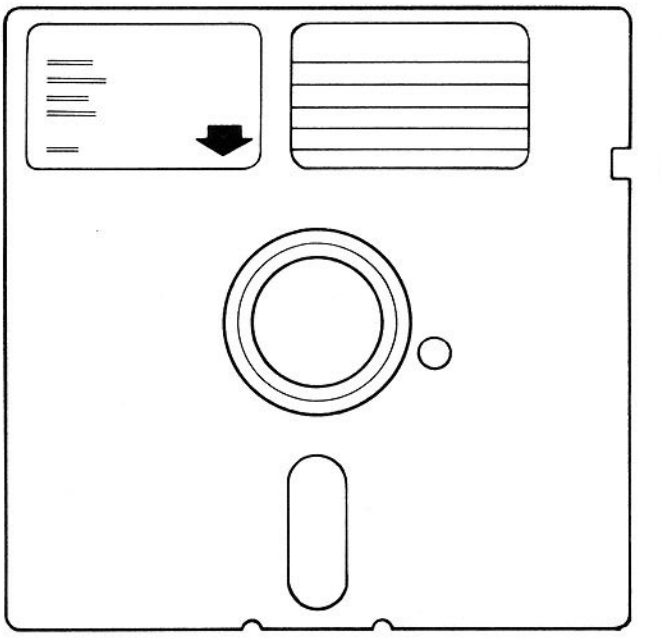
DIRECTIONS: Software can be stored on different devices. Label the software devices below. Use these names: card, cartridge, tape, disk. Color the picture.



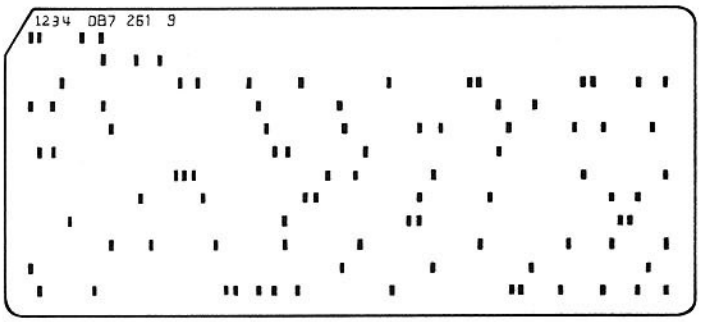
1. _____

2. _____





3. _____



4. _____

Answer: Your teacher has the answer. It is on page 156 of the book. **Holiday Computer Activities.**

SOFTWARE
WORKSHEET 2

CHRISTMAS DECEMBER 25

NAME: _____

DIRECTIONS: In six places in this picture, Santa and his elves are not using disk and tapes correctly. Put an **X** on each spot. Color the picture.

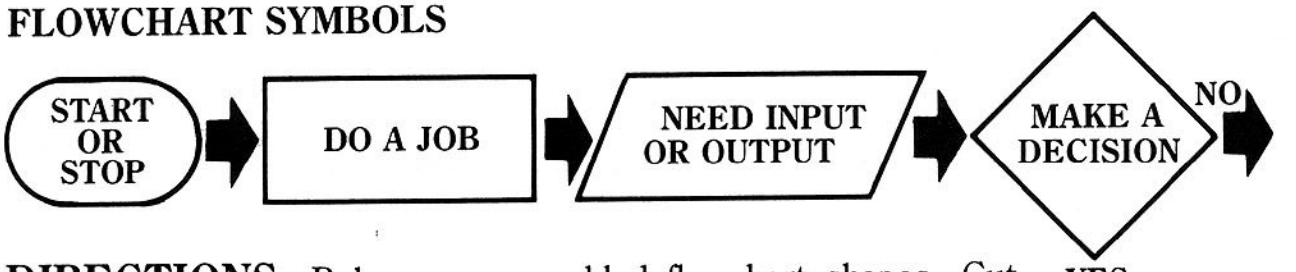
Answer: Your teacher has the answer. It is on page 156 of the book, **Holiday Computer Activities.**

CHRISTMAS FLOWCHART WORKSHEET

CHRISTMAS DECEMBER 25

NAME: _____

FLOWCHART SYMBOLS



DIRECTIONS: Below are scrambled flowchart shapes. Cut out the shapes and glue them on a sheet of paper so that they form a flowchart. Draw in the flowchart arrows.

Follow the directions inside the flowchart and you will make a Christmas tree ornament.

GLUE THE BACK OF THE STAR TO A CLOTHESPIN

END

NO DOES STAR HAVE ENOUGH GLITTER?

YES

CLIP STAR TO A CHRISTMAS TREE BRANCH

CUT OUT STAR

DRAW OUTLINE OF A STAR ON THE OAKTAG

DO YOU WANT TO MAKE ANOTHER ORNAMNENT?

GET SUPPLIES: GLUE, GLITTER, SCISSORS, PENCIL, CLOTHESPIN, OAKTAG PAPER

START

GLUE GLITTER SPRINKLES TO FRONT OF STAR

Answer: Your teacher has the answer. It is on page 156 of the book, **Holiday Computer Activities.**

CHRISTMAS AND HANUKKAH

QUICK TIPS

WRITE LETTERS FROM SANTA

Each December, I cut out the words "Printouts for Santa" from felt, glue them onto a Christmas stocking, and hang the stocking in my computer corner. I tell kids the stocking is their direct line to Santa. They are to put any printouts they are particularly proud of in the stocking and I will see that Santa gets them.

Each week, I take the stocking home and review the printouts. I then compose a letter from Santa on my computer. Each letter summarizes the good computer work kids did in the printouts.

I hang each letter on a bulletin board in the computer corner. The kids love seeing their names in a letter from Santa. There are other benefits, too. The letters motivate kids to do more computer work, and reading what others did gives students new ideas to try.

Maxine Brown

UNSCRAMBLE A CHRISTMAS JOKE

Question: Why couldn't Santa Claus get his computer to work?

The program below asks you this joke and shows the answer. To find the answer, tell kids to type in the program below, type RUN, and press RETURN or ENTER.

```
10 REM JOKE
20 PRINT "WHY COULDN'T SANTA":GOTO
   40
30 PRINT "IT HAD":GOTO 50
40 PRINT "CLAUS GET HIS":GOTO 60
50 PRINT "FROSTBYTE."END
60 PRINT "COMPUTER TO WORK?":GOTO
   30.
```

WRITE GIFT LISTS IN BASIC

This is the time all kids write lists of gifts they would like to receive for Hanukkah or Christmas. Have kids use the computer program below to write their lists.

Students should type in line 10 as is, but when they come to lines 20–40, they should replace the gifts that are in quotes with ones they would like. If they would like to list more than three gifts, they can continue writing line statements like lines 20–40. (Number lines by tens.)

```
10 PRINT "GIFT LIST"
20 PRINT "BIKE"
30 PRINT "DOG"
40 PRINT "COMPUTER"
```

Once they've typed their program, tell kids to type in RUN, press ENTER or RETURN, and they'll have a computerized list of the presents they'd like!

Extension: You might consider having kids write an entire book of lists for December holidays. Lists could include Hanukkah and Christmas gifts kids plan to buy for friends, favorite seasonal songs, and so on.

WRAP GIFTS IN CUSTOMIZED PRINTOUT PAPER

Computer printout paper can make great wrapping paper—especially when it has seasonal graphics on it!

Using the PRINT statements below, kids can create a Christmas tree on the computer screen.

```
10 PRINT "          *"
20 PRINT "         * *"
30 PRINT "        *   *"
40 PRINT "       * * * *"
50 PRINT "          X"
```

After the program is typed into the computer, have kids type in RUN and press ENTER or RETURN. They'll have a delightful Christmas tree!

Have students print out their tree and wrap their present so that the tree appears on the top center of the gift.

ILLUSTRATE YOUR HOLIDAY STORY HOUR

Our school purchased a Koala Pad, a pad that plugs into a microcomputer and transfers drawings that you produce on the pad with your finger or stylus onto a computer monitor.

The pad has become a big hit with many primary classes during story hour. As a teacher reads a holiday story, students are selected to use the Koala Pad to draw a series of illustrations about the story on the computer screen. For example, during a story about Christmas, one student was asked to draw a red-nosed reindeer on the computer screen. When the story is finished, the illustrations contain many important elements of the tale. This serves as a good discussion springboard.

Tom Boudrot

Make an Input Bank

In art class, my students make data banks that do not store words or numbers. Their data banks hold nickels, dimes, quarters, and an occasional half-dollar. Your students can make data banks of their own for keeping coins. Data banks also make great Hanukkah and Christmas gifts.

Cut a 3-inch slot in the plastic lid of an empty coffee can. Cover the sides of the can with construction paper and paste in place. In large letters on the side of the can, write "DATA BANK." Higher up on the can, in smaller letters, write "INPUT" and draw an arrow pointing toward the lid. Encourage kids to paste on decorations of their own, such as colorful trim or photographs of coins.

Make an Abacus

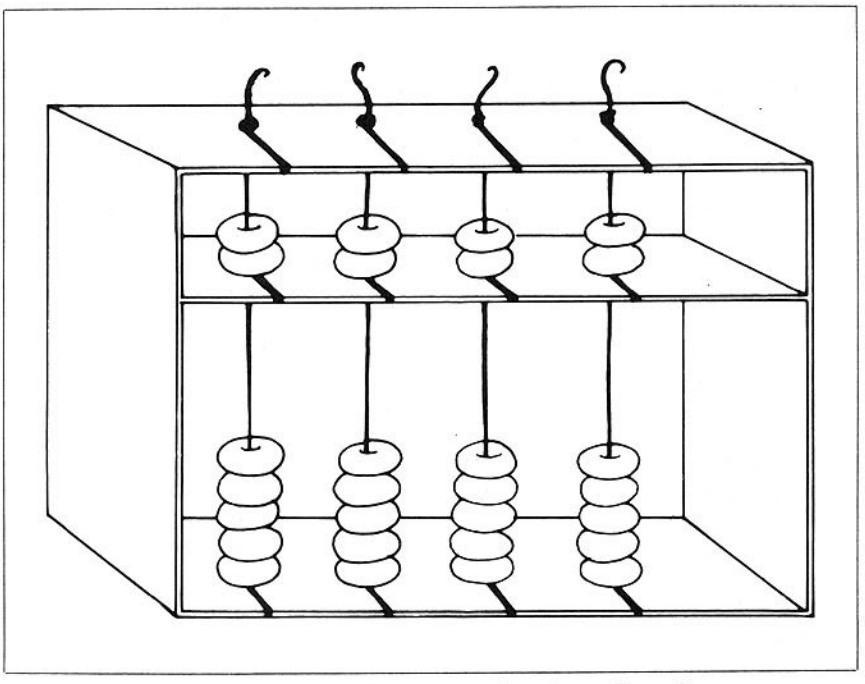
One of the earliest calculating devices was the abacus. Students can make their own abacuses for Christmas or Hanukkah gifts. Each student will need these materials: a gift box, fishing line, Cheerios (or other cereal with center holes), scissors, and a piece of cardboard.

Follow these simple steps:

1. Cut four matching slits along the two longer edges of the box. Make the slits half as deep as the edges. *(See illustration.)*
2. Cut a piece of cardboard so that it fits lengthwise in the box. On one edge of the cardboard, cut four slits that correspond to the slits on the box. *(See illustration.)*
3. Place the cardboard in the box, about two-thirds of the way from one of the long sides.
4. Knot a piece of fishing line and string it through the first slit. String two Cheerios on the fishing line and place them above the cardboard insert.
5. String the line through the insert and then string five Cheerios on the line.
6. String the line through the bottom slit. Knot the line and cut it.
7. String three more rows of Cheerios in the same way.

This is a Chinese abacus. Other versions may differ slightly.

Ask two students to do research on the Chinese abacus and to teach the class how to add and subtract on one. (Most encyclopedias contain adequate information.)

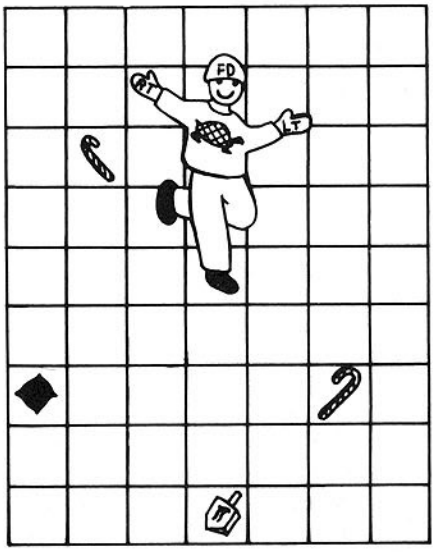


As a holiday gift, make an abacus with strings of Cheerios or Froot Loops.

HOLIDAY PARTY GAMES

Play the Turtle Toss Game

Turtle Toss teaches students to use the Logo commands FORWARD, BACK, LEFT, and RIGHT. It's also a fun game for December holiday parties.



To play, cut out construction paper letters for the Logo commands FORWARD and BACK (FD and BK) and tape them to the front and back of an old ski cap. Do the same for the commands LEFT and RIGHT (LT and RT) and tape the letters to a pair of mittens, one command per mitten. Select a student to be the "turtle." This student wears the cap and mittens in their appropriate positions, allowing classmates to refer to the Logo commands and their meanings. Using a plastic tablecloth or butcher paper and a felt-tip pen, prepare a large grid for the floor. *(See illustration.)* Have the turtle toss a beanbag to a box on the grid. The other children direct the turtle to the box the beanbag landed on by giving Logo commands. To reach the beanbag in the illustration, the commands would be FD 2, RT 90, FD 3.

To make the game more challenging, I place on the grid candy canes, dreidels, and other Hanukkah or Christmas objects that the turtle must be instructed to move around.

Dorothy J. Sphar

WINTER PUZZLE WORKSHEET

FIRST DAY IN WINTER **DECEMBER 21**

NAME: _____

Cut out puzzle shapes.

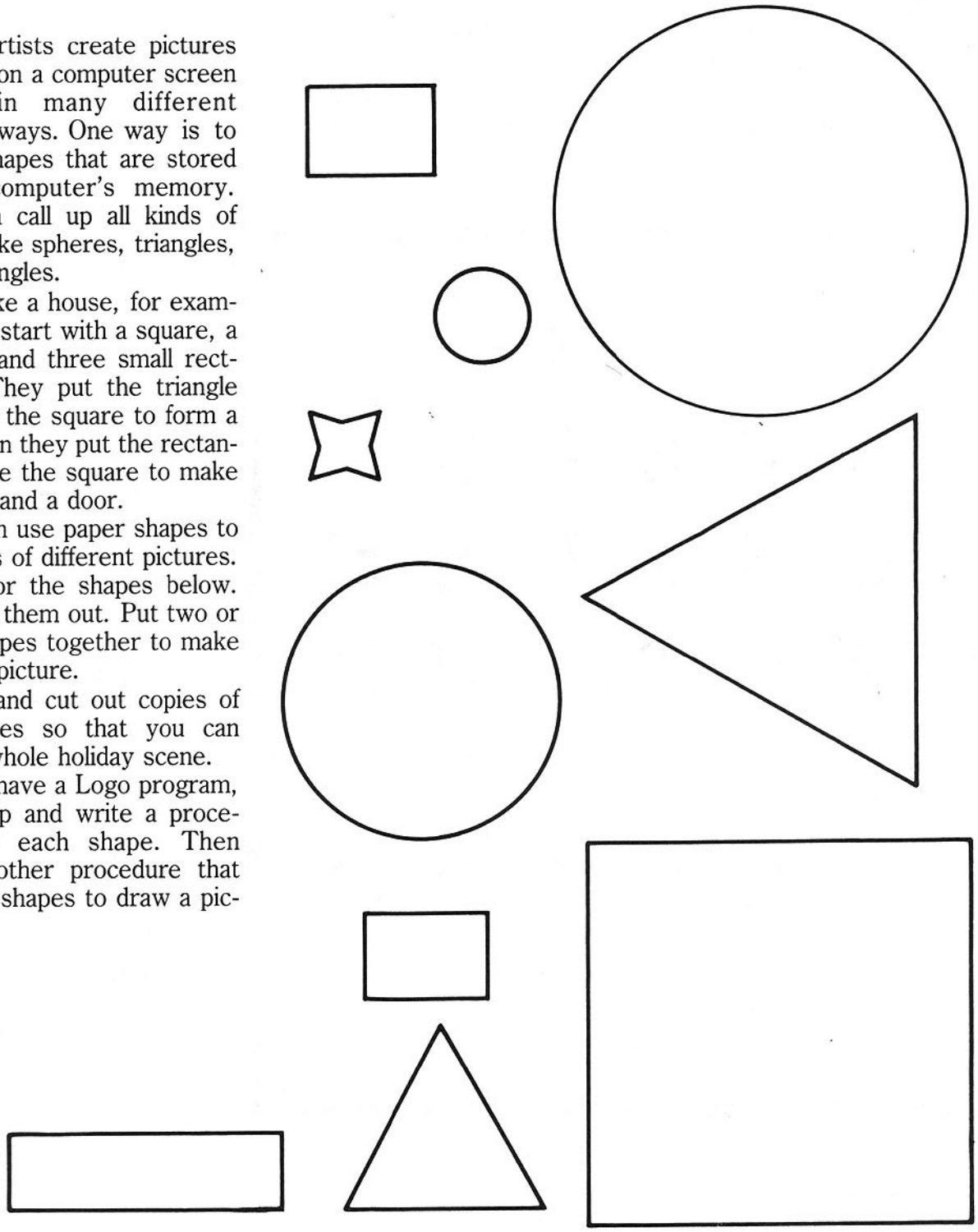
Artists create pictures on a computer screen in many different ways. One way is to call up shapes that are stored in the computer's memory. They can call up all kinds of shapes, like spheres, triangles, and rectangles.

To make a house, for example, they start with a square, a triangle, and three small rectangles. They put the triangle on top of the square to form a roof. Then they put the rectangles inside the square to make windows and a door.

You can use paper shapes to make lots of different pictures. First color the shapes below. Then cut them out. Put two or more shapes together to make a winter picture.

Draw and cut out copies of the shapes so that you can make a whole holiday scene.

If you have a Logo program, boot it up and write a procedure for each shape. Then write another procedure that uses the shapes to draw a picture.



Answer: Your teacher has the answer. It is on page 156 of the book, **Holiday Computer Activities.**

WINTER GREETINGS WORKSHEET

FIRST DAY IN WINTER **DECEMBER 21**

NAME: _____

DIRECTIONS: The puzzle below contains 10 computer words. They are hidden in every direction—even diagonally.

In the puzzle, find and circle all 10 words listed below. The letters that are left over spell out a winter greeting. Write the winter greeting in the spaces provided below.

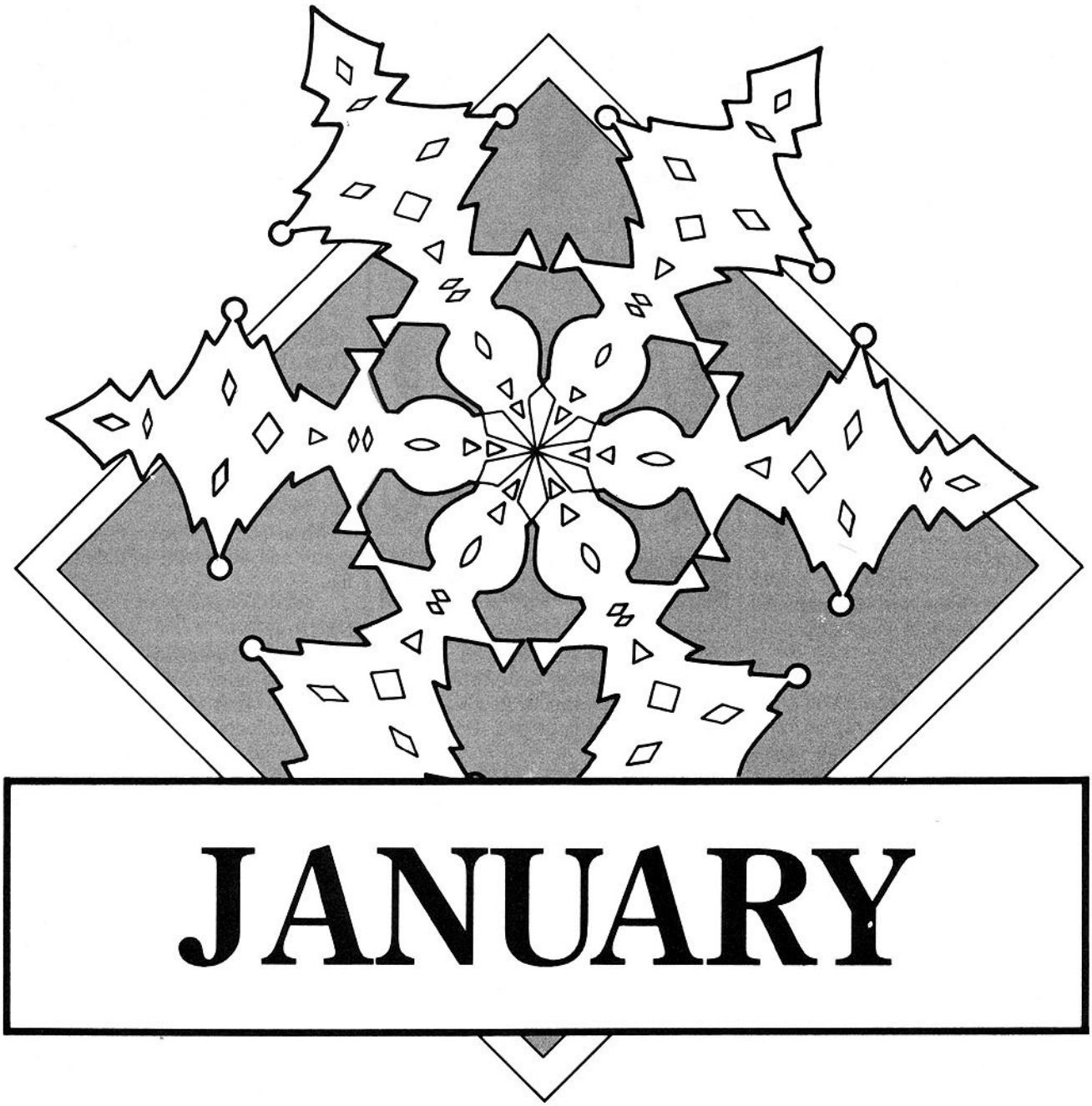
D	P	L	R	O	M
S	E	B	E	U	N
C	H	I	P	S	N
R	U	T	E	U	R
E	B	D	A	T	A
E	G	O	T	O	M
N	D	E	B	U	G

Word List:

Bit
Chips
Data
Debug
GOTO
RAM
Repeat
ROM
RUN
Screen

ANSWER: _____

Answer: Your teacher has the answer. It is on page 156 of the book, **Holiday Computer Activities.**



JANUARY

New Year
92

National Blood Donor Month
93

Martin Luther King, Jr.'s Birthday
95

MONTHS OF THE YEAR DATA BASE

From January to December, the months of the year are chock-full of birthdays, holidays, and special events.

You can teach students what's in store for the coming year and some interesting facts about the months by creating a "Months of the Year" data base file. The data base will contain information on each month, including the name of the month, the number of days, the season, students' birthdays, holidays, school events, and additional facts.

You can use just about any simple data base program for this activity. Just follow these four easy steps.

STEP 1:
Create a MONTHS Data File

Boot your data base program into your computer. Design a file called MONTHS with the following fields, or categories. Save the file on disk or cassette.

MONTH:
NO. OF DAYS:
SEASONS:
HOLIDAYS:
SCHOOL EVENTS:
STUDENT BIRTHDAYS:
ADDITIONAL FACTS:

Editor's Note: Some programs allow only a limited number of characters per field. If you are using one of these programs, abbreviate field names.

STEP 2:
Research the Months

Divide the class into 12 groups. Assign a different month to each group. Print out 12 copies of the MONTHS file and pass out one copy per group.

Have groups use calendars, school bulletins, the almanac, and guides to monthly holidays as resources to fill in all the fields in the MONTHS file, except BIRTHDAYS.

For HOLIDAYS and SPECIAL EVENTS with specific dates, write the name of the holiday or event first, followed by the date in parentheses. For example:

HOLIDAYS: VALENTINE'S DAY (14).

Here is a sample record for March.

MONTH: MARCH
NO. OF DAYS: 31
SEASONS: WINTER, SPRING
HOLIDAYS: ST. PATRICK'S DAY (17), SPRING BEGINS (20), EASTER (30)
SCHOOL EVENTS: PARENT'S DAY (13), SPRING BREAK (14-22)
BIRTHDAYS:
ADDITIONAL FACTS: A POPULAR SAYING IS, "MARCH COMES IN LIKE A LION AND GOES OUT LIKE A LAMB." ALSO, "BEWARE THE IDES OF MARCH" (MARCH 15), WHICH IS THE DAY JULIUS CAESAR WAS KILLED.

STEP 3:
Add the Information to the Data File

Boot the data base program, call up the MONTHS file, and have groups add their information to the file. When everyone has finished, there will be 12 records in the MONTHS file, one for each month of the year.

Check students' records for misspellings and factual errors. Have children correct their mistakes.

Instruct kids to take turns entering their birthdays into the records. To do this, they will have to call up the record for the appropriate month. Then they will have to insert their names next to the STUDENT BIRTHDAYS field, followed by the date in parentheses. Separate birthdays with a comma. For example:

STUDENT BIRTHDAYS: BILLY (9), NORA (12), MELISSA (30).

When students have finished, secretly add your own birthday to the file.

STEP 4:
Search for Specific Information

Review how to retrieve information with your data base program. Have students use the MONTHS data base to find out the following information:

1. Find the longest months of the year. (Hint: The longest months have 31 days.)
2. Find all the summer months.
3. Find your teacher's birthday.
4. According to an old saying, oysters should only be eaten during months with an "r" in them. (The saying was once a way to warn people that summer oysters spoil easily, but it no longer applies, due to modern refrigeration methods.) Find all the months with an "r" in them.
5. In what month is Easter this year?
6. When is the last day of school?
7. Is there any month in which nobody has a birthday?
8. Suppose it is January 15. Is anything special happening on this day?

Encourage students to add more fields to the MONTHS data base, including zodiac signs, the original names of the months, dates on which a full moon occurs, historic events, and so on.

Lorraine Hopping

COMPUTER BLOOD BANK PROGRAM

January is designated National Blood Donor Month. It's the perfect time for using this science program listing on human blood types.

The program is called *Computer Blood Bank*. It checks the blood types of a donor and a recipient to determine if a transfusion is possible. Not just any human blood type can be donated to or mixed with another. In this program, students learn which blood types are compatible.

HOW THE PROGAM WORKS

A "recipient" and a "donor" enter their names and blood types. The program determines if a transfusion is safe by comparing ABO and RH blood types.

Despite ABO and RH compatibility, blood still may clump, although the probability is very low. As a further safeguard, a *crossmatch test* (the actual mixing of blood samples to check for clumping) is used. This test is included in the program.

If blood types are not compatible, students can select another recipient or donor, or end the program.

USING THE PROGRAM IN YOUR SCIENCE CURRICULUM

Following are discussion topics and activities for using *Computer Blood Bank* in a unit on health or the human body.

1. Discuss blood types and transfusions. All humans have one of four blood types: A, B, AB, or O. When one human gives blood to another *(a transfusion)*, blood types must be compatible. Otherwise, blood clumps together, and the recipient may die.

Blood types indicate the presence or absence of A and B *antigens*. Antigens produce *antibodies* that attack foreign particles in the body. Type A blood, for example, has A antigens that produce anti-B antibodies. When types A and B blood are mixed, the anti-B antibodies "attack" particles in the type B blood. That's what produces clumping.

Type O blood has no antibodies. Therefore, it can be added to any blood type without causing clumping. Type AB blood, on the other hand, contains both A and B antigens. It can only be donated to another AB blood type. (For more information on blood type relationships, see the chart on this page.)

Blood can also be RH (Rhesus) positive or negative. Most people are RH positive, meaning their blood has RH antigens. Blood from an RH positive donor can only be given to an RH positive recipient. An RH negative type may give to either an RH positive or an RH negative recipient.

Ask students why they think someone might need a transfusion. Common reasons are blood loss from accidents or surgery. Transfusions also help patients with anemia, hemophilia (inability of blood to clot), shock, and leukemia.

2. Check blood types. Have students use a blood testing kit to determine their blood types. (See list of suppliers at end of article.)

They are now ready to use *Computer Blood Bank*. After students have played both donor and recipient roles, have them construct a chart showing transfusion relationships. Here's a sample:

Transfusion Relationships of A-B-O Blood Groups

Blood Group	Can Donate to:	Can Receive from:
O	O,A,B,AB	O
A	A, AB	O,A
B	B, AB	O,B
AB	AB	O,A,B,AB

Ask students why AB is called the "universal recipient" and O is called the "universal donor." *(People with AB blood can receive A, B, AB or O blood. People with O blood can donate to people with A, B, AB, or O blood.)*

Graph the percentage of A, B, AB, and O, and of RH positive and RH negative students in the class. Have each student make a list of all classmates who could safely donate blood to him or her.

3. Visit a blood bank. In the early 1900s, donors and recipients lay side by side, and the blood was transferred immediately. Now, blood from a donor is stored in containers until it is needed.

Arrange a field trip to a local blood bank to show students how a modern blood bank operates.

SUPPLIERS OF BLOOD TYPING KITS

Editor's note: Kit prices quoted are based on a 30-student standard.

- Carolina Biological Supply Co., 2700 York Rd., Burlington, NC 27215; $17.50.
- Central Scientific, 11222 Melrose Ave., Franklin Park, IL 60131; $11.50 (50 students).
- Connecticut Valley Biological Supply Co., PO Box 326, Southampton, MA 01073; $8.50.
- Fisher Educational Materials, 4901 W. LeMoyne St., Chicago, IL 60651; $7.50.
- Nasco, 901 Janesville Ave., Fort Atkinson, WI 53538; $8.50.
- Redco-Science Inc., 11 Robinson Ln., Oxford, CT 06483; $8.50.
- Sargent Welch, 7300 N. Linder Ave., PO Box 1026, Skokie, IL 60077; $11.75 (25 students).
- Science Kit, Inc., 777 E. Park Dr., Tonawanda, NY 14150; $10.95.

Richard Bollinger

(continued)

PROGRAM LISTING FOR *COMPUTER BLOOD BANK*

This program listing is for Apple computers. To convert the program for use on Atari, Commodore, and Radio Shack computers, see the Program Conversions, page 154.

```
10  REM  COMPUTER BLOOD BANK @1984 SCHOLASTIC INC.
20  HOME : CLEAR
30  PRINT "  WELCOME TO THE COMPUTER BLOOD BANK."
40  REM  GET INFO ON RECIPIENT
50  PRINT : PRINT "  ENTER THE NAME OF THE RECIPIENT AND"
60  PRINT "PRESS <RETURN>."
70  INPUT R$: HOME
80  PRINT "  WHY DOES ";R$;" NEED A TRANSFUSION?"
90  PRINT : PRINT "   1  ANEMIA."
100  PRINT "   2  LEUKEMIA."
110  PRINT "   3  HEMOPHILIA."
120  PRINT "   4  SHOCK."
130  PRINT "   5  BLOOD LOSS DUE TO ACCIDENT."
140  PRINT "   6  SURGERY."
150  PRINT "   7  OTHER."
160  PRINT : PRINT "  ENTER A NUMBER (1-7) AND PRESS"
170  PRINT "<RETURN>.": INPUT I$
180  REM  ENTER BLOOD TYPES OF RECIPIENT AND DONOR
190  HOME : PRINT "  WHAT BLOOD TYPE IS ";R$;"?"
200  GOSUB 1000: REM  LIST BLOOD TYPES
210  INPUT RB$: IF RB$ <  > "A" AND RB$ <  > "B" AND RB$
                    <  > "O" THEN 210
220  HOME
230  REM  GET INFO ON DONOR
240  PRINT "  ENTER THE NAME OF THE DONOR AND PRESS"
250  PRINT "<RETURN>.": INPUT D$
260  PRINT : PRINT "  WHAT BLOOD TYPE IS ";D$;"?"
270  GOSUB 1000: REM  LIST BLOOD TYPES
280  INPUT DB$: IF DB$ <  > "A" AND DB$ <  > "B" AND DB$
     <  > "AB" AND DB$ <  > "O" THEN 280
290  REM  CHECK FOR ABO COMPATIBILITY
300  IF DB$ = "A" AND (RB$ = "O" OR RB$ = "B") THEN 590
310  IF DB$ = "B" AND (RB$ = "O" OR RB$ = "A") THEN 590
320  IF DB$ = "AB" AND RB$ <  > "AB" THEN 590
330  REM  RH POSTITIVE OR NEGATIVE
340  HOME : PRINT "  ABO BLOOD TYPES MATCH. IS THE"
350  PRINT "RECIPIENT, ";R$;", RH POSITIVE"
360  PRINT "OR RH NEGATIVE?"
370  GOSUB 2000: REM   LIST CHOICES
380  INPUT RH$: IF RH$ <  > "-" AND RH$ <  > "+" THEN 380
390  HOME : PRINT "  IS THE DONOR, ";D$;", RH POSITIVE"
400  PRINT "OR RH NEGATIVE?"
410  GOSUB 2000: REM  LIST CHOICES
420  INPUT DH$: IF DH$ <  > "+" AND DH$ <  > "-" THEN 420
430  REM  CHECK FOR RH COMPATIBILITY
440  IF DH$ = "+" AND RH$ = "-" THEN 590
450  REM  RH BLOOD TYPES MATCH
460  HOME : PRINT "  RH BLOOD TYPES MATCH. THE DOCTOR "
470  PRINT "WILL DO A CROSSMATCH TEST TO CHECK FOR"
480  PRINT "CLOTTING."
490  PRINT : PRINT "  ONE MOMENT, PLEASE...."
500  REM  CROSSMATCH TEST
510 X =  INT (100 *  RND (1)) + 1
520  FOR Y = 1 TO 5000: NEXT Y
530  IF X = 50 THEN  PRINT "  CROSSMATCH TEST PRODUCED
     CLUMPING.": GOTO 61 <  > "AB" AND RB$
540  REM  TRANSFUSION IS SAFE
550  PRINT : PRINT "  CROSSMATCH TEST PRODUCED NO CLUMPING."
560  PRINT "TRANSFUSION IS SAFE. GOOD LUCK...."
570  PRINT : PRINT "  WHAT WOULD YOU LIKE TO DO NOW?"
580  GOTO 640
590  REM  TRANSFUSION UNSAFE
600  HOME : PRINT "  BLOOD TYPES DO NOT MATCH. TRANSFUSION"
610  PRINT "MIGHT BE HARMFUL TO THE RECIPIENT."
620  PRINT : PRINT "  WHAT DO YOU THINK IS THE BEST COURSE"
630  PRINT "OF ACTION?"
640  PRINT : PRINT "  1  TRY ANOTHER DONOR."
650  PRINT "  2  TEST A NEW RECIPIENT AND DONOR."
660  PRINT "  3  END THE PROGRAM."
670  PRINT : PRINT "  ENTER THE NUMBER OF YOUR CHOICE AND"
680  PRINT "PRESS <RETURN>."
690  INPUT CH$
700  IF CH$ = "1" THEN 220
710  IF CH$ = "2" THEN 10
720  IF CH$ <  > "3" THEN 690
730  PRINT "  HAVE A NICE DAY...."
740  END
1000  REM  LIST BLOOD TYPES
1010  PRINT : PRINT "  TYPE A"
1020  PRINT "  TYPE B"
1030  PRINT "  TYPE AB"
1040  PRINT "  TYPE O"
1050  PRINT : PRINT "  ENTER A, B, AB, OR O. PRESS <RETURN>."
1060  RETURN
2000  REM  RH+ OR RH-
2010  PRINT : PRINT "  RH POSITIVE (+)"
2020  PRINT "  RH NEGATIVE (-)"
2030  PRINT : PRINT "  ENTER + OR - AND PRESS <RETURN>."
2040  RETURN
```

WRITE A BIOGRAPHY OF MARTIN LUTHER KING JR.

It's official: January 15 is a newly designated national holiday in celebration of Martin Luther King, Jr.'s birthday.

In honor of the occasion, we've put together a writing unit on the famous civil rights leader. In the unit, students research events in King's life and use a word processing program to write a short biography of him.

Children can use any word processing program to do this activity. They should know how to call up and save files, move the cursor, and insert and delete text.

RESEARCH KING'S LIFE

Objective: Students research basic facts about Martin Luther King, Jr.'s life. They also learn what type of information to include in a biography.

Preparation: Cut out and laminate the Write a Biography task card on page 96.

Activity: Discuss with the class what a biography is. *(A factual account, usually written, of a person's life.)* Divide students into pairs and explain that each pair is going to write a biography of Martin Luther King, Jr.

Instruct student pairs to research King's life. They should look for information such as when and where he was born and died, what his childhood was like, great achievements in his life, and the names of his family members.

Load the word processing program into the computer and have students complete the Write a Biography task card (see page 96). The task card asks students to insert answers to questions about King's life. (Students will have to do additional research if they don't know the answer to a question.) The completed file will later serve as an outline for their biography.

Following is an example of a completed file. Additional or different information is acceptable for questions 3, 6, 7, and 9.

1. When and where was Martin Luther King, Jr. born? King was born on January 15, 1929 in Atlanta, Georgia.

2. What were the names of King's parents? How many brothers and sisters did he have? What were their names? Were they older or younger? King's father was Reverend Martin Luther King, Sr., and his mother was Alberta Williams King. King had an older sister named Willie Christine and a younger brother named Alfred Daniel.

3. Describe an event in King's boyhood that influenced his later life. One day, young Martin and his father walked into a shoe store. When they sat down, the sales clerk told them to move to the back of the store. The clerk explained that he could serve black people only if they sat in the back. Rather than move, Martin's father took him by the hand and stormed out without buying any shoes. Martin remembered the event as an example of how blacks were treated unfairly.

4. What did King do for a living? He was a minister in the Baptist church.

5. Whom did King marry? How many children did the Kings have and what were their names? He married Coretta Scott. They had four children: Yolanda Denise, Martin III, Dexter Scott, and Bernice Albertine.

6. Tell about three great achievements or moments in King's life. In 1955, King led a boycott of public buses in protest of unfair laws against black passengers. The successful boycott showed people that rights could be won through nonviolent protest. In 1963, he led a successful march in Washington, DC, to help the civil rights cause. In 1964, King won the Nobel Peace Prize.

7. Describe King's dream for the future of the world as he explained it in his "I Have a Dream" speech. How did he think it could be achieved? King dreamed that people of all races, religions, and social classes would live together in peace, and that they would all be given equal opportunity to fulfill their dreams for a happy life. He believed that such freedom and

justice could be achieved through nonviolent protest.

8. When, where, and how did King die? King was shot in Memphis, Tennessee, on April 4, 1968.

9. Add any other information on King's life that you think is important. King united many groups in his campaign against poverty. Besides blacks, he called together American Indians, Spanish-speaking Americans, and others. He planned a Poor People's March on Washington, DC, for 1968 but did not live to lead it.

WRITE THE BIOGRAPHY

Objective: Students write a biography based on the outline they compiled in the previous activity.

Preparation: Print out students' outlines and check for spelling errors, missing information, factual errors, and inappropriate responses to the questions. Pass back the corrected outlines.

Load the word processing program into the computer.

Activity: Have students call up their outlines and make the changes and corrections that you indicated.

They are now ready to write the biography, using their answers to the questions as a first draft. They can put the information in any order by moving blocks of text. They can also insert and delete text to make the biography read more smoothly.

Encourage students to add more information to the biography. They might even wish to add quotations from King's speeches.

Lorraine Hopping

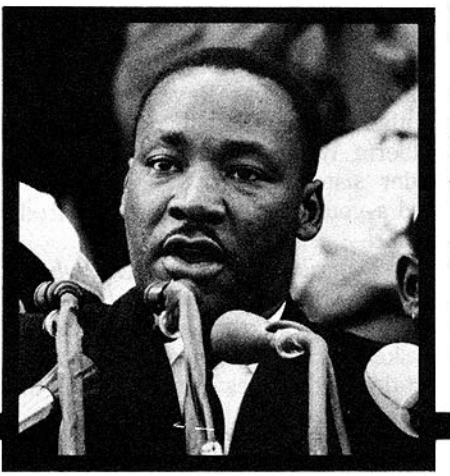
COPY

HOLIDAY TASK CARD

Write a Biography

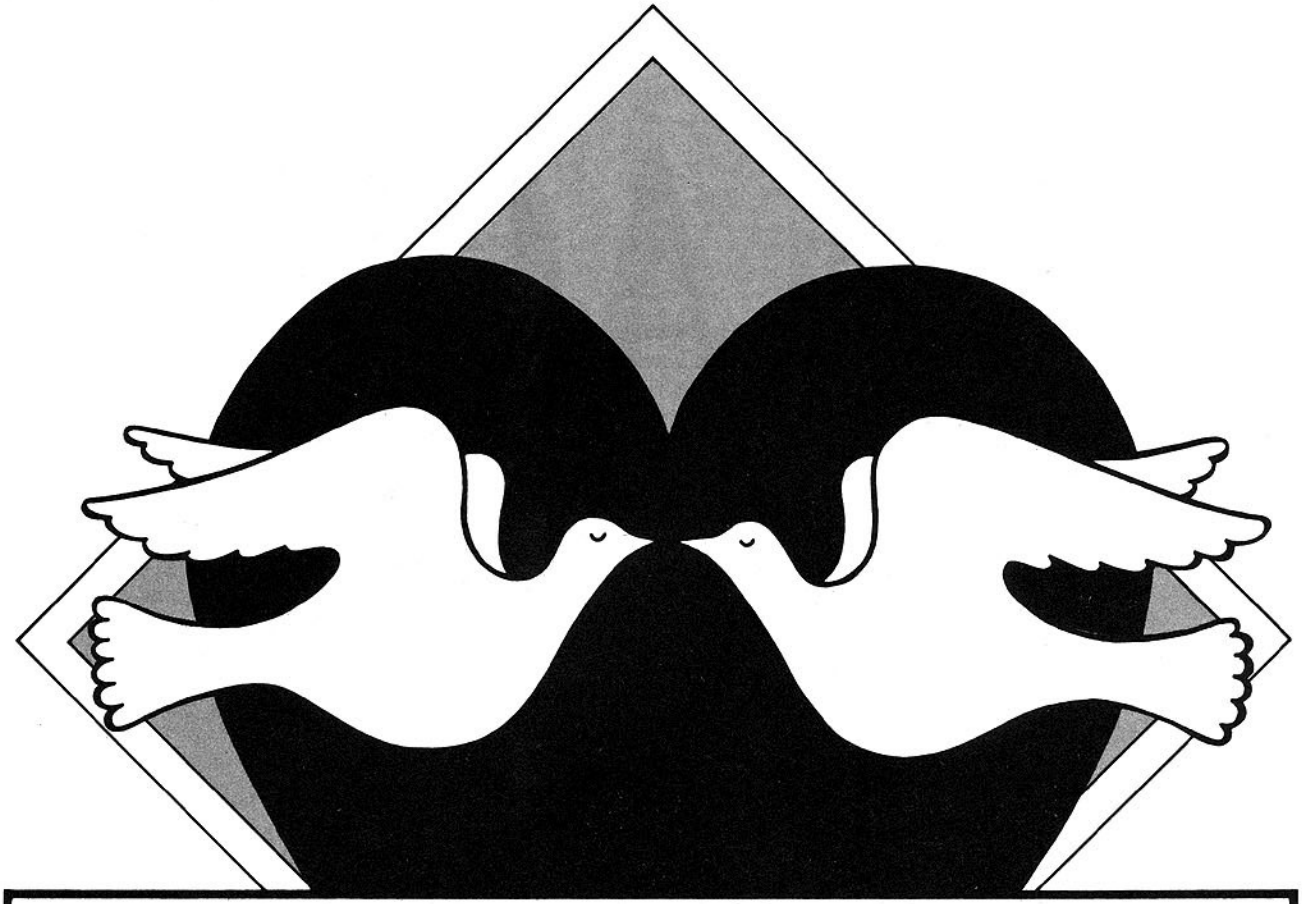
DIRECTIONS: Load the word processing program into the computer. Type in answers to the following questions. Use complete sentences. Save the file on disk or cassette. Use your first name and last initial as a filename. (For example: JENNYP.)

1. When and where was Martin Luther King, Jr. born?
2. What were the names of King's parents? How many brothers and sisters did he have? What were their names? Were they older or younger?
3. Describe an event in King's boyhood that influenced his later life.
4. What did King do for a living?



upi

5. Whom did King marry? How many children did the Kings have and what were their names?
6. Tell about three great achievements or moments in King's life.
7. Describe King's dream for the future of the world as he described in his "I Have a Dream" speech. How did he think it could be achieved?
8. When, where, and how did King die?
9. Add any other information on King's life that you think is important.



FEBRUARY

BLACK AMERICAN HISTORY QUIZ

February is Black American History Month. This *Black American History Quiz* program celebrates Black American heritage and quizzes students on four famous black leaders: Harriet Tubman, Frederick Douglass, Ida Wells Barnett, and Dr. Martin Luther King, Jr. You can use *Black American History Quiz* in February to supplement a unit on famous black leaders or expand the program to include information on several other Black Americans who have helped make America.

HOW THE PROGRAM WORKS

Black American History Quiz generates up to five clues, one at a time, on each of the four leaders. Using as few clues as possible, students try to guess the name of each leader. When students type in their guesses, they must spell out the person's full name correctly. If they spell the name incorrectly, the computer rejects the guess.

USING THE PROGRAM IN THE CURRICULUM

To give children an introduction to events, people, and issues in black American history, have them read at least one history book on the subject. *(See bibliography, next page.)*

- For a class project, construct a *Who's Who of Black American History*. Have each child pick a black civil rights leader, politician, writer, educator, scientist, scholar, musician, sports star, or other figure about whom to write a short biography. Alphabetize and assemble the biographies in book form, complete with index.

Add the *Who's Who* entries to the *Black American History Quiz* program. *(See Expanding the Program, next page.)*

- Have students read black fiction or poetry. *(See bibliography, next page.)* As a class, discuss issues raised by the books, such as discrimination, civil rights, segregation, busing, and slavery.
- Using Alex Haley's book, *Roots*, as an example, tell students that some authors use both fact and fiction to recreate historical events accurately and realistically. This *historical fiction* often takes the form of short stories, novels, poems, speeches, plays, or screenplays.

Have students pick a time, place, event, or person about which to write a short piece of historical fiction. Let them choose the medium they wish to use. Encourage kids to collaborate on projects to make a television miniseries or a short, historical novel in which each person writes a chapter.

One project might be an epic poem about Phillis Wheatley, a black woman born in Senegal, Africa, in the 1700s. She came to America as a child slave and later wrote her way to freedom as a poet. Another project could be a historical drama about Crispus Attucks, the first martyr of the Boston Massacre, and the events that led up to his death. Other sug-

gestions include: a speech written by a civil rights protester, a news story published in an 1865 newspaper, and a screenplay about a black family in the 1980s.

- Discuss the phrase "separate but equal." Explain that in the late 1800s and early 1900s many states had *Jim Crow laws*. These laws required blacks and whites to use separate public facilities, such as schools, churches, restaurants, hotels, buses and trains, public toilets, and so on.

In 1896, in the case of *Plessy v. Ferguson,* the Supreme Court ruled that these "separate but equal" facilities for blacks and whites were constitutional.

In 1954, however, the Supreme Court ruled, in the case of *Brown v. Board of Education of Topeka,* that public schools were in fact separate but not equal. Most black schools were inferior to white schools, and so blacks did not have the same opportunities for education as whites. In 1969, the Court ordered schools to *desegregate.*

- Choose nine class members to represent judges of a newly formed Supreme Court. Divide the rest of the class in half for a debate on the "separate but equal" issue. To find arguments on both sides, have debaters research the Supreme Court cases mentioned above, speeches by civil rights supporters and attackers, and the Constitution, including the Civil Rights Act and the first 10 amendments.

After the debate, have the judges issue a written ruling explaining all sides of the issue and deciding by majority vote whether "separate but equal" in all facilities is constitutional or not.

EXPANDING THE PROGRAM

Expand *Black American History Quiz* to include other figures in history, such as George Washington Carver, Abraham Lincoln, Sojourner Truth, W.E.B. Du Bois, and so on. Here's how to expand the program to include George Washington Carver.

1. Before the END statement in the last line of the listing, add DATA statements containing the name of the historical figure and five clues about him or her. (Be sure to change the line number of the END statement.)

```
1300 DATA "GEORGE WASHINGTON CARVER."
1310 DATA "I WAS BORN IN MISSOURI IN 1864."
1320 DATA "I WAS KIDNAPPED AND SOLD AS A SLAVE."
1330 DATA "I BECAME A BOTANIST AND SCIENTIST."
1340 DATA "MY WORK IMPROVED THE SOUTH'S ECONOMY."
1350 DATA "I FOUND OVER 300 USES FOR THE PEANUT."
```

2. Set P in line 20 equal to the number of figures included in the program. For example, if you wanted to quiz students on 10 historical figures, line 20 would read: `20 HOME: CLEAR: P = 10`.

3. RUN the program to check for errors.

BIBLIOGRAPHY

Nonfiction

Black Frontiersmen: Adventures of Negroes Among American Indians, 1528–1918, by Norman Heard, (Harper & Row: 1969), grade 6 and up.

Black History: Events in February, by Ida S. Meltzer, (Book-Lab, Inc.: 1972), grades 4–12.

Black Pioneers of Science & Invention, by Louis Haber (Harcourt Brace Jovanovich: 1970), grade 5 and up.

Blacks in Early American History, by Ida S. Meltzer, (Book-Lab, Inc.: 1972), grades 4–9.

The Color Your Way into Black History Book, by Adrienne Sealy, (The Association for Family Living: 1980), workbook.

The Ebony Book of Black Achievement, by Margaret Peters, (Johnson Publishing Co., Inc.: 1974), grades 4–8.

Junior History of the American Negro, by M.C. Goodman, (Fleet Press Corp.: 1969–70), grade 6–12.

They Showed the Way: Forty American Negro Leaders, by Charlemae Rollins, (Harper & Row: 1964), grade 4 and up.

Fiction

Apples on a Stick, by Barbara Michels and Bettye White, (Putnam Publishing Group: 1983), grades 3–6.

Black Crusaders for Freedom, by Bennett Wayne, (Garrard Publishing Co.: 1974), grade 5–12.

By Secret Railway, by Enid La Monte Meadowcroft, (Scholastic Inc.: 1969), grade 6 and up.

Guests in the Promised Land, by Kristin Hunter, (Scribner & Sons, Inc.: 1973), grade 5 and up.

Home Is Over the Mountains: The Journey of Five Black Children, by James Streeter, (Garrard Publishing Co.: 1972), grades 3–6.

My Name Is Black: Anthology of Black Poets, edited by Amanda Ambrose, (Scholastic Inc.: 1973), grade 3 and up.

Song About Black, by Ann McGovern, (Scholastic Inc.: 1970), grades 2–5.

Striped Ice Cream! by Joan M. Lexau, (Scholastic Inc.: 1968), grade 4 and up.

Two Tales in Afro-American History, by Jon Rice, (The Committee: 1982).

Lorraine Hopping

PROGRAM LISTING FOR *BLACK AMERICAN HISTORY QUIZ*

This program listing is for Apple computers. To convert it for use on Atari, Commodore, and Radio Shack computers, see Program Conversions, page 154.

```
10  REM    BLACK AMERICAN HISTORY QUIZ @ 1984 SCHOLAS
     TIC INC.
20  HOME : CLEAR :P = 4
30  PRINT "WELCOME TO BLACK AMERICAN HISTORY QUIZ!"
40  PRINT : PRINT "  THIS IS A QUIZ PROGRAM ON FOUR G
     REAT"
50  PRINT "LEADERS IN BLACK HISTORY."
60  PRINT : PRINT "  THE COMPUTER WILL GIVE YOU UP TO
      FIVE"
70  PRINT "CLUES ON EACH LEADER. YOU MUST GUESS"
80  PRINT "WHO IT IS BASED ON THE CLUES."
90  PRINT : PRINT "  REMEMBER TO SPELL OUT THE FULL N
     AME"
100  PRINT "CORRECTLY TO MAKE IT COUNT."
110  PRINT : PRINT "  PRESS <RETURN> TO START THE QUI
     Z.": INPUT Z$
120  REM  GIVE CLUES
130  READ A$
140  IF A$ = "END" THEN 380
150  FOR N = 1 TO 5: REM  FIVE CLUES
160  READ C$
170  HOME
180  PRINT "           *** CLUE #";N;" ***"
190  PRINT : PRINT : PRINT C$
200  PRINT : PRINT : PRINT "                WHO AM I?"
210  PRINT : PRINT : PRINT "ENTER THE FULL NAME AND P
     RESS <RETURN>."
220  INPUT G$
230  IF G$ = A$ THEN 320
240  PRINT : PRINT "   SORRY, THAT'S NOT WHO I AM. CH
     ECK"
250  PRINT "YOUR SPELLING FOR ERRORS."
260  PRINT : PRINT "   PRESS <RETURN> TO GO ON.":
     INPUT $Z
270  NEXT N
280  HOME
290  PRINT "   MY NAME IS ";A$;"."
300  PRINT : PRINT "   PRESS <RETURN> TO CONTINUE.":
     INPUT  Z$
310  GOTO 120
320  HOME
330  PRINT "   YOU GOT IT!  CONGRATULATIONS!":SC = SC
      + 1
340  PRINT : PRINT "   I AM, INDEED, ";A$;"."
350  IF N < 5 THEN  FOR M = N + 1 TO 5: READ C$: NEXT
     M
360  PRINT : PRINT "   PRESS <RETURN> TO CONTINUE.":
     INPUT  Z$
370  GOTO 120
380  REM  END OF QUIZ
390  PRINT : PRINT "   YOUR SCORE IS ";SC;" OUT OF ";
     P;"."
400  PRINT : PRINT "   WOULD YOU LIKE TO TRY AGAIN (Y
     /N)?"
410  INPUT Z$: IF Z$ <  > "Y" AND Z$ <  > "N" THEN
     PRINT"  TYPE 'Y' OR 'N' AND PRESS <RETURN>.":
     GOTO 410
420  IF Z$ = "Y" THEN SC = 0: RESTORE : GOTO 120
430  PRINT : PRINT "  THAT'S ALL, FOLKS....": END
1000  DATA  "HARRIET TUBMAN"
1010  DATA  "I WAS BORN A SLAVE IN MARYLAND IN 1820."
1020  DATA  "I AM THE MOSES OF MY PEOPLE."
1030  DATA  "I ESCAPED BY THE UNDERGROUND RAILROAD."
1040  DATA  "I HELPED 300 OTHER SLAVES ESCAPE."
1050  DATA  "I NURSED AND SCOUTED IN THE CIVIL WAR."
1060  DATA  "FREDERICK DOUGLASS"
1070  DATA  "AS A YOUNG SLAVE, I WORKED ON A SHIP."
1080  DATA  "MY MASTER'S WIFE HELPED EDUCATE ME."
1090  DATA  "I ESCAPED AND CHANGED MY NAME IN 1838."
1100  DATA  "I SPOKE AGAINST SEGREGATION AND RACISM."
1110  DATA  "I FOUNDED AN ANTISLAVERY NEWSPAPER."
1120  DATA   "MARTIN LUTHER KING JR."
1130  DATA  "I FOUGHT INJUSTICE BY PEACEFUL MEANS."
1140  DATA  "I WAS A BAPTIST MINISTER FROM GEORGIA."
1150  DATA  "I WON THE NOBEL PEACE PRIZE IN 1964."
1160  DATA  "I LED MARCHES AND SPOKE ON CIVIL RIGHTS."
1170  DATA  "I WAS ASSASSINATED ON APRIL 4, 1968."
1180  DATA   "IDA WELLS BARNETT"
1190  DATA  "AT 14, I TAUGHT SCHOOL IN MISSISSIPPI."
1200  DATA  "I SAT IN A 'WHITES-ONLY' RAILROAD CAR."
1210  DATA  "I PUT OUT A PAPER CALLED 'FREE SPEECH.'"
1220  DATA  "I HEADED AN ANTI-LYNCHING CAMPAIGN."
1230  DATA  "I FOUNDED THE NEGRO FELLOWSHIP LEAGUE."
1300  DATA  "END"
```

DENTAL CHECKUP

Dental Checkup is a BASIC program that takes a student, step by step, through a typical visit to the dentist. Along the way, the program's resident dentist, Dr. Gumm, quizzes the student on dental hygiene.

HOW THE PROGRAM WORKS

In the program, Dr. Gumm performs a make-believe dental examination in which she takes an X-ray, cleans the student's teeth, and fills any cavities that she finds.

During the examination, Dr. Gumm asks seven dental hygiene questions. The accuracy of the student's responses to these questions determines how many cavities the child has at the end of the checkup. Here are the questions:

- When was the last time you visited the dentist?
- How often do you brush your teeth?
- Describe how you brush your teeth.
- How often do you floss?
- Why are dental X-rays important?
- What are your front teeth called and what do they do?
- How do cavities form?

For each question, a student chooses one of three possible answers. If he or she chooses the wrong answer, the computer adds cavities to the child's score. No cavities are added for correct answers. If a student accumulates more than five cavities (out of 11 possible), the computer reschedules him or her for another visit by starting the program over.

At the end of the examination, Dr. Gumm reviews the dental hygiene rules that the student has learned.

INTRODUCING THE PROGRAM

Explain to students that children have three basic kinds of teeth: incisors, cuspids or canines, and molars. *(See illustration.)* Have students choose partners and take turns looking into each other's mouths to identify the different types of teeth.

Point out that the incisors, or the four front teeth on top and four front teeth on bottom, are very sharp. They can cut easily into food. Beavers have very long incisors so that they can bite into wood. What other animals have long incisors? *(Squirrels, rats, mice, and other rodents.)*

Cuspids, or canine teeth, are the four pointy teeth on either side of the top and bottom incisors. They tear tough foods, such as meats. Dogs have long canine teeth. Can students think of any other animals with long canines? *(Lions, sharks, and other meat-eating animals.)*

Molars are the eight flat teeth in the back of the mouth. They grind food into bits. Animals that eat soft foods, such as hippopotamuses, have a lot of flat, round molars.

Adult humans have a fourth type of tooth, called a bicuspid. There are eight bicuspids, two behind each canine tooth. Most adults also have four molars called wisdom teeth. Wisdom teeth usually grow in the back corners of the mouth when a person is about 20 years old.

Ask students how having so many different kinds of teeth is helpful to humans. *(They can eat many different foods.)*

Explain that some foods humans eat, especially those with a lot of sugar, are very bad for teeth. They can cause tooth decay. Ask if anyone in the class knows what tooth decay is and how it forms.

Explain that everyone's mouth has germs. Germs eat food that is on teeth. When germs eat the food, they leave behind a very strong chemical called an acid. The acid wears down the outer layer of the tooth (the enamel). This wearing down is called tooth decay. (*Dental caries* is another term for tooth decay.)

Tooth decay can make a cavity, or hole, in the tooth. If the cavity is not filled, the hole gets deeper. If the decay reaches the center of the tooth, the tooth can die.

Brushing and flossing keeps food from building up on teeth. Without food, germs cannot produce the acid that causes tooth decay.

USING THE PROGRAM

Type in and save the *Dental Checkup* program listed on page 102. Have students run through the program individually.

Challenge programmers in the class to add special effects to *Dental Checkup* for the tooth cleaning and X-ray portions.

For more information on dental hygiene, write to the American Dental Association, sponsors of National Children's Dental Health Month, Bureau of Health Education and Audiovisual Services, 211 E. Chicago Ave., Chicago, IL 60611.

Lorraine Hopping

(continued)

PROGRAM LISTING FOR *DENTAL CHECK-UP*

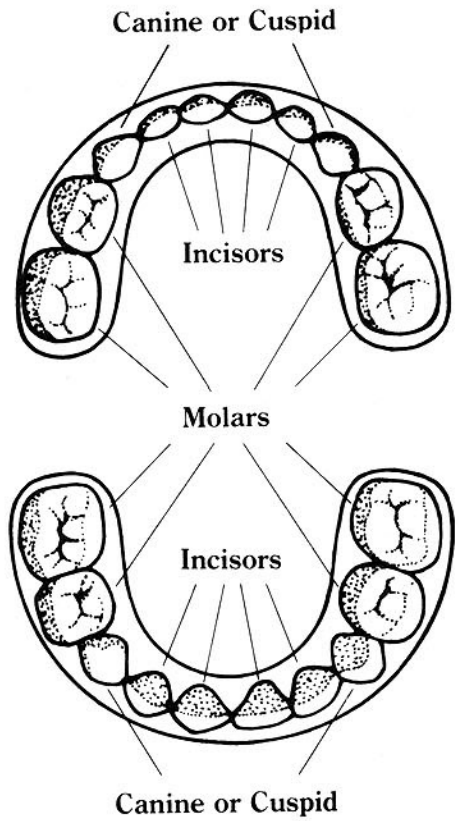
This program listing is for Apple computers. To convert the program for use on Atari, Commodore 64, Radio Shack Color Computer, and TRS-80 Model III computers, see Program Conversions, page 154.

```
10  REM   DENTAL CHECK-UP @1985 SCHOLASTIC INC.
20  HOME : CLEAR
30  PRINT "       *************************"
40  PRINT "       *   DR. GUMM'S OFFICE   *"
50  PRINT "       *************************"
60  PRINT : PRINT "  PLEASE HAVE A SEAT. DR. GUMM WILL BE"
70  PRINT "WITH YOU SHORTLY."
80  PRINT : PRINT "  WHILE YOU'RE WAITING, ENTER YOUR NAME"
90  PRINT "INTO THE COMPUTER AND PRESS <RETURN>.": INPUT N$
100  PRINT : PRINT "  THANK YOU, ";N$;". DR. GUMM IS"
110  PRINT "READY FOR YOU NOW. SHE WILL ASK YOU A"
120  PRINT "FEW QUESTIONS ABOUT YOUR TEETH. CHOOSE"
130  PRINT "THE BEST ANSWER FROM THE CHOICES GIVEN."
140  PRINT "  IF YOU CHOOSE A WRONG ANSWER, THE"
150  PRINT "COMPUTER WILL ADD 'CAVITIES', OR POINTS"
160  PRINT "TO YOUR SCORE. AVOID GETTING POINTS BY"
170  PRINT "ANSWERING THE QUESTIONS CORRECTLY."
180  PRINT : PRINT "  GOOD LUCK, ";N$;"!"
190  PRINT : PRINT "  PRESS <RETURN> TO BEGIN.": INPUT Z$
200  HOME : PRINT "  HELLO, ";N$;"! I'M DR. GUMM."
210  PRINT "WHEN WAS THE LAST TIME YOU WENT TO A"
220  PRINT "DENTIST?"
230  PRINT : PRINT "  1. LESS THAN A YEAR AGO."
240  PRINT "  2. MORE THAN A YEAR AGO BUT LESS THAN"
250  PRINT "     TWO YEARS AGO."
260  PRINT "  3. TWO OR MORE YEARS AGO."
270  GOSUB 10000
280  IF C$ = "2" THEN SC = SC + 1: REM  ADD CAVITY FOR WRON
     G ANSWER
290  IF C$ = "3" THEN SC = SC + 2
300  IF C$ <  > "1" THEN  PRINT "  YOU SHOULD VISIT THE DEN
     TIST EVERY": PRINT "SIX MONTHS."
310  IF C$ = "1" THEN  PRINT "  I'M GLAD YOU ARE TAKING GOO
     D CARE OF: PRINT "YOUR TEETH, ";N$;"."
320  PRINT "  HOW OFTEN DO YOU BRUSH YOUR TEETH?"
330  PRINT : PRINT "  1. ONCE A DAY."
340  PRINT "  2. TWICE OR THREE TIMES A DAY."
350  PRINT "  3. LESS THAN ONCE A DAY."
360  GOSUB 10000
370  IF C$ = "1" THEN SC = SC + 1
380  IF C$ = "3" THEN SC = SC + 2
390  IF C$ <  > "2" THEN  PRINT "  YOU SHOULD BRUSH AFTER E
     VERY MEAL,": PRINT N$;", OR THREE TIMES A DAY."
400  IF C$ = "2" THEN  PRINT "  KEEP UP THE GOOD WORK,";N$ ;"."
410  PRINT "  WHICH ONE OF THE FOLLOWING BEST"
420  PRINT "DESCRIBES THE WAY YOU BRUSH YOUR TEETH?"
430  PRINT : PRINT "  1. I BRUSH UP AND DOWN THE FRONT OF"
440  PRINT "     MY TEETH."
450  PRINT "  2. I SCRUB THE TOP AND SIDES OF MY"
460  PRINT "     BACK TEETH ROUND AND ROUND."
470  PRINT "  3. I DO BOTH 1 AND 2. THEN I USE"
480  PRINT "     THE TIP OF THE BRUSH TO REACH"
490  PRINT "     BEHIND MY FRONT TEETH."
500  GOSUB 10000
510  IF C$ = "1" OR C$ = "2" THEN SC = SC + 1
520  PRINT "  IF YOU BRUSH ALL PARTS OF YOUR TEETH,"
530  PRINT N$;" (ANSWER #3), YOU WILL HAVE"
540  PRINT "FEWER CAVITIES. YOU WILL ALSO KEEP A"
550  PRINT "STICKY SUBSTANCE CALLED PLAQUE FROM"
560  PRINT "BUILDING UP. PLAQUE CAN HARM YOUR GUMS"
570  PRINT "AND CAUSE OTHER DENTAL PROBLEMS."
580  PRINT "  ANOTHER WAY TO WARD OFF PLAQUE AND"
590  PRINT "CAVITIES IS TO USE DENTAL FLOSS. DENTAL"
600  PRINT "FLOSS IS STRING THAT YOU RUB BETWEEN"
610  PRINT "YOUR TEETH TO REMOVE BITS OF FOOD."
620  PRINT "  HOW OFTEN DO YOU FLOSS, ";N$;"?"
630  PRINT : PRINT "  1. NEVER OR NOT VERY OFTEN."
640  PRINT "  2. ONCE OR TWICE A WEEK."
650  PRINT "  3. AT LEAST ONCE A DAY."
660  GOSUB 10000
670  IF C$ = "1" THEN SC = SC + 2
680  IF C$ = "2" THEN SC = SC + 1
690  PRINT "  FLOSSING ONCE A DAY IS IMPORTANT."
700  IF C$ = "3" THEN  PRINT "  KEEP UP THE GOOD WORK,";N$ ;"."
710  PRINT "  WHEN YOU BRUSH YOUR TEETH, WATCH FOR"
720  PRINT "BLEEDING GUMS. THAT MEANS YOU ARE NOT"
730  PRINT "FLOSSING PROPERLY OR OFTEN ENOUGH."
740  PRINT "  ANOTHER WAY TO CHECK IF YOU ARE"
750  PRINT "FLOSSING AND BRUSHING PROPERLY IS TO"
760  PRINT "USE A DISCLOSING TABLET. WHEN YOU CHEW"
770  PRINT "THE TABLET, IT COLORS THE AREAS WHERE"
780  PRINT "THERE IS PLAQUE. THE COLOR WILL"
790  PRINT "DISAPPEAR AFTER YOU HAVE FLOSSED AND"
800  PRINT "BRUSHED AWAY THE PLAQUE. YOU CAN GET"
810  PRINT "DISCLOSING TABLETS AT A DRUGSTORE OR"
820  PRINT "FROM ANY DENTIST."
830  PRINT "  NOW I'D LIKE TO TAKE AN X RAY OF YOUR"
840  PRINT "TEETH, ";N$;". SIT UP STRAIGHT, "
850  PRINT "HOLD STILL, AND PRESS THE <RETURN> KEY.": INPUT Z$
860  GR : TEXT : FOR D = 1 TO 1000: NEXT D: PRINT  CHR$ (7)
     : GR : TEXT : FOR D = 1 TO 1000: NEXT D: HOME
870  PRINT "  THANK YOU, ";N$;". THAT WAS EASY,"
880  PRINT "WASN'T IT? CAN YOU TELL ME WHY TAKING"
890  PRINT "X RAYS IS IMPORTANT?"
900  PRINT : PRINT "  1. X RAYS SHOW WHETHER MY TEETH ARE"
910  PRINT "     GROWING PROPERLY OR NOT."
920  PRINT "  2. X RAYS PREVENT CAVITIES FROM"
930  PRINT "     FORMING."
940  PRINT "  3. X RAYS CLEAN MY TEETH."
950  GOSUB 10000
960  IF C$ <  > "1" THEN SC = SC + 1
970  PRINT "  X RAYS SHOW WHETHER YOUR TEETH ARE"
980  PRINT "GROWING PROPERLY. THEY CAN'T PREVENT"
990  PRINT "CAVITIES, BUT THEY CAN SHOW IF ANY"
1000  PRINT "CAVITIES ARE HIDDEN BETWEEN YOUR TEETH."
1010  PRINT "  NOW LET'S TAKE A LOOK AT YOUR TEETH,"
1020  PRINT N$;". OPEN WIDE. WHAT ARE YOUR"
1030  PRINT "FRONT TEETH CALLED AND WHAT DO THEY DO?"
1040  PRINT : PRINT "  1. THEY ARE CANINE TEETH. THEY TEAR"
1050  PRINT "MEAT AND OTHER TOUGH FOODS."
1060  PRINT "  2. THEY ARE MOLARS. THEY GRIND FOOD."
1070  PRINT "  3. THEY ARE INCISORS. THEY CUT FOOD."
1080  GOSUB 10000
1090  IF C$ <  > "3" THEN SC = SC + 1
1100  PRINT "  INCISORS IS THE RIGHT ANSWER. CANINES"
1110  PRINT "ARE THE POINTY TEETH IN BACK OF YOUR"
1120  PRINT "INCISORS. MOLARS ARE THE FLAT TEETH IN"
1130  PRINT "BACK OF YOUR CANINES."
1140  PRINT "  LET'S SEE IF I CAN SEE ANY CAVITIES,"
1150  PRINT N$;" DO YOU KNOW HOW CAVITIES FORM?"
1160  PRINT : PRINT "  1. GERMS EAT AWAY THE ENAMEL, OR"
1170  PRINT "     OUTER LAYER OF THE TOOTH."
1180  PRINT "  2. GERMS CAUSE ACID TO FORM ON THE"
1190  PRINT "     TOOTH. THE ACID WEARS AWAY ENAMEL."
1200  PRINT "  3. EATING HARD FOODS CREATES A HOLE"
1210  PRINT "     IN THE TOOTH."
1220  GOSUB 10000
1230  IF C$ = "1" THEN SC = SC + 1
1240  IF C$ = "3" THEN SC = SC + 2
1250  PRINT "  CAVITIES ARE CAUSED BY ACID ON THE"
1260  PRINT "TOOTH. THE ACID APPEARS WHEN GERMS IN"
1270  PRINT "YOUR MOUTH EAT FOOD THAT WASN'T BRUSHED"
1280  PRINT "OR FLOSSED AWAY."
1290  PRINT "  NOW, I'M GOING TO CLEAN YOUR TEETH,"
1300  PRINT N$;". FIRST, I'LL SCRAPE OFF THE"
1310  PRINT "PLAQUE. THEN I'LL POLISH YOUR TEETH SO"
1320  PRINT "THAT THEY'RE BRIGHT WHITE."
1330  PRINT "  PRESS <RETURN> WHEN YOU ARE READY.": INPUT Z $
1340  PRINT "  HERE WE GO....": FOR D = 1 TO 4000: NEXT D
1350  HOME : PRINT "  ALL DONE. ";N$;", THE X RAYS SHOW"
1360  PRINT "THAT YOU HAVE ";SC;" CAVITIES."
1370  IF SC > 5 THEN 1590
1380  IF SC = 0 THEN  PRINT "  WAY TO GO, ";N$;"! YOU ANSWE
     RED": PRINT "ALL THE QUESTIONS CORRECTLY.": GOTO 1510
1390  IF SC = 1 OR SC = 2 THEN  PRINT "  THAT'S NOT TOO BAD
     . NEXT TIME, TRY TO": PRINT "ANSWER ALL THE QUESTIONS
     CORRECTLY."
```

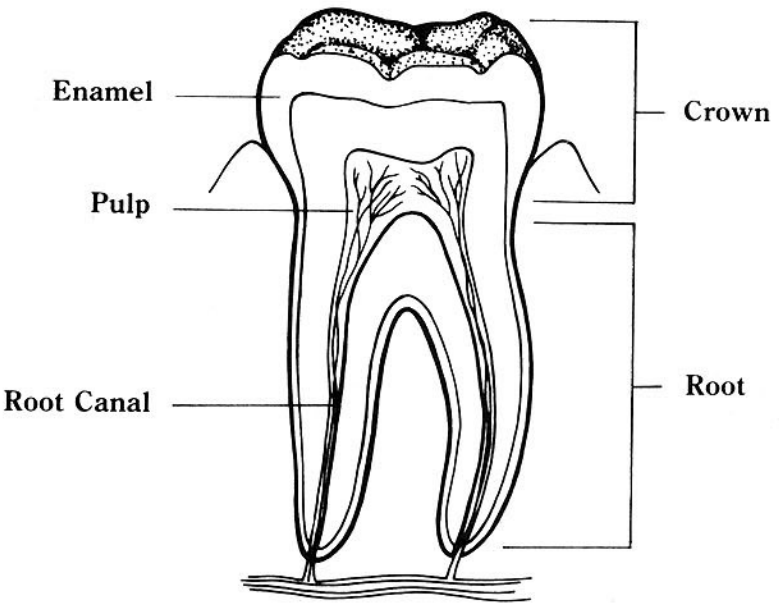
PROGRAM LISTING FOR *DENTAL CHECK-UP*

```
1400  FOR X = 1 TO SC
1410  PRINT "  GET READY, ";N$;". I'M GOING TO"
1420  PRINT "CLEAR OUT THE DECAY WITH A DRILL...."
1430  FOR D = 1 TO 6000: NEXT D
1440  FOR D = 1 TO 5: PRINT  CHR$ (7): NEXT D
1450  PRINT "  OKAY, ";N$;", TIME FOR THE FILLING."
1460  FOR D = 1 TO 4000: NEXT D
1470  PRINT : PRINT "  I FILLED THE CAVITY WITH SILVER"
1480  PRINT "AMALGAM. PRESS <RETURN> TO CONTINUE."
1490  INPUT Z$: HOME
1500  NEXT X
1510  PRINT "  THAT'S IT FOR TODAY, ";N$;"."
1520  PRINT "REMEMBER TO FOLLOW THESE IMPORTANT"
1530  PRINT "RULES FOR DENTAL HYGIENE:"
1540  PRINT : PRINT "  1. AVOID EATING SUGARY FOODS."
1550  PRINT "  2. BRUSH AFTER EVERY MEAL."
1560  PRINT "  3. FLOSS ONCE A DAY."
1570  PRINT "  4. SEE YOUR DENTIST ONCE A YEAR."
1580  PRINT : PRINT "  SEE YOU NEXT TIME, ";N$;"....": END
1590  REM  SCHEDULE ANOTHER APPOINTMENT
1600  PRINT "  ";N$;", YOU HAVE FAR TOO MANY"
1610  PRINT "CAVITIES. YOU ARE NOT TAKING PROPER"
1620  PRINT "CARE OF YOUR TEETH."
1630  PRINT "  I HAVE SCHEDULED ANOTHER APPOINTMENT"
1640  PRINT "FOR YOU TO SEE ME RIGHT AWAY."
1650  PRINT "  THIS TIME, SEE IF YOU CAN ANSWER ALL"
1660  PRINT "THE QUESTIONS PROPERLY."
1670  PRINT "  PRESS <RETURN> TO BEGIN.": INPUT Z$: GOTO 10

10000  REM  ENTER ANSWER
10010  PRINT : PRINT "  ENTER THE NUMBER OF YOUR CHOICE (1,"
10020  PRINT "2, OR 3) AND PRESS <RETURN>."
10030  INPUT C$: IF C$ <  > "1" AND C$ <  > "2" AND C$ <  >
       "3" THEN 10030
10040  HOME : RETURN
```

PRIMARY TEETH



Children start with 20 primary teeth: eight incisors, four canines or cuspids, and eight molars.



This diagram shows the basic parts of a tooth: the enamel, pulp, root canal, and crown.

FEBRUARY FOLKLORE

Kids love folklore—the lively tales about famous heroes or nature's secrets that have been handed down from generation to generation. Such literature is associated with many of the holidays in February. There are tales behind the founding of Groundhog Day and Valentine's Day, as well as legends to tell about Abraham Lincoln and George Washington in honor of their February birthdays.

The existence of these tales makes February a perfect time to conduct a teaching unit on folklore. In the following unit, students will learn about two particular kinds of folklore: legends and folktales.

Legends are stories based on popular, yet difficult-to-prove, accounts of history. They may be stories about the virtues of heroes we know existed, such as George Washington and Abraham Lincoln, or of characters who probably were imagined, such as King Arthur and Ichabod Crane.

Folktales are stories that were made up to explain unexplainable events in nature. The main characters are usually animals who act as humans. Folktales were created long ago by people who did not have the scientific knowledge needed to understand most natural phenomena. Even though we have the knowledge today to disprove the explanations in most folktales, it is still fun to learn about them, because they tell us so much about how our ancestors thought.

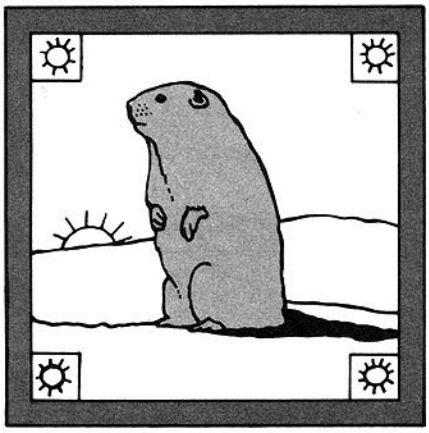
The six task cards in this writing unit will help students learn more about folklore. At the same time, the cards will help kids construct well-written sentences, paragraphs, and even original folktales. The cards also include exercises in using correct capitalization and punctuation.

Students can use any word processing program to perform the writing activities on the cards. They'll find that word processing helps them become better writers: It makes correcting errors much easier, which, in turn, allows students to do more revising and refining.

Before children use the cards, they will need to know some basic word processing skills. They should know how to insert, delete, replace, and move text using word processing commands. Students should also know how to call up a file and how to save information on a blank disk or cassette.

To prepare for this writing unit, photocopy and laminate the task cards on pages 107, 108, 109. Then review the teachers' notes on the following pages. These notes discuss the learning objectives of each card and the materials and teacher preparation required. In some cases you will need to type information on a disk or cassette (referred to as a *data disk* or *data cassette*) for students to use with the task cards. This information is supplied under the "Preparation" headings. Keep the task cards, word processing program, data disks or cassettes, and some blank disks or cassettes near your computer so kids can work on the cards independently as each holiday approaches.

TEACHERS' NOTES



GROUNDHOG DAY (FEB. 2)

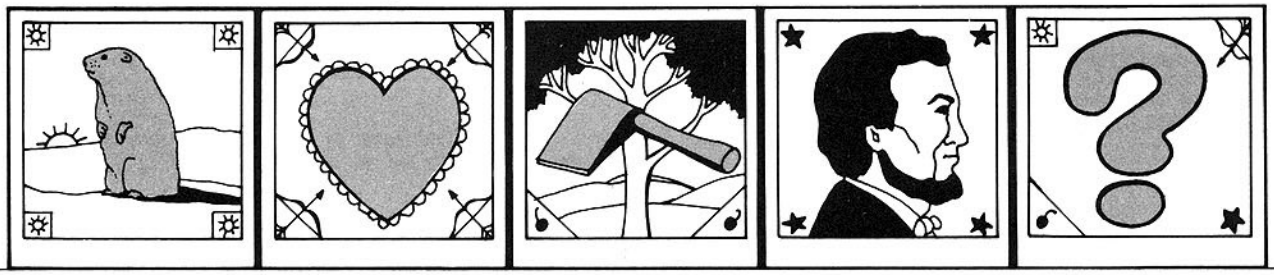
TASK CARD 1

Word Processing Prerequisites: Students must be able to access, save, insert, and replace text in a data disk or cassette.

Teaching Objectives: Students practice inserting and replacing words as well as using periods and capitalization correctly. They also learn the history of Groundhog Day.

Materials: Word processing program, a data disk or cassette containing GROUNDHOG file, and a blank disk or cassette.

Preparation: Using a word processor, enter the paragraphs below onto a data disk or cassette. (Include all the mistakes in punctuation and capitalization that appear.) Save under



the name GROUNDHOG.

GROUNDHOG DAY

february 2 is Groundhog Day. a folktale says that on february 2 the groundhog will wake up from its winter's sleep in search of food If the sun is shining when the groundhog steps outside its home, called a burrow, it will be frightened by its shadow and will return to the burrow. this means there will be six more weeks of winter

if it is cloudy when the groundhog steps out of its burrow, it won't be frightened by its shadow and will stay outside. this means that there will be an early spring. this is a sign to farmers that they can soon begin planting their crops

farmers in europe were the first to believe that animals like hedgehogs and badgers could predict the weather When European farmers came to this country, there were no hedgehogs or badgers, so they chose the groundhog to tell them when spring would arrive

can the groundhog really tell the coming of spring? What do you think?

Activity: Task Card 1 asks students to correct this report by inserting periods and capital letters where needed. Then it asks them to write their own answers to the question: Can the groundhog really tell the coming of spring?

LINCOLN'S BIRTHDAY (FEB. 12)

TASK CARD 2

Word Processing Prerequisites: Students must be able to enter and save data on a disk or cassette.

Teaching Objectives: Students write reports on honesty. They also learn two legends about Honest Abe.

Materials: Word processing program and a blank disk or cassette.

Activity: Task Card 2 presents two legends about Lincoln. After reading the legends, students use a word processing program to write about honesty in their lives.

VALENTINE'S DAY (FEB. 14)

TASK CARD 3

Word Processing Prerequisites: Students must be able to access, save, insert, delete, and replace text on a data disk or cassette.

Teaching Objectives: Students use a dictionary to help them correct misspelled words. They also learn about the legend of St. Valentine.

Material: Word processing program, a data disk or cassette containing VALENTINE file, a blank disk or cassette, and a dictionary.

Preparation: Using a word processing program, type the three paragraphs, exactly as they appear below, onto a data disk or cassette. Save them under the name VALENTINE.

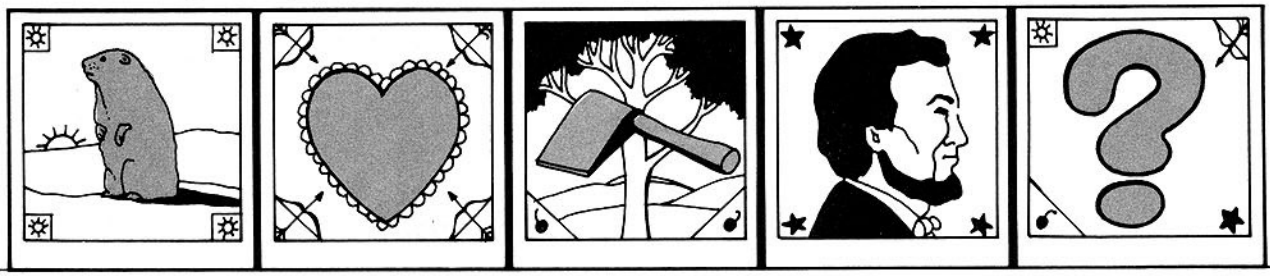
The Legends of St. Valentine

There are many legands about St. Valentine. One legend says that he was a wunderful gardener and raised beauteful flowers. Often he would give them to children who lived near his home in Rome.

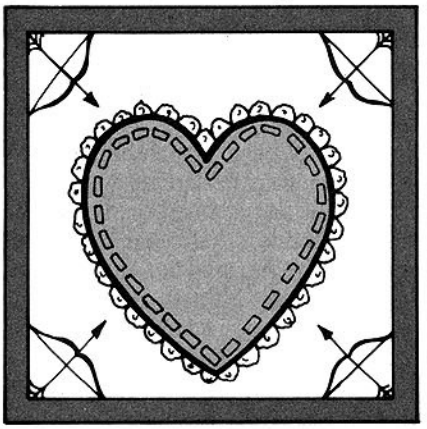
When Valentine lived en Rome, it was against the law to preech Christianity. Becus Valentine would not stop preaching, he was put in jail. The children mised him, so they tied notes to flowers and threw them into Valentine's window at the jail. Later, he was put to death. Each year on the anniversary of his death, people send flowers and notes, which they call valentines, to their friends.

Another legend says that while in jail, Valentine became friends with the jailer's blind daughter. During their friendship, Valentine wrote letters to her and sighned them, "From your Valentine." Valentine praied for her, and she reganed her sight. From that time on, letters of friendship sent on Febuary 14 have been called valentines.

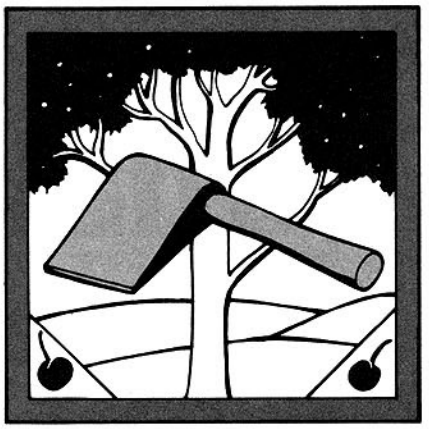
Activity: Task Card 3 tells students to use the dictionary to help them find correct spellings for misspelled words in the St. Valentine's legends. Students then replace the misspelled words with the correct spelling.



VALENTINE'S DAY (FEB. 14)
TASK CARD 4
Word Processing Prerequisites: Students must be able to type information into the computer and save it on a disk or cassette.
Teaching Objectives: Students supply words for the symbols in a rebus and practice keyboarding skills. They also learn about valentine symbols.
Materials: Word processing program and a blank disk or cassette.
Activity: Task Card 4 contains a rebus on valentine symbols. Students type the rebus story from the task card into the computer and save it on a disk or cassette. As students come across a rebus symbol, they figure out what word it represents and insert that word in their typed text.



WASHINGTON'S BIRTHDAY (FEB. 22)
TASK CARD 5
Word Processing Prerequisites: Students must be able to access, save, and move text on a data disk or cassette.

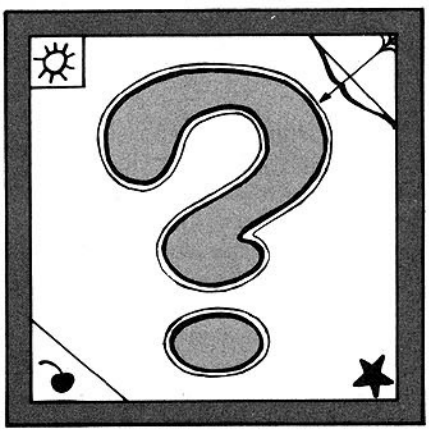


Materials: Word processing program, a data disk or cassette containing TREE, a blank disk or cassette.
Preparation: Using a word processing program, type the incidents as they appear below onto a data disk or cassette. Save the file under the name TREE.

Washington's Boyhood

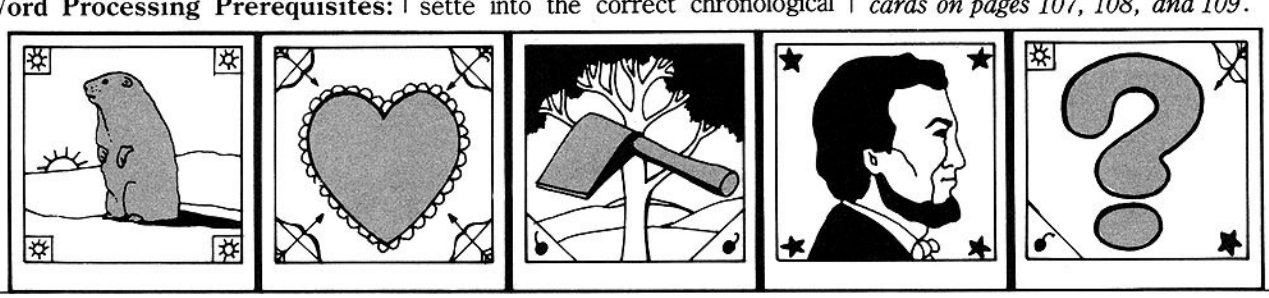
1. One day he struck his father's cherry tree with his hatchet.
2. "I cannot tell a lie, Father. I did it with my little hatchet."
3. His father demanded to know who ruined his tree.
4. At the age of six, George Washington received a hatchet.
5. "George, do you know who killed my cherry tree?"
6. The bark was damaged, and the cherry tree died.
7. He was very fond of his hatchet and loved to go around the yard chopping sticks and flowers.
8. George went to his father with his little hatchet.

Activity: Task Card 5 tells students to use the MOVE command in their word processing program to put the events listed in the data disk or cassette into the correct chronological order.
Teaching Objectives: Students practice sequencing events and moving text. They also learn about the legend of Washington and the cherry tree.
Solution: 4, 7, 1, 6, 3, 5, 8, 2.

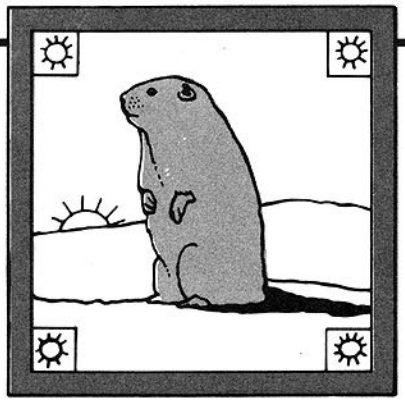


WRITE A FOLKTALE
TASK CARD 6
Word Processing Prerequisites: Students must be able to enter and save text on a disk or cassette.
Teaching Objectives: Students write their own folktales.
Material: Word processing program and a blank disk or cassette.
Activity: Task Card 6 presents a formula on how to create folktales. Students use the formula to write and edit original folktales.

Photocopy and laminate the six February Folklore word processing task cards on pages 107, 108, and 109.



FEBRUARY FOLKLORE TASK CARD 1

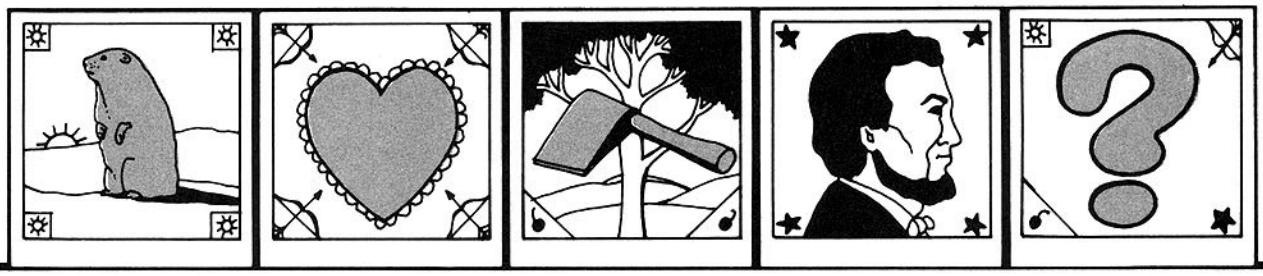


Groundhog Day

A student named Chuck wrote a report on the folktale about Groundhog Day. To read Chuck's report, boot your word processing program into the computer, load the data disk or cassette that goes with this card, and call up the GROUNDHOG file.

Although Chuck wrote an interesting report, he left out many capital letters and periods. See if you can help him by inserting the capitals and periods where they are needed. Here's how:

1. Remove the data disk or cassette and load a blank disk or cassette.
2. Find the 10 small letters that need to be changed to capital letters. Use the DELETE and INSERT commands to make the changes.
3. Find the five places where the periods are missing. Use the INSERT command and place them in the text.
4. Read the last paragraph in Chuck's report again. Do you believe a groundhog can tell the beginning of spring? At the end of the report insert a paragraph that tells what you think and why.
5. Save your corrected report on the blank disk or cassette.



FEBRUARY FOLKLORE TASK CARD 2

Honest Abe

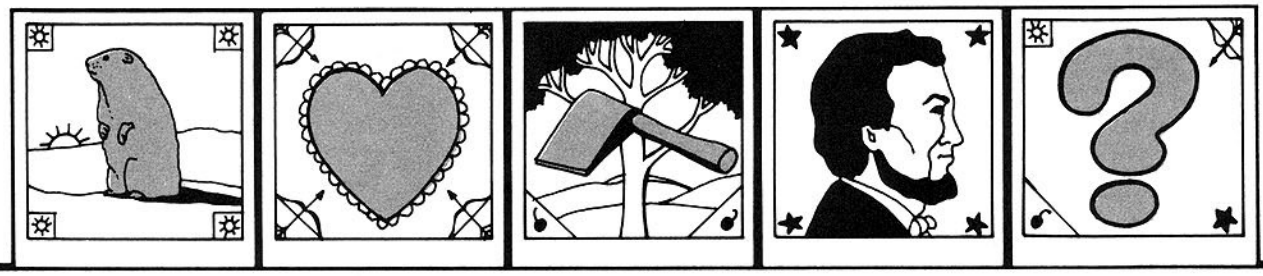
Many legends are told about why Abraham Lincoln was nicknamed Honest Abe. Here are two:

When Lincoln was young, he worked at a country store. At the end of one day he was counting his cash, and he learned that he had charged someone too much. He closed the store and walked miles to the person's house to repay him.

Another time, Lincoln discovered that he had used the wrong weight on a scale when he was weighing out a woman's tea. He should have given her more tea. As soon as he figured out his mistake, he weighed out the tea that was due her and took it to her house.

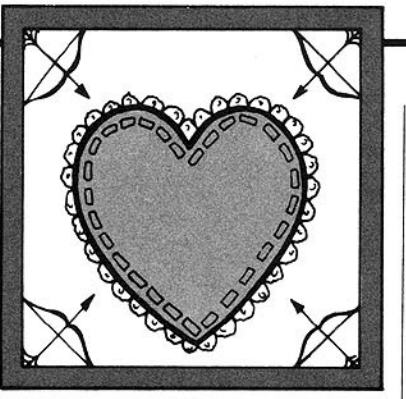
Lincoln was a model of honesty.

1. Load your word processing program into the computer and write about three incidents that you know of involving honesty. Write a paragraph about each one. Don't forget to indent each paragraph and to give your report a title.
2. Save your report on a blank disk or cassette.



COPY AND LAMINATE

FEBRUARY FOLKLORE TASK CARD 3

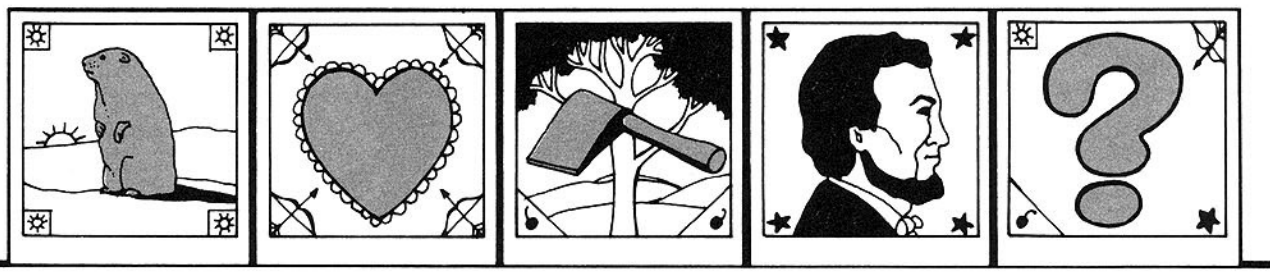


A Man Named Valentine

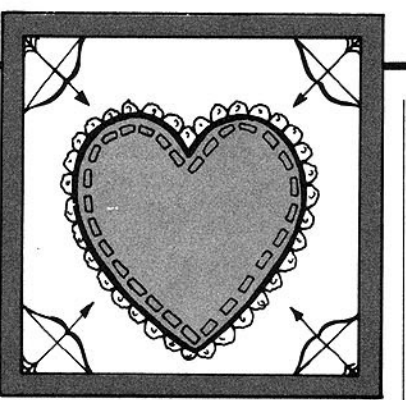
How did Valentine's Day get its name? Many people believe the day was named after a Christian priest named Valentine. Valentine lived in Rome 1,700 years ago, when Christianity was a new religion. He was put to death for his belief and was later called a saint.

To learn more about Valentine, boot your word processing program into the computer, load the data disk or cassette for this card, and call up the file VALENTINE. As you read the story, you will see that 11 words are misspelled. To correct the errors, here is what you do:

1. Remove the data disk or cassette and load a blank disk or cassette.
2. Reread the story. When you come to a misspelled word, look up the word in a dictionary. Use the DELETE and INSERT commands to correct the spelling.
3. Save the corrected story on the blank disk or cassette.



FEBRUARY FOLKLORE TASK CARD 4



Valentine's Day Rebus

A *rebus* is a riddle that uses symbols to stand for words. Below is a rebus on the symbols used on Valentine's Day. It has 6 symbols in it. If you can figure out what the symbols represent, try this:

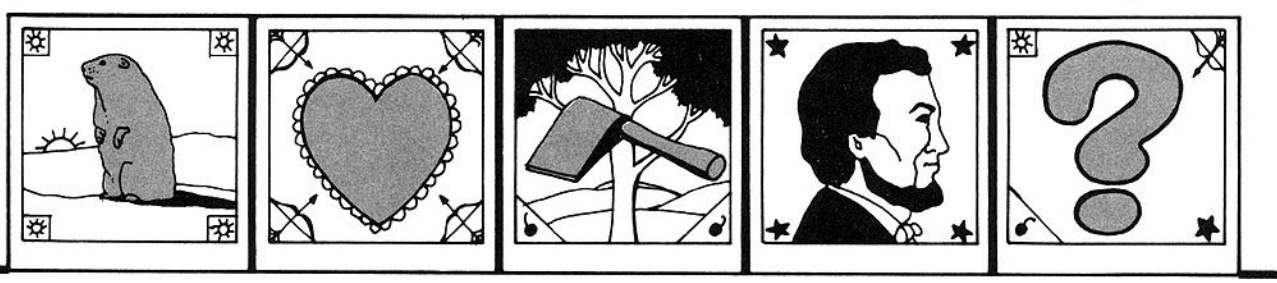
1. Boot your word processing program into the computer and load a blank disk or cassette.
2. Type the paragraphs below into the computer. When you come to a symbol, type in the word that it stands for. Save your story on the blank disk or cassette.

Valentine Symbols and Colors

Many symbols and colors are connected with Valentine's Day.

A ( )ed child carrying arrows is known as Cupid. He is often seen on valentine cards and candy ( ). ( ) are also used on valentine cards. They stand for, or symbolize, love and peace. Some countries consider ( ) magical. The symbol most widely used on Valentine's Day is the (♥). It is Cupid's target and the basic symbol of love.

Two colors are used on Valentine's Day. They are red and white. The color red is a symbol of warmth and also of the human (♥). The color white stands for faith and goodness.



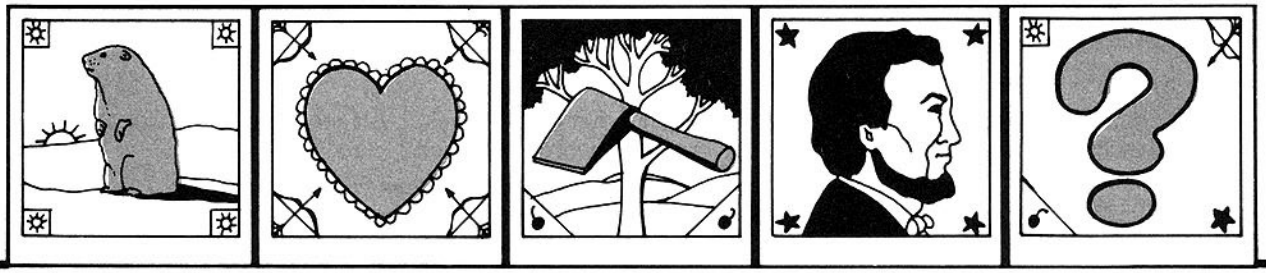
FEBRUARY FOLKLORE TASK CARD 5

Washington's Boyhood

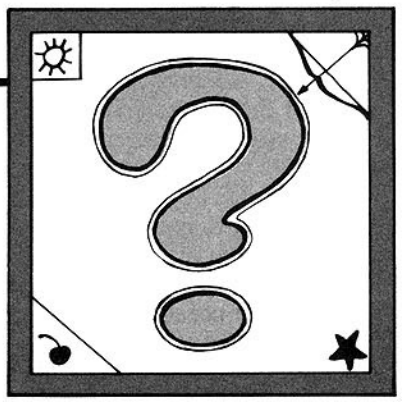
Do you know the famous legend about George Washington and the cherry tree? To find out more about it, boot your word processing program into the computer, load the data disk or cassette that goes with this card, and call up the file named TREE.

Read the story. Does it make sense to you? If not, it is probably because the events are not in order. Here is how to put the events in order:

1. Remove the data disk or cassette and load a blank disk or cassette.
2. Read through all the events carefully. Use the MOVE command in your word processing program to put the events in the right order.
3. Save the corrected legend on the blank disk or cassette.



FEBRUARY FOLKLORE TASK CARD 6



Write Your Own Folktale

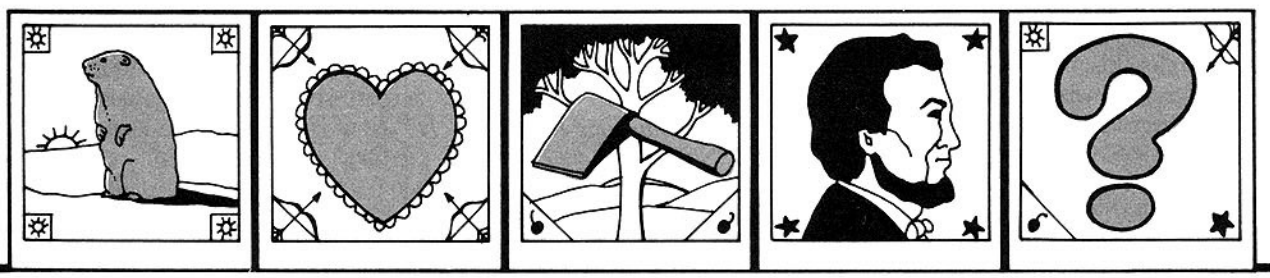
Folktales are stories that tell or explain something about events in nature. Animals are usually the main characters in folktales. Many years ago, people didn't have the knowledge we have today, so they would make up stories to explain nature. For example, the groundhog folktale says that the groundhog can tell when spring will arrive.

Even today folktales are fun to create. Why not try to write one? Here is how:

1. Choose an animal or object in nature: for example, a raccoon.
2. Decide on a nature question your folktale can answer. For example: Why does a raccoon wash its food before eating?
3. Develop a story that answers your question. For example:

A young raccoon named Harvey always washed his hands before eating. One day Harvey was invited to a picnic. Because the picnic was going to be in the deepest part of the woods, Harvey knew he would not be able to find water to wash his hands. Harvey decided that if he washed his food before he left his home he would not need to wash his hands before eating.

4. Once you think of a story, boot your word processing program in the computer and write a folktale.
5. Save it on a disk or cassette.



COMPUTERIZED VALENTINES

Valentine messages have always been a means of expressing love and friendship. By using computer terms, students can now write valentine messages in a new way. The electronic way!

Computer use has added many new meanings to words. *Boot* no longer means just the covering to protect your feet from the snow. Instead it can mean to load a program into the computer. *Chips* are more than just snacks to serve with dip. In the computer world, they are miniature electronic circuits. This Valentine's Day, February 14, have your students use computer words to write their valentine messages. Here's how.

To start your students off, list computer terms on the chalkboard. Let the students choose a word and think about what it means when referring to the computer.

Instruct your students to use the computer words they choose to write a short sentence about their valentines. For instance, if a student chooses the word *disk*, he or she knows that disks must be handled with care. The student may write a valentine like this: "My heart is like a DISK. Handle it with care!"

This exercise will probably take some brainstorming, so encourage your students to bounce ideas off each other. At first students may not understand each other's messages, but if the computer words are used correctly, you'll see smiles of understanding gradually creep over their faces.

This exercise is not limited to words. Remind your students of some of the abbreviations used with the computer, such as RAM and ROM. Your students should think about what these letters stand for to use them in their messages. Here's one message using ESC: "You can't ESCape....So RETURN to me!" This message uses a computer term and a computer abbreviation. Encourage your students to use as much computer jargon as possible in their valentine messages.

If your students get stuck, here are some samples you can share with them:

When my CHIPS are down, you are there!

INPUT love; OUTPUT happiness.

Valentine, you are the one;
I need your love to make me RUN.

You may be VARIABLE,
But I think you're marry-able.

Valentine, you have the PASSWORD to ACCESS my heart.

How do I love thee?
Let me LIST and RUN the ways.

I'm LOGO over you.

Valentine, you wrote the PROGRAM on BASIC love.

What's a valentine message without a card on which to present it? Once your students have either created or selected a saying, they should design a card to go with it. On the next page are two sample valentine cards. Students may wish to make these valentines or similar ones. If your students choose to make the RAM or the BYTE HEART on the next page, copy the page and pass it out to your students.

To assemble the ram, color and cut out the ram's head and matching heart. Glue the ram's neck to the back of a small, empty juice can that has been covered with colored paper. Position the ram's arms around the can, as if it is hugging it, and glue the heart to the arms where marked. Fill the can with nuts and raisins or valentine candy.

To make the BYTE HEART, color and cut the pattern. Write the message "You've taken a big BYTE out of my heart" in the center of the pattern. Fold in half where indicated. Now it's ready to be sent to a valentine.

Wendy Caron
Tom Conklin

BYTE HEART

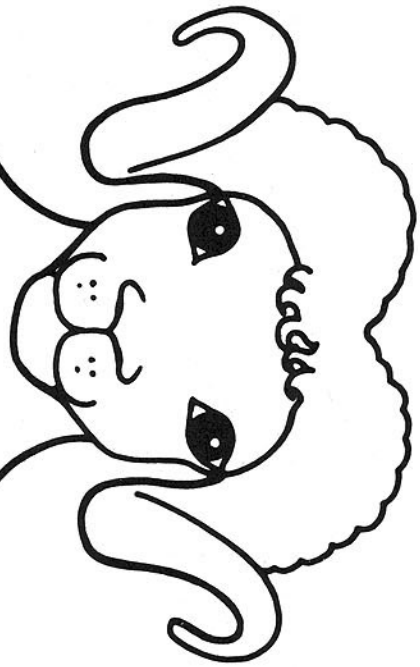
You've taken a big BYTE out of my heart.

FOLD

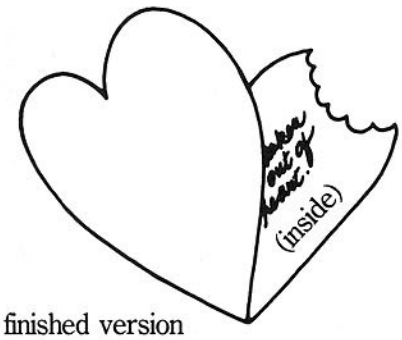
GLUE

GLUE

RAM



Ram-ember I Love Ewe



finished version

finished version

Atari 400, 800, 800XL Radio Shack Color Computer TRS-80 Models I/III

INSTANT VALENTINE INVITATIONS WORKSHEET

VALENTINE'S DAY FEBRUARY 14

NAME: _____

Want to throw a Valentine's Day Party on February 14? Your computer can help you write the invitations! Here's how.

The *Instant Valentine Invitation* program on this page makes invitations for a Valentine's Day Party. You tell the computer where and when the Valentine's Day party will take place and the names of your guests. The computer prints a Valentine's Day party invitation addressed personally to each guest.

WHAT TO DO

Put your computer in BASIC. Type NEW and press RETURN or ENTER.

Type in the *Instant Valentine Invitation* program listing exactly as it appears.

Make sure the printer is ready. RUN the program and answer the questions as they appear. Press RETURN or ENTER after each answer. *Do not* use a comma or a colon in your answers.

When you have answered all the questions, the computer will print a Valentine's Day party invitation...instantly!

INSTANT VALENTINE INVITATION

```
10 PRINT "WHAT IS YOUR NAME?" :INPUT H$
20 PRINT "WHERE WILL THE PARTY TAKE PLACE?" :INPUT L$
30 PRINT "ON WHAT DAY?" :INPUT D$
40 PRINT "AT WHAT TIME?" :INPUT T$
50 PRINT "ENTER SPECIAL INSTRUCTIONS. (PRESS RETURN/ENTER IF THERE ARE NONE.)" :INPUT I$
60 PRINT "ENTER THE NAME OF A GUEST." :INPUT G$
70 PRINT:PRINT "PRESS RETURN/ENTER WHEN THE PRINTER IS READY.":INPUT Z$
80 LPRINT:LPRINT:LPRINT "DEAR ";G$;","
90 LPRINT:LPRINT "YOU ARE INVITED TO A VALENTINE'S DAY PARTY!"
100 LPRINT:LPRINT "PLACE: ";L$
110 LPRINT "DATE: ";D$
120 LPRINT "TIME: ";T$
130 LPRINT:LPRINT I$
140 LPRINT:LPRINT
"          CORDIALLY," :LPRINT
"          ";H$
150 PRINT "ARE THERE OTHER GUESTS?" :INPUT Z$
160 IF Z$ = "Y" OR Z$ = "YES" THEN 60
170 END
```

Note: Atari users add 1 DIM H$(30), O$(20), L$(30), D$(20), T$(20), I$(40), Z$(3), G$(30). Radio Shack users add 1 CLEAR 5000.

Challenge 1: Add fancy decorations to the program. (Hint: Use the "*" key to make a pretty border or design.)

Challenge 2: You can also use this program to make invitations for other events, like birthday parties. To use this program to make invitations for other occasions, you must make two changes.

1. Add this line: 25 PRINT:PRINT "WHAT IS THE EVENT?" :INPUT O$

2. Change line 90 to LPRINT : LPRINT "YOU ARE INVITED TO A ";O$;" PARTY."

Apple II Plus and IIe

INSTANT VALENTINE INVITATIONS WORKSHEET

VALENTINE'S DAY FEBRUARY 14

NAME: _____

Want to throw a Valentine's Day Party on February 14? Your computer can help you write the invitations! Here's how.

The *Instant Valentine Invitation* program on this page makes invitations for a Valentine's Day Party. You tell the computer where and when the Valentine's Day party will take place and the names of your guests. The computer prints a Valentine's Day party invitation addressed personally to each guest.

WHAT TO DO

Put your computer in BASIC. Type NEW and press RETURN or ENTER.

Type in the *Instant Valentine Invitation* program listing exactly as it appears.

Make sure the printer is ready. RUN the program and answer the questions as they appear. Press RETURN or ENTER after each answer. *Do not* use a comma or a colon in your answers.

When you have answered all the questions, the computer will print a Valentine's Day party invitation...instantly!

INSTANT VALENTINE INVITATION

```
10 PRINT "WHAT IS YOUR NAME?" :INPUT H$
20 PRINT "WHERE WILL THE PARTY TAKE PLACE?" :INPUT L$
30 PRINT "ON WHAT DAY?" :INPUT D$
40 PRINT "AT WHAT TIME?":INPUT T$
50 PRINT "ENTER SPECIAL INSTRUCTIONS. (PRESS RETURN IF THERE ARE NONE.)" :INPUT I$
60 PRINT "ENTER THE NAME OF A GUEST." :INPUT G$
70 PRINT:PRINT "PRESS RETURN WHEN THE PRINTER IS READY." :INPUT Z$
80 PR#1:PRINT:PRINT:PRINT "DEAR " ;G$; ","
90 PRINT:PRINT "YOU ARE INVITED TO A VALENTINE'S DAY PARTY!"
100 PRINT:PRINT "PLACE: ";L$
110 PRINT "DATE: ";D$
120 PRINT "TIME: ";T$
130 PRINT:PRINT I$
140 PRINT:PRINT "          CORDIALLY," : PRINT "          " ;H$
150 PR#0:PRINT "ARE THERE OTHER GUESTS?":INPUT Z$
160 IF Z$ = "Y" OR Z$ = "YES" THEN 60
170 END
```

Challenge 1: Add fancy decorations to the program. (Hint: Use the "*" key to make a pretty border or design.)

Challenge 2: You can also use this program to make invitations for other events, like birthday parties. To use this program to make invitations for other occasions, you must make two changes.

1. Add this line: 25 PRINT:PRINT "WHAT IS THE EVENT?" :INPUT O$
2. Change line 90 to PRINT:PRINT "YOU ARE INVITED TO A ";O$;" PARTY."

FEBRUARY

QUICK TIPS

MAKE A VALENTINE CARD LIST

Valentine's Day, February 14, can be disappointing for students who don't receive many valentines. To encourage my students to send each member of the class a valentine, I give them a printout that lists all their classmates' names. The list is easy to make. In fact, we make it together.

First I type in:

```
10 PRINT "STUDENTS IN MRS. GRAY'S CLASS"
```

Next, I have each student type in his or her own name.

```
20 PRINT "STACY DAVIS"
30 PRINT "MATT BEAMER"
40 PRINT "ERIN O'DONNELL"
```

When all the names are entered we type RUN and press ENTER or RETURN. Our student list will appear on the screen. We review the list to be sure everyone's name is included and printed correctly.

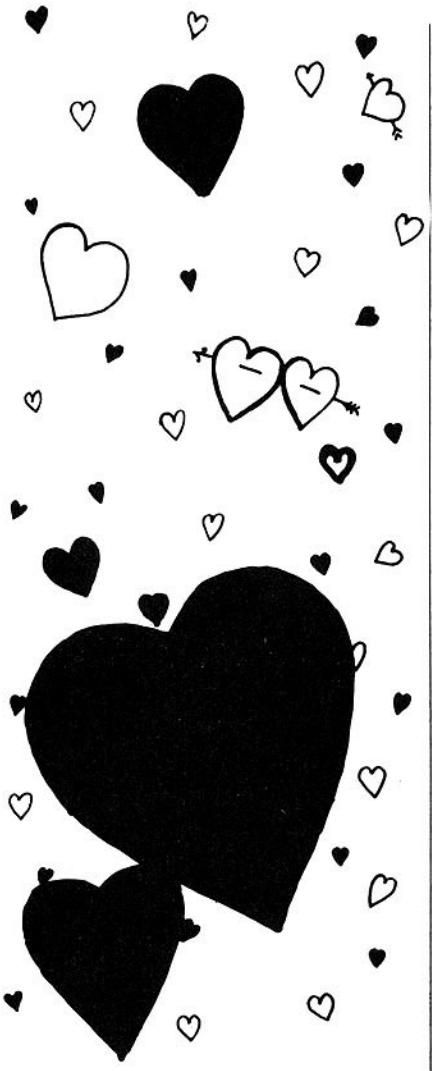
If everyone's name has been spelled correctly, I make a printout of the list for each student. To make the printouts on an Apple computer, I add this line: `5 PR#1`. If you have an Atari or Radio Shack computer, you must change PRINT to LPRINT to make the printouts.

FEBRUARY SOFTWARE TIPS

Elect one of these programs to help your students celebrate the birthdays of two famous U.S. presidents, Abraham Lincoln (February 12) and George Washington (February 22).

Lincoln's Decisions

Given the choices that Abraham Lincoln faced, students try in this simulation to guess the presidential decisions he made.



Apple II, IIe; Commodore 64; TRS-80 III, 4; grades 5–12; Educational Activities, PO Box 392, Freeport, NY 11520; 516/223-4666; $63.

Meet the Presidents

With the help of eight clues, students try to identify the president that is gradually displayed on the screen.

Apple II series; grades 4–9; Versa Computing, 3541 Old Conejo Rd., #103, Newbury Park, CA 91320; 805/498-1956; $39.95.

President's Choice

In this simulation program, students deal with the problems and decisions that confront contemporary presidents.

Apple II series; IBM PC; Commodore 64; grades 6–12; Spinnaker Software; One Kendall Sq., Cambridge, MA 02139; 617/494-1200; $39.95.

DECORATE A VALENTINE PRINTOUT

Cupids and hearts, sweet songs and poems. Everyone's thoughts turn to love on Valentine's Day, February 14. This activity lets your students express what love is to them and at the same time creates an attractive door decoration.

On the chalkboard write "Love is..." and ask your students to fill in the blank. You'll probably have to start them off by giving examples of what "love is" to you. Once your students start to express themselves, select one student to type their ideas into the computer. For example:

```
10 PRINT "LOVE IS... "
20 PRINT "A DOG NAMED SAMSON, "
30 PRINT "SHARING CANDY WITH MY SISTER, "
40 PRINT "HELPING MOM WITH THE DISHES, "
50 END
```

After each student has contributed two or three examples, type RUN and press ENTER or RETURN. This will display the list, so the class can check for spelling errors.

When you've corrected all spelling errors, make a printout of the list. To make the printout using an Apple computer, add this line: 5 PR#1. If you have a Radio Shack or Atari computer, change the PRINT commands to LPRINT. Your students can decorate the printout with hearts, cupids, and flowers. Hang the printout on your door as a valentine from your class to the rest of the school.

GIVE STUDENTS PERSONAL VALENTINES

Did you know that teachers receive more valentines than any other professional group? Here's a BASIC program that you can use every Valentine's Day, February 14, to help you give as many valentines as you receive. This program will produce a personalized valentine for every student in your class.

To use the program, you must hook up your computer to a printer. When you run the program, the computer asks you to enter a student's first and last names. The computer will accept up to 16 characters in each student's name. After you type in a name, the computer tells the printer to print out that student's name in the shape of a V and wishes him or her a Happy Valentine's Day. Each time the computer completes a printout, the program loops to the beginning and asks for another student's name.

```
10 INPUT "ENTER A STUDENT'S FIRST
   AND LAST NAME. THE COMPUTER
   WILL ACCEPT UP TO 16 CHARACTERS
   IN THE NAME.";P$
20 INPUT "TURN YOUR PRINTER ON AND
   PRESS RETURN OR ENTER.";Z$
30 N$ = "       " + P$ +"       "
40 FOR L = LEN(N$) TO 1 STEP -1
50 S = 30 - L
60 PR#1:PRINT TAB (S) LEFT$(N$,L)
   RIGHT$(N$,L)
70 NEXT L
80 PRINT "       HAPPY VALENTINE'S
   DAY ";P$
90 PRINT:PRINT:PRINT:PR#0
100 INPUT "DO YOU WANT TO MAKE AN-
   OTHER VALENTINE? (YES/NO)";Q$
110 IF Q$ = "YES" THEN GOTO 10
```

This listing is for Apple computers. If you have a TRS-80 computer, you can use the program by deleting PR#1 and PR#0 in lines 60 and 90 and changing the PRINT command in lines 60, 80, and 90 to LPRINT.

Craig Dickinson

PLAY MUSICAL KEYBOARDS

Groundhog Day, Valentine's Day, and President's Day can provide great material for creative writing. My kids write about these holidays with the help of a fun word processing activity called Musical Keyboards.

Before beginning the activity, display these story titles on the chalkboard: "The Groundhog's Big Surprise," "My Hero Abraham Lincoln," "Cupid Strikes Again," and "The Adventures of Our First President."

To begin, assign a student to each computer. Have children boot up their word processing programs. Tell each child to select a story topic from the board and write an introduction for such a story. While students are writing, play music. About 10 minutes later, turn it off. Tell kids to stop typing, leave their stories on their screens, and move to a different computer.

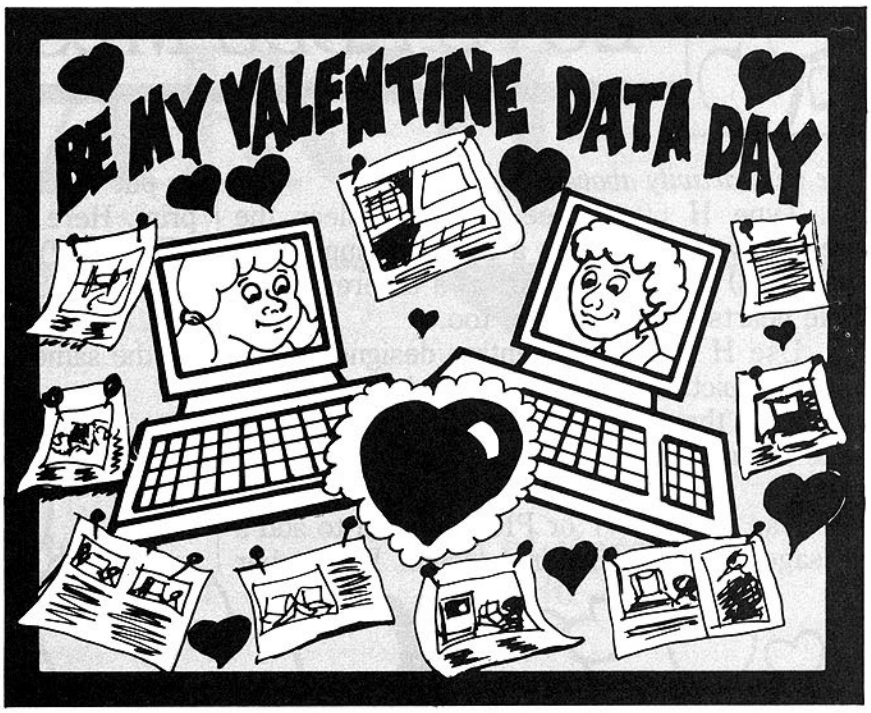
After students are seated, begin the music again. At the new computers, tell children to read the stories on the screen and type in continuations of them. Again, stop the music after 10 minutes and have students move to a new computer. Continue until students have contributed to several stories.

Finally, tell them to return to their original computers, read the interesting twists their stories have taken, and write endings for them.

Mary Ellen Switzer

CREATE A VALENTINE BULLETIN BOARD

Here's a Valentine's Day (February 14) bulletin board idea that helps students become aware of how computers are used in day-to-day lives.



This valentine display shows how computers are used in everyday life.

Cut out two computer shapes (each complete with keyboard and monitor) from butcher paper. Tack the shapes side by side in the center of the board. Draw a boy's face on one monitor and a girl's face on the other. Tack up paper letters that say "Be My Valentine Data Day" at the top of the board. Tear out pictures from magazines of how computers are used in day-to-day life, such as in grocery stores, banks, and offices. Tape these pictures onto red, white, or pink construction paper and post them on the board around the computers.

Donna Helm

USE LOGO TO MAKE ELECTRONIC VALENTINES

Here's a Logo activity in which students combine hearts of different sizes into electronic valentine designs they can display to the class.

Logo Prerequisites: Students should be familiar with the FD, BK, RT, LT, CS or DRAW, PRINT, and REPEAT commands. They should also know how to use Logo variables, define procedures, and save and load or read programs.

Preparation: Copy and laminate the Logo Valentine Task Card below. Then type in and save the following procedures on a blank disk or cassette under the file name VALENTINE.

```
TO H :D
  HT LT 30 FD :D RT 30 TOP :D
  RT 30 FD :D RT 150
END

TO TOP :D
  ARC :D RT 180 ARC :D
END

TO ARC :D
  MAKE "RADIUS :D/4
  REPEAT 18 [RT 5 FD :RADIUS * .174532
    RT 5]
END
```

Activity: Boot Logo and load the VALENTINE procedures into the computer's memory. Students will save all their valentines on the same disk or cassette containing the VALENTINE program.

Have students take turns doing the task card. The task card tells students to make heart shapes in different sizes and to combine the hearts into a valentine design. Have each student make his or her electronic valentine for someone else in the class. (Draw names from a box. If there is an odd number of students, add your name to the list.)

Remind students that their valentine messages should be four lines or less; otherwise the extra lines will not appear on the screen.

On Valentine's Day, have each student load the program stored under his or her name on the VALENTINE disk or cassette. To read the valentine, the student types his or her name and presses RETURN or ENTER.

Evelyn Dale

COPY AND LAMINATE

LOGO VALENTINE TASK CARD

LOVE-ABLE MESSAGES

(Use with activity above.)

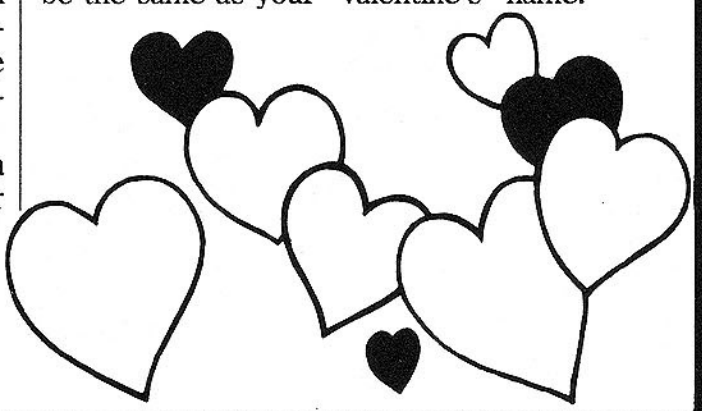
1. Type H 50 to see a heart. Clear the screen. Type H and put a different number in place of 50 to make a heart of a different size. Make hearts of other sizes, too.

2. Use H to make valentine designs. When you get a picture you like, define it as a procedure. Give the procedure the same name as the name of the person who will receive the valentine.

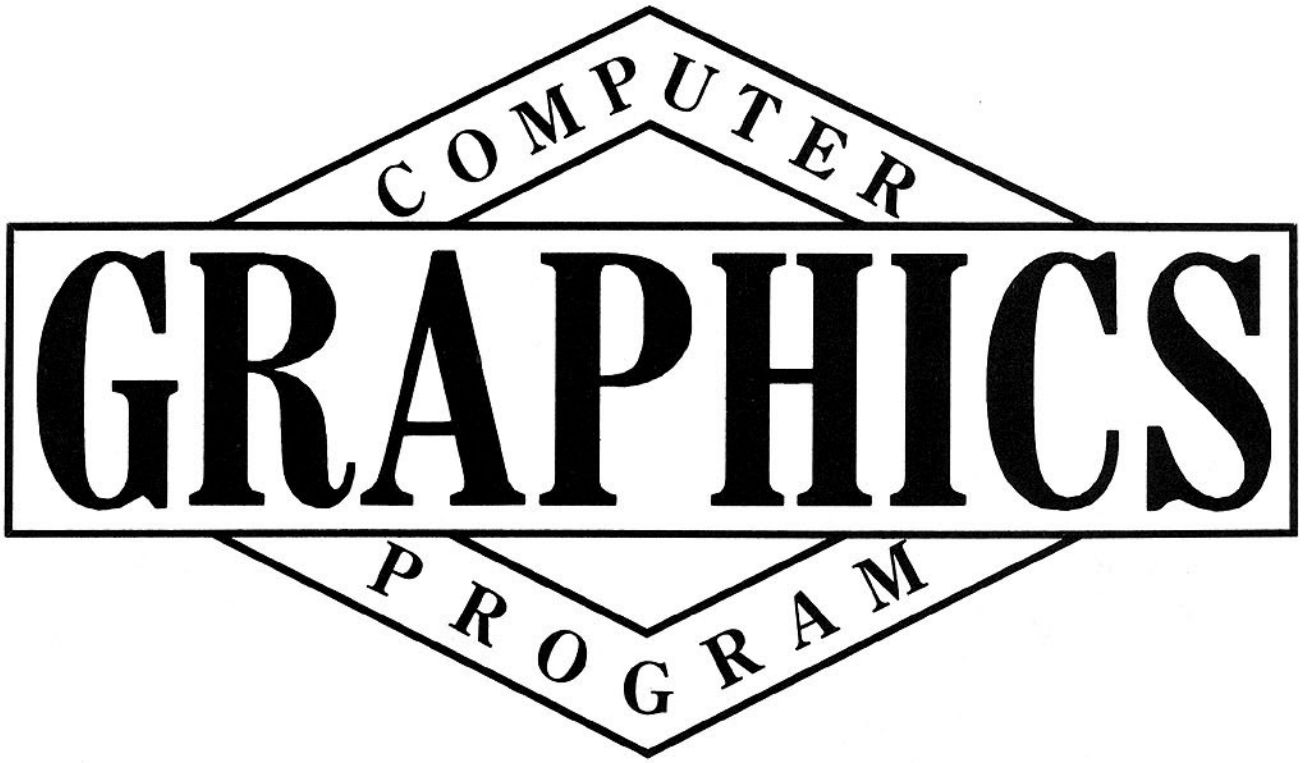
3. Use the PRINT or PR command to add a message to your valentine design. Remember to put brackets around the words you want to print. Here is an example:

PR [HAPPY VALENTINE'S DAY.]
PR [GUESS WHO?]

4. Save your valentine. The file name should be the same as your "valentine's" name.



MARCH



The *Easy Draw* graphics program is a tool that turns your computer screen into an artist's canvas. It allows children to draw designs on the computer by pressing keys (Apple II and Radio Shack versions) or by manipulating a joystick (Atari version). It also allows kids to save their designs and retrieve them later.

To run the program, you need a keyboard, a monitor, and a disk drive. Atari users also need a joystick.

HOW THE PROGRAM WORKS

When the program is first loaded, instructions are offered. Users who are familiar with the instructions may start the drawing program immediately by pressing the "N" key.

The program allows you to draw with the cursor, to move the cursor to another location on the screen without drawing, to clear the screen, to save your picture on a disk, and to retrieve a picture you saved on a disk. The program does not allow you to print your designs on paper. The Apple and Atari versions of this program allow you to draw in color; the TRS-80 version of the program does not.

Easy Draw also features a menu that appears at the bottom of the screen to remind kids of the operating commands.

USING THE PROGRAM

Easy Draw provides many possibilities for stimulating creativity and for practicing design concepts. First show students how the program works. Then you might allow them to explore its creative potential on their own. Or, if you prefer to introduce the program with more structured drawing activities, here are some examples to get you started.

Reproduce an Artist's Pattern

Select some art books from your school library that feature simple patterns and designs. Ask students to choose their favorite patterns. Then have them use the *Easy Draw* program to reproduce the patterns on the computer screen. To challenge students, hold a contest and award prizes to the children whose computer pictures most closely resemble their selected patterns.

Imitate a Friend's Design

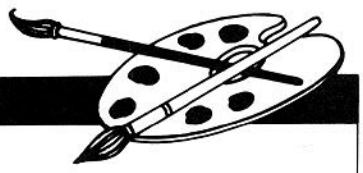
Students work in pairs for this activity. One student draws a design on the left side of the computer screen with the *Easy Draw* program. The student's partner imitates the design on the right side of the screen. Students switch roles to experience creating and imitating designs.

Complete the Picture

Working with a partner, one student uses the *Easy Draw* program to draw half of a picture on the left side of the screen. The other student completes the picture on the right side of the screen. Make sure both students get a chance to start and to complete a picture. (This makes a great lesson on symmetry.)

Make a Funny Face

Students use the *Easy Draw* program to draw the outline of a face on the computer screen. Then they use the letters in their first names to draw features on the face. For example, a student named Barb could use the two "bs" in her name for eyes, the "a" for a nose and the "r" turned on its side as a mouth.



EASY DRAW INSTRUCTIONS

On the following pages are separate listings for three versions of the *Easy Draw* program: an Apple version, an Atari version, and a Radio Shack version. Below are special instructions for using each of the program versions.

Apple II (DOS 3.3)

- CTRL-L allows you to move the cursor to another location on the screen without drawing.
- CTRL-D lets you draw. Each time you press CTRL-D, you must also choose a color to see your picture on the screen. (Information on color selections appears at the end of these instructions.)
- CTRL-C clears the screen. This command makes your picture disappear. Once you press CTRL-C, you can't get your picture back, unless you have saved it on a disk.
- CTRL-S saves the picture on your screen on a disk. You must give the picture a file name. To choose a file name, follow the SAVE rules you use for choosing a file name in BASIC or any word processing program.
- CTRL-F finds a picture you have saved on disk. If you try to find a picture that is not on the disk, the program ends. Type RUN to start the program again.
- CTRL-E ends the program.
- To move the cursor in any of the following directions, press the corresponding keys:

North	I
Northeast	O
East	K
Southeast	,
Southwest	N
West	J
Northwest	U

HINT: You may want to place a piece of tape on each of the keys listed above to indicate the direction it represents.

- The program allows you to draw in 16 colors by pressing the following number and letter keys:

0 Black	**8** Brown
1 Magenta	**9** Orange
2 Dark blue	**G** Gray
3 Purple	**P** Pink
4 Dark green	**Y** Yellow
5 Gray	**A** Aqua
6 Medium blue	**W** White
7 Light blue	

- You erase by choosing black (zero) and then drawing over the section you want to erase.
- You must choose a color each time you press CTRL-D.
- On the Apple IIe computer, you can repeat a command by holding down the appropriate key.
- On the Apple II+ computer, you must hold down the REPEAT key while you press the command key to repeat a command.
- If your Apple system uses ProDos, you will need to make minor adjustments to run this program. Refer to your user's manual for instructions.

Atari

- Joystick is required.
- "U" allows you to move the cursor to another location on the screen without drawing.
- "D" lets you draw.
- "C" clears the screen. This command makes your picture disappear. Once you press the "C" key you can't get your picture back unless you have saved it on a disk.
- "S" saves the picture on your screen on a disk. To save a picture, you must give it a file name made of eight or fewer characters.
- "L" loads a picture you have saved on disk. If you try to load a picture not on the disk, the computer flashes an error message and then returns you to the drawing program.
- "E" allows you to erase by drawing over the appropriate section with the joystick.
- "Q" allows you to quit (or end) the program.
- To move the cursor, you move the joystick in the desired direction.
- The program allows you to draw in three colors. Press "O" for orange, "B" for blue, and "G" for green.
- When you type the program into your computer, type the characters printed in italics in lines 1030, 1040, and 2920 in reverse field. To type in reverse field, press the Atari key along with the appropriate character. To exit the reverse field and return to normal mode, type the Atari key again.

TRS-80 Model III

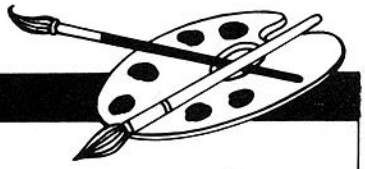
- "U" allows you to move the cursor to another location on the screen without drawing.
- "D" lets you draw.
- "C" clears the screen. This command makes your picture disappear. Once you press the "C" key, you can't get your picture back unless you have saved it on a disk.
- "S" saves the picture on your screen on a disk. You must give the picture a file name. To choose a file name, follow the SAVE rules you use for choosing a file name in BASIC or any word processing program. The program saves pictures very slowly.
- "F" finds a picture you have saved on disk. If you try to find a picture that is not on the disk, the program ends. Type RUN to start the progam again.
- "E" allows you to exit the program.
- To move the cursor, you press any number on the keypad that is placed in the direction you wish to move.
- The program allows you to draw in black and white only. Press "W" for white and "B" for black.
- You erase by choosing black ("B") and then drawing over the section you want to erase.

Programs by Michael Milone, Henry Gaylord, and William Kraus.

PROGRAM LISTING FOR *EASY DRAW*

This program will run on Apple II+ and IIe computers, but not on Apple IIc. See page 119 for special instructions on how to run the program.

```
10  ONERR  GOTO 740
20  TEXT : HOME :D$ =  CHR$ (4)
30  VTAB 10: INPUT "DO YOU WANT INSTRUCTIONS (Y/N)?";A$
40  IF A$ = "N" THEN 270
50  IF A$ <  > "Y" THEN 20
60  HOME : PRINT "1. EACH COLOR HAS A NUMBER OR LETTER."
70  PRINT "TO CHOOSE A COLOR, PRESS THE NUMBER OR"
80  PRINT "LETTER OF THAT COLOR. TO ERASE, CHOOSE"
90  PRINT "'0' FOR BLACK."
100  HTAB 31: PRINT "I": HTAB 27: PRINT "U";: HTAB 35: PRINT "O"
110  HTAB 28: PRINT  CHR$ (92);: HTAB 31: PRINT "^";: HTAB 34: PRINT "/"
120  HTAB 29: PRINT  CHR$ (92);: HTAB 31: PRINT "!";: HTAB 33: PRINT "/"
130  PRINT "2. DRAW IN ANY DIRECTION";: HTAB 30: PRINT  CHR$ (92);"!/"
140  PRINT "BY PUSHING THE KEYS";: HTAB 26: PRINT "J <--*--> K"
150  PRINT "SHOWN ON THIS CHART.";: HTAB 30: PRINT "/!"; CHR$ (92)
160  HTAB 29: PRINT "/";: HTAB 31: PRINT "!";: HTAB 33: PRINT  CHR$ (92)
170  HTAB 28: PRINT "/";: HTAB 31: PRINT "V";: HTAB 34: PRINT  CHR$ (92)
180  HTAB 27: PRINT "N";: HTAB 35: PRINT ",";: PRINT : HTAB 31: PRINT "M"
190  PRINT : PRINT "3. PRESS CTRL-C TO CLEAR THE SCREEN."
200  PRINT "  PRESS CTRL-L TO LIFT THE PEN."
210  PRINT "  PRESS CTRL-D TO DROP THE PEN."
220  PRINT "  PRESS CTRL-S TO SAVE THE PICTURE."
230  PRINT "  PRESS CTRL-F TO FIND THE PICTURE."
240  PRINT "  PRESS CTRL-E TO END THE PROGRAM."
250  PRINT : HTAB 9: PRINT "PRESS RETURN TO BEGIN.";
260  GET A$
270  GR :H = 18:V = 20:C = 15:P = 1
280  FOR I = 0 TO 30 STEP 2: COLOR= I / 2: PLOT I,39: NEXT I
290  HOME : FOR I = 0 TO 9: PRINT I;" ";: NEXT I
300  PRINT "G P C Y A W": PRINT "CTRL-L = LIFT PEN";: HTAB 20: PRINT "CTRL -D = ";: INVERSE : PRINT "PEN DOWN": NORMAL
310  PRINT "CTRL-C = CLEAR";: HTAB 20: PRINT "CTRL-E = END"
320  PRINT "CTRL-S = SAVE";: HTAB 20: PRINT "CTRL-F = FIND";
330  IF P = 0 THEN C =  SCRN( H,V)
340  COLOR= C: PLOT H,V
350 K =  PEEK ( - 16384): IF K < 128 THEN  COLOR= (C = 0) + C *  NOT  SCRN(H,V): PLOT H,V: GOTO 350
360 K = K - 128: COLOR= C: PLOT H,V: IF V > 38 THEN V = 38: GOTO 330
370  POKE  - 16368,0
380  IF K = 73 AND V > 0 THEN V = V - 1
390  IF K = 85 AND H > 0 AND V > 0 THEN H = H - 1:V = V - 1
400  IF K = 77 AND V < 38 THEN V = V + 1
410  IF K = 79 AND H < 39 AND V > 0 THEN H = H + 1:V = V - 1
420  IF K = 74 AND H > 0 THEN H = H - 1
430  IF K = 78 AND H > 0 AND V < 38 THEN H = H - 1:V = V + 1
440  IF K = 75 AND H < 39 THEN H = H + 1
450  IF K = 44 AND H < 39 AND V < 38 THEN H = H + 1:V = V + 1
460  IF K > 47 AND K < 58 THEN C = K - 48:K = 4
470  IF K = 71 THEN C = 10:K = 4
480  IF K = 80 THEN C = 11:K = 4
490  IF K = 67 THEN C = 12:K = 4
500  IF K = 89 THEN C = 13:K = 4
510  IF K = 65 THEN C = 14:K = 4
520  IF K = 87 THEN C = 15:K = 4
530  IF K = 5 THEN  TEXT : HOME : END
540  IF K = 19 THEN 590
550  IF K = 6 THEN 670
560  IF K = 12 THEN P = 0: VTAB 22: HTAB 10: INVERSE : PRINT "LIFT PEN";: NORMAL : HTAB 29: PRINT "PEN DOWN"
570  IF K = 4 THEN P = 1: VTAB 22: HTAB 10: PRINT "LIFT PEN";: INVERSE : HTAB 29: PRINT "PEN DOWN": NORMAL
580  GOTO 330
590  HOME : VTAB 22: PRINT "WHAT DO YOU WANT TO CALL THIS PICTURE?": INPUT P$
600  IF P$ = "" THEN 290
610  VTAB 24: INPUT "IS THE NAME CORRECT (Y/N)?";A$
620  IF A$ = "N" THEN 590
630  IF A$ <  > "Y" THEN 610
640  COLOR= 0: HLIN 0,39 AT 39
650  PRINT D$;"BSAVE ";P$;",A$400, L$3F8"
660  GOTO 280
670  HOME : VTAB 22: INPUT "WHAT IS THE NAME OF THE PICTURE? ";P$
680  IF P$ = "" THEN 290
690  VTAB 24: INPUT "IS THE NAME CORRECT (Y/N)? ";A$
700  IF A$ = "N" THEN 670
710  IF A$ <  > "Y" THEN 690
720  PRINT D$;"BLOAD ";P$;" ,A$400"
730 P = 0:H = 2:V = 39:C = 1: GOTO 280
740  IF  PEEK (222) = 255 THEN 270
750  HOME : PRINT "PROGRAM ERROR IN LINE ";256 *  PEEK (219) +  PEEK (218) : END
```



PROGRAM LISTING FOR *EASY DRAW*

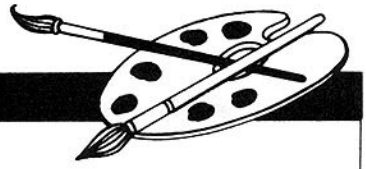
This program will run on Atari 800 or 800XL computers. See page 119 for special instructions on how to run the program.

```
5 REM Characters in italics in lines 1030, 1040, and 2920
6 REM should be typed in reverse field.
10 C=1:S=100:X=80:Y=40:P=1:TC=1
15 DIM F$(10),Q$(8)
20 GOTO 1000
100 REM PLOT POINT
110 TX=X+DX:TY=Y+DY
120 IF TX<0 OR TX>159 OR TY<0 OR TY>79 THEN RETURN
130 SOUND 0,50+2.5*TY,10,4
140 X=TX:Y=TY
150 IF P=1 THEN PLOT X,Y
160 RETURN
1000 REM MAIN PROGRAM
1005 GRAPHICS 7
1010 TRAP 1010:POKE 752,1
1020 PRINT CHR$(125);"Press highlighted letter to select:"
1025 REM Type the O, G, B, E, C, U, D, L, S, and Q
1026 REM in the next two lines in reverse field.
1030 PRINT "Orange   Green   Blue   Erase   Clear"
1040 PRINT :PRINT "Pen Up   Pen Down   Load   Save   Quit";
1100 Q=STICK(0)
1110 DX=(Q=5 OR Q=6 OR Q=7)-(Q=9 OR Q=10 OR Q=11)
1120 DY=(Q=5 OR Q=9 OR Q=13)-(Q=6 OR Q=10 OR Q=14)
1130 IF DX<>0 OR DY<>0 THEN GOSUB 100:GOTO 1100
1140 COLOR 0:IF C=0 THEN COLOR 1
1150 PLOT X,Y:SOUND 0,0,0,0
1160 POKE 77,1:POKE 694,0:POKE 702,64
1170 Q=PEEK(764):POKE 764,255
1180 IF Q=8 AND P=1 THEN C=1:REM ORANGE
1190 IF Q=61 AND P=1 THEN C=2:REM GREEN
1200 IF Q=21 AND P=1 THEN C=3:REM BLUE
1210 IF Q=42 AND P=1 THEN C=0:REM ERASE
1220 IF Q=18 THEN GOTO 1000:REM CLEAR
1230 IF Q=47 THEN POKE 752,0:END :REM QUIT
1240 IF Q=11 THEN P=0:TC=C:C=0:REM PEN UP
1250 IF Q=58 THEN P=1:C=TC:REM PEN DOWN
1260 IF Q=0 THEN GOSUB 2000:GOTO 1010:REM LOAD
1270 IF Q=62 THEN GOSUB 2100:GOTO 1010:REM SAVE
1280 COLOR C:PLOT X,Y:GOTO 1100
2000 REM LOAD PICTURE
2010 POKE 752,0:I=7:Q=4
2020 PRINT CHR$(125);"Name of picture to load";
2030 INPUT Q$:GOSUB 2900:RETURN
2100 REM SAVE PICTURE
2110 POKE 752,0:I=11:Q=8
2120 PRINT CHR$(125);"Name of picture to save";
2130 INPUT Q$:GOSUB 2900:RETURN
2900 TRAP 2990
2905 F$="D:":F$(3)=Q$:OPEN #1,Q,0,F$
2910 REM The "*" and "d" in line 2920 must be in reverse field.
2920 Q$="hhh*LVd"
2950 POKE 852,PEEK(88):POKE 853,PEEK(89)
2955 POKE 850,I:POKE 856,128:POKE 857,12
2960 Q=USR(ADR(Q$),16):CLOSE #1:RETURN
2990 CLOSE #1:PRINT :PRINT "*** DISK ERROR ***"
2995 FOR I=1 TO 1000:NEXT I:RETURN
```

PROGRAM LISTING FOR *EASY DRAW*

This program will run on TRS-80 Model III computers. See page 119 for special instructions on how to run the program.

```
10 CLEAR 5000:DIM SC$(13)
20 CLS
30 PRINT@448,:INPUT"DO YOU WANT INSTRUCTIONS (Y/N) ";A$
40 IF A$="N" THEN 250
50 IF A$<>"Y" THEN 20
60 CLS:REM INSTRUCTIONS
70 PRINT "1. PRESS W TO DRAW IN WHITE OR B TO ERASE IN BLACK."
80 PRINT:PRINT@173,"8"
90 PRINT@232,"7";STRING$(4,32);CHR$(94);STRING$(4,32);"9"
100 PRINT@298,CHR$(92);CHR$(32);CHR$(32);"!";CHR$(32);CHR$(32);"/"
110 PRINT "2. DRAW OR ERASE IN ANY DIRECTION"
120 PRINT @364,CHR$(92);"!/"
130 PRINT "BY PRESSING THE NUMBER KEYS AS"
140 PRINT@422,"4 <----*----> 6"
150 PRINT "SHOWN ON THIS CHART."
160 PRINT@492,"/!";CHR$(92)
170 PRINT@554,"/";CHR$(32);CHR$(32);"!";CHR$(32);CHR$(32);CHR$(92)
180 PRINT@616,"1";STRING$(4,32);"v";STRING$(4,32);"3"
190 PRINT@685,"2"
200 PRINT:PRINT"3. PRESS U FOR PEN UP, D FOR PEN DOWN, F
    TO FIND AND LOAD A"
210 PRINT "PICTURE FROM DISK, S TO SAVE A PICTURE TO DISK,
    C TO CLEAR THE"
220 PRINT "SCREEN, E TO END THE PROGRAM."
230 PRINT@980,"PRESS ENTER TO CONTINUE.";
240 K$=INKEY$:IF K$="" THEN 240
250 H=63:V=20:P=1:C=-1
260 CLS:REM ON-SCREEN MENU
270 FOR I=1 TO 14:PRINT STRING$(64,128);:NEXT I
280 PRINT@896,"U = PEN UP";
290 PRINT@960,"D = PEN DOWN";
300 PRINT@944,"C = CLEAR SCREEN";
310 PRINT@1008,"E = END";
320 PRINT@997,"S = SAVE";
330 PRINT@933,"F = FIND";
340 PRINT@913,"W = WHITE (DRAW)";
350 PRINT@977,"B = BLACK (ERASE)";
360 IF P=0 THEN K$="U":GOTO 700
370 IF P=0 THEN C=POINT(H,V)
380 REM ERASE POINT AT H,V
390 IF C=0 THEN RESET(H,V):GOTO 420
400 SET(H,V):REM PLOT POINT AT H,V
410 REM GET INPUT FROM KEYBOARD
420 K$=INKEY$:IF K$<>"" THEN 440
430 SET(H,V):RESET(H,V):GOTO 420
440 IF V>41 THEN V=41:REM CHECK FOR SCREEN BOUNDARY
450 REM IF THE COLOR IS WHITE, THEN SET A POINT AT H,V
460 IF C=-1 THEN SET(H,V):GOTO 500
470 REM IF THE COLOR IS BLACK, THEN ERASE THE POINT AT H,V
```

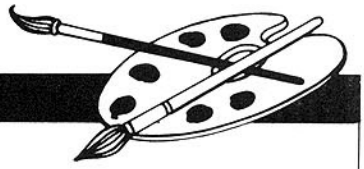


```
480 RESET(H,V)
490 REM MOVE THE CURSOR IN THE DIRECTION INDICATED BY THE NUMBER
500 IF K$="8" AND V>0 THEN V=V-1
510 IF K$="7" AND H>0 AND V>0 THEN H=H-1:V=V-1
520 IF K$="2" AND V<41 THEN V=V+1
530 IF K$="9" AND H<127 AND V>0 THEN H=H+1:V=V-1
540 IF K$="4" AND H>0 THEN H=H-1
550 IF K$="1" AND H>0 AND V<41 THEN H=H-1:V=V+1
560 IF K$="6" AND H<127 THEN H=H+1
570 IF K$="3" AND H<127 AND V<41 THEN H=H+1:V=V+1
580 REM IF KEY 'C' IS PRESSED, THEN CLEAR THE SCREEN
590 IF K$="C" THEN 250
600 REM W STANDS FOR WHITE AND B STANDS FOR BLACK (ERASE)
610 IF K$="W" THEN C=-1:LC=C
620 IF K$="B" THEN C=0:LC=C
630 REM IF KEY 'E' IS PRESSED, THEN END THE PROGRAM
640 IF K$="E" THEN CLS:END
650 REM SAVE THE PICTURE
660 IF K$="S" THEN 740
670 REM FIND A PICTURE ALREADY SAVED ON DISK
680 IF K$="F" THEN 890
690 REM U=PEN UP, D=PEN DOWN
700 IF K$="U" THEN P=0:LC=C
710 IF K$="D" THEN P=1:C=LC
720 GOTO 370
730 REM SAVE THE PICTURE ON DISK
740 PRINT@896,CHR$(31);"WHAT DO YOU WANT THE CALL THE PICTURE";:INPUT P$
750 IF P$="" THEN PRINT@896,CHR$(31);:GOTO 280
760 PRINT@896,CHR$(31);"IS THE NAME ";P$;" OK (Y/N)";:INPUT A$
770 IF A$="N" OF A$="n" THEN 740
780 IF A$<>"Y" THEN 760
790 PRINT@896,CHR$(31);"SAVING ";P$
800 FOR J=0 TO 13:SC$(J)="":K=15360+64*J
810 FOR I=K TO K+63
820 SC$(J)=SC$(J)+CHR$(PEEK(I))
830 NEXT I,J
840 OPEN "O",1,P$
850 FOR I=0 TO 13:PRINT#1,SC$(I):NEXT I
860 CLOSE 1
870 PRINT@896,CHR$(31);:GOTO 280
880 REM FIND A PICTURE ALREADY SAVED ON DISK
890 PRINT@896,CHR$(31);"WHAT IS THE NAME OF THE PICTURE";:INPUT P$
900 IF P$="" THEN PRINT@896,CHR$(31);:GOTO 280
910 PRINT@896,CHR$(31);"IS THE NAME ";P$;" OK (Y/N)";:INPUT A$
920 IF A$="N" OR A$="n" THEN 890
930 IF A$<>"Y" THEN 910
940 PRINI@896,CHR$(31);"FINDING ";P$
950 OPEN "I",1,P$
960 FOR I=0 TO 13:INPUT #1,SC$(I):PRINT@I*64,SC$(I):NEXT I
970 CLOSE 1
980 P=0:H=30:V=42
990 PRINT@896,CHR$(31);
1000 GOTO 280
```

COMMODORE 64 PROGRAM LISTING FOR *EASY DRAW*

This program will run on Commodore 64 computers.

```
5 REM EASY DRAW, COMMODORE 64 VERSION
10 POKE 53281,0:PRINT CHR$(5):REM BLACK BACKGROUND
, WHITE CURSOR
20 PRINT CHR$(142);CHR$(8):REM UPPERCASE
30 CLR:PRINT CHR$(147):DIM C$(5000):R=1
40 R$=CHR$(29):REM RIGHT CURSOR
50 L$=CHR$(157):U$=CHR$(145):REM LEFT,UP
60 D$=CHR$(17):RO$=CHR$(18): REM DOWN, REVERSE ON
70 PRINT "  DO YOU WANT INSTRUCTIONS (Y/N)";
80 INPUT Z$:IF Z$<>"Y" AND Z$<>"N" THEN 80
90 IF Z$="Y" THEN GOSUB 10000
100 GOSUB 20000:REM ON-SCREEN MENU
110 REM CHECK FOR ERASE MODE
120 IF ER=1 THEN GOSUB 6000:GOTO 210
130 REM SET BLINKING CURSOR
140 PRINT RO$;" ";CHR$(146);L$;
150 FOR F=1 TO 100
160 GET Y$:IF Y$<>""THEN 210
170 NEXT F
180 PRINT " ";L$;
190 FOR F=1 TO 100:NEXT F:GOTO 130
210 GOSUB 1000:REM KEYBOARD COMMANDS
220 IF SW=0 THEN C$(R)=Y$:R=R+1
230 SW=0:GOTO 110
1000 REM RESPOND TO KEYBOARD COMMANDS
1010 IF Y$="1" THEN PRINT CHR$(144);:ER=1:RETURN
1020 IF Y$="2" THEN PRINT CHR$(5);:ER=0:RETURN
1030 IF Y$="3" THEN PRINT CHR$(28);:ER=0:RETURN
1040 IF Y$="4" THEN PRINT CHR$(159);:ER=0:RETURN
1050 IF Y$="5" THEN PRINT CHR$(156);:ER=0:RETURN
1060 IF Y$="6" THEN PRINT CHR$(30);:ER=0:RETURN
1070 IF Y$="7" THEN PRINT CHR$(31);:ER=0:RETURN
1080 IF Y$="8" THEN PRINT CHR$(158);:ER=0:RETURN
1110 REM MOVE CURSOR AND DRAW
1120 IF Y$="I" AND V>1 THEN PRINT U$;RO$;" ";L$;:V
=V-1:RETURN
1130 IF Y$="M" AND V<19 THEN PRINT D$;RO$;" ";L$;:
V=V+1:RETURN
1140 IF Y$="K" AND H<40 THEN PRINT R$;RO$;" ";L$;:
H=H+1:RETURN
1150 IF Y$="J" AND H>1  THEN PRINT L$;RO$;" ";L$;:
H=H-1:RETURN
1160 IF Y$="U"AND H>1 AND V>1 THEN PRINT L$;U$;RO$
;" ";L$;:H=H-1:V=V-1:RETURN
1170 IF Y$="O" AND V>1 AND H<40 THEN PRINT U$;R$;R
O$;" ";L$;:V=V-1:H=H+1:RETURN
1180 IF Y$="N" AND V<19 AND H>1 THEN PRINT L$;D$;R
O$;" ";L$;:V=V+1:H=H-1:RETURN
1190 IF Y$="."AND H<40 AND V<19 THEN PRINT D$;R$;R
O$;" ";L$;:V=V+1:H=H+1:RETURN
1200 IF Y$="C" THEN GOSUB 2000:REM CLEAR
1210 IF Y$="E" THEN GOSUB 3000:REM END
1220 IF Y$="^" THEN GOSUB 4000:REM LIFT PEN
1230 IF Y$="S" THEN GOSUB 8000:REM SAVE
1240 IF Y$="F" THEN GOSUB 9000:REM FIND
1250 SW=1:RETURN
2000 REM CLEAR THE SCREEN
2005 PRINT CHR$(147);CHR$(5)
2010 PRINT "  ARE YOU SURE YOU WANT TO CLEAR THE"
2020 PRINT "SCREEN (Y/N)?"
2030 INPUT Z$:IF Z$<>"Y" AND Z$<>"N" THEN 2030
2050 IF Z$="N" THEN GOSUB 7000
2060 IF Z$="Y" THEN R=1: GOSUB 20000
2070 RETURN
3000 REM END THE PROGRAM
3005 PRINT CHR$(147);CHR$(5)
3010 PRINT "  ARE YOU SURE YOU WANT TO QUIT (Y/N)?"
3020 INPUT Z$:IF Z$<>"N" AND Z$<>"Y" THEN 3020
3040 IF Z$="N" THEN GOSUB 7000
3050 IF Z$="Y" THEN PRINT "GOODBYE...":END
3060 RETURN
4000 REM LIFT PEN AND MOVE CURSOR
4010 IF SW=0 THEN C$(R)=Y$:R=R+1:GOSUB 5000
4020 IF SW=1 THEN JK=JK+1:Y$=C$(JK):REM CONTINUE R
EDRAW
4030 REM MOVE CURSOR WITHOUT DRAWING
4040 IF Y$="K" AND H<40 THEN PRINT R$;:H=H+1
4050 IF Y$="J" AND H>1 THEN PRINT L$;:H=H-1
4060 IF Y$="I" AND V>1 THEN PRINT U$;:V=V-1
4070 IF Y$="M" AND V<19 THEN PRINT D$;:V=V+1
4080 IF Y$="U" AND V>1 AND H>1 THEN PRINT U$;L$;:H
=H-1:V=V-1
4090 IF Y$="O" AND V>1 AND H<40 THEN PRINT U$;R$;:
H=H+1:V=V-1
4100 IF Y$="N" AND V<19 AND H>1 THEN PRINT D$;L$;:
H=H-1:V=V+1
4110 IF Y$="." AND V<19 AND H<40 THEN PRINT D$;R$;
:H=H+1:V=V+1
4120 IF Y$<>"D" THEN 4000
4130 IF SW=0 THEN C$(R)=Y$:R=R+1
4140 RETURN
5000 REM + SIGN AS CURSOR
5010 GA=55295+H+40*(V-1)
5020 GB=1023+H+40*(V-1)
5030 GC=PEEK(GA):GD=PEEK(GB)
5040 POKE GB,43
5050 POKE GA,PEEK(53281)+1
5060 GET Y$:IF Y$="" THEN 5060
5070 POKE GB,GD
5080 POKE GA,GC
5090 RETURN
6000 REM ERASE WITH BLACK
6010 TE=PEEK(53281)
6020 TF=55295+40*(V-1)+H
6030 POKE TF,TE+1
6040 TG=1023+40*(V-1)+H
6050 POKE TG,42
6060 GET Y$:IF Y$="" THEN 6060
6070 POKE TG,224
6080 POKE TF,TE
6090 RETURN
7000 REM REDRAW PICTURE
7010 SW=1:GOSUB 20000:EI=0
7020 FOR JK=1 TO R
7030 Y$=C$(JK):GOSUB 1000
7040 NEXT JK
7050 EI=1:RETURN
8000 REM SAVE PICTURE ON DISK
8010 PRINT CHR$(147);CHR$(5)
8030 PRINT "  WHAT DO YOU WANT TO CALL THE PICTURE
?"
8040 INPUT A$
8050 IF LEN(A$)>9 THEN PRINT "  THE NAME MUST BE L
ESS THAN 9 LETTERS.":GOTO 8040
8060 PRINT "  PUT YOUR DISK IN THE DRIVE AND PRESS"
```

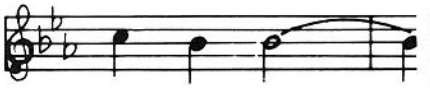


```
8070 PRINT "<RETURN>.":INPUT Z$
8075 PRINT:PRINT "  SAVING ";A$;"..."
8080 OPEN 5,8,5,"@0:"+A$+",S,W"
8090 PRINT#5,R
8100 FOR X=1 TO R
8110 PRINT#5,C$(X)
8120 NEXT X
8130 CLOSE 5
8140 GOSUB 7000:RETURN
9000 REM RETRIEVE FROM DISK
9010 PRINT CHR$(147):PRINT CHR$(5):R=1
9020 PRINT "  PUT YOUR DISK IN THE DISK DRIVE AND"
9030 PRINT "PRESS <RETURN>.":INPUT Z$
9040 PRINT "  WHAT IS THE NAME OF THE PICTURE YOU"
9050 PRINT "WANT TO RETRIEVE?"
9060 INPUT A$
9070 PRINT "  IS ";A$;" SPELLED CORRECTLY (Y/N)?"
9080 INPUT Z$
9090 IF Z$="N" OR Z$="NO" THEN 9040
9095 PRINT "  LOOKING FOR ";A$;"..."
9100 OPEN 5,8,5,"0:"+A$+",S,R"
9110 INPUT#5,R
9120 FOR X=1 TO R
9130 INPUT#5,C$(X)
9140 NEXT X
9150 CLOSE 5:GOSUB 7000:RETURN
10000 REM INSTRUCTIONS
10010 PRINT CHR$(147)
10020 PRINT "  USE THESE KEYS TO DRAW:"
10030 PRINT:PRINT TAB(14)" U  I  O "
10040 PRINT TAB(14)"\  |  /"
10050 PRINT TAB(14)" \ | / "
10060 PRINT TAB(14)"J--*--K"
10070 PRINT TAB(14)" / | \ "
10080 PRINT TAB(14)"/  |  \"
10090 PRINT TAB(14)" N  M  , "
10100 PRINT:PRINT:PRINT "TYPE THIS:   TO DO THIS:"
10110 PRINT:PRINT "'E' KEY      END THE PROGRAM"
10120 PRINT "'C' KEY      CLEAR THE SCREEN"
10130 PRINT "'S' KEY      SAVE THE PICTURE"
10140 PRINT "'F' KEY      FIND A SAVED PICTURE"
10150 PRINT "'^' KEY      LIFT THE PEN "
10160 PRINT "'D' KEY      DROP THE PEN"
10170 PRINT:PRINT "  PRESS <RETURN> TO CONTINUE."
10180 INPUT Z$:PRINT CHR$(147)
10190 PRINT "  YOU CAN DRAW IN THESE COLORS:"
10200 PRINT:PRINT CHR$(5);"WHITE = 2         ";CHR
$(30);"GREEN = 6"
10210 PRINT CHR$(28);"RED = 3           ";CHR$(31)
;"BLUE = 7"
10220 PRINT CHR$(159);"CYAN = 4          ";CHR$(15
8);"YELLOW = 8"
10230 PRINT CHR$(156);"PURPLE = 5";CHR$(5)
10240 PRINT:PRINT "  TO CHOOSE A COLOR, PRESS THE
NUMBER"
10250 PRINT "KEY OF THE COLOR YOU WANT. FOR EXAMPL
E,"
10260 PRINT "PRESS THE 3 KEY TO DRAW IN RED."
10270 PRINT:PRINT "  TO ERASE, PRESS 1 FOR BLACK.
TO STOP"
10280 PRINT "ERASING, CHOOSE A COLOR FROM 2 TO 8."
10290 PRINT:PRINT "  PRESS <RETURN> TO BEGIN."
10300 INPUT Z$:RETURN
20000 REM ON-SCREEN MENU
20010 PRINT CHR$(147)
20020 FOR X=1 TO 18:PRINT:NEXT X
20030 REM COLOR BAR
20040 PRINT "PICK A COLOR:  ";CHR$(5);"2  ";CHR$(2
8);"3  ";CHR$(159);"4  ";
20050 PRINT CHR$(156);"5  ";CHR$(30);"6  ";CHR$(31
);"7  ";CHR$(129);"8  "
20060 PRINT CHR$(5);
20070 PRINT:PRINT "S........SAVE          C........
CLEAR"
20080 PRINT "F........FIND          E........END"
20085 PRINT "^........LIFT PEN      1 (BLK)..ERASE"
20090 PRINT "D........DROP PEN";
20100 PRINT CHR$(19);
20110 FOR X=1 TO 9:PRINT:NEXT X
20120 FOR X=1 TO 18:PRINT R$;:NEXT X
20130 V=10:H=19
20140 RETURN

READY.
```

PROJECTS USING MUSIC SOFTWARE

My class is alive with the sounds of music and yours can be, too! What's that? You say you can't play an instrument or direct a choir? That's all right. You don't have to be a musician to teach music—not if you have a computer. There is a lot of good software available to help you teach students about the subject. Some programs drill students on music theories and concepts; some teach children how to use musical notation to play an instrument or compose a score; still others provide historical background on great musicians.

Below are three sound-sational music programs that I use with my students. I've provided summaries of the programs as well as supplementary activities to use with the entire class. Everything you need to teach yourself and your students about the magic of music is here.



MUSIC
Computer: Apple
Level: Preschool–Grade 2
Price: $34.95
Contact: Lawrence Hall of Science, University of California, Berkeley, CA 94720; 415/642-3167.

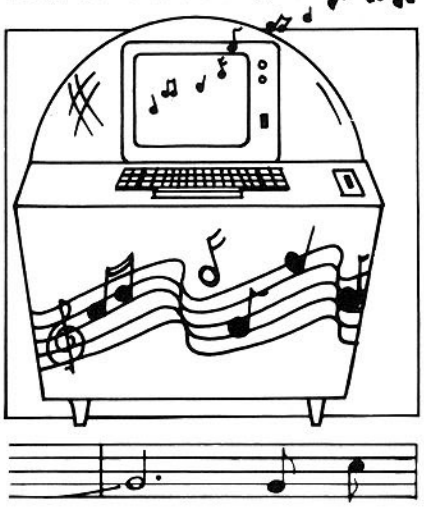
Music is part of the Micros for Micros series, a collection of software for preschool and primary students that was developed by the Math and Computer Education Project (MCEP) at the Lawrence Hall of Science. In *Music,* students choose from a menu of three programs. The choices are "Make Music," "Note Sandwich," and "Play a Tune." Each program uses the same basic format. The number keys "1" through "8" on your computer keyboard act as notes on a scale. When students press these keys, the notes are not only heard, but they are displayed as numbered and colored bars that vary in length according to the pitch of the particular note. For example, the sound of *do* is a long red bar numbered one; *sol* is a medium-sized orange bar numbered five; and *do prime* is a short yellow bar numbered eight.

"Make Music" is an open-ended activity that allows students to use the keyboard to compose short tunes or random sounds. The computer stores the notes and can play them back at a fast, slow, or moderate tempo. Students also have a choice of whether to hear just the notes, see only the bars, or hear the notes *and* see the bars of the music they have created. The one limitation of this program is that the computer can play and store only 20 notes at a time. To play more notes, the student must erase the 20 preceding notes and begin again.

The second program in *Music,* "Note Sandwich," tests children's listening, memory, and estimating skills. The computer plays two notes of the scale, and students try to guess the note that falls between the two. If a student gets stumped with just the sounds, he or she can ask the computer to flash the music bars on the screen, to get a visual clue.

"Play a Tune," the final option on the program, is a game similar to Name That Tune. Students select one of six tunes for the computer to play. The computer plays as many as 14 notes of the tune and displays the bars of the notes on the screen. From this information, students must recreate the song by pressing the appropriate number keys. The six tunes are familiar children's songs, including "Happy Birthday," "The Farmer in the Dell," and "Twinkle, Twinkle Little Star." Because the songs are well known, students can

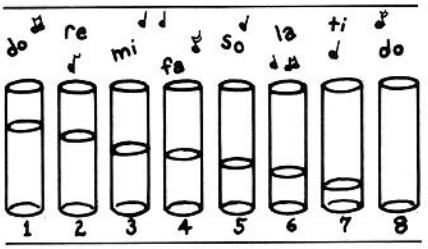
hum them as they try to guess each note. On the bottom of the screen, the computer displays instructions: PRESS "H" TO HEAR THE COMPUTER'S SONG AGAIN. PRESS "P" TO HEAR THE SONG YOU CREATED. This allows children to compare their final notes and bars to the computer's notes and bars. This game can be difficult for early preschoolers to play, but they still enjoy hearing how close their songs come to the original.



Supplementary Activities

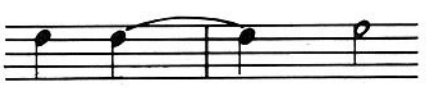
• Use the "Make Music" program to play Recognize the Notes, a game I created to familiarize students with the notes of the scale. First, on the chalkboard, draw eight bars to represent the scale as it appears on the computer. Turn the monitor away from the class and select one student to play a set of 10 random notes. Ask the child to play the composition again. Students must listen carefully to the sounds and draw the bars that represent the pattern of notes they hear. Play the music a third time and instruct students once again to draw the sound bars they hear. Now turn the monitor to face the class and play back the notes and bars together. Have kids compare their drawings to the the actual musical pattern. Students are pleased to find that the last pattern they drew is often closer to the actual pattern. They realize the more they listen to a melody, the easier it becomes to recognize individual sounds.

• Here's an adaptation of "Note Sandwich," in which students identify notes that fall between other notes on the scale.

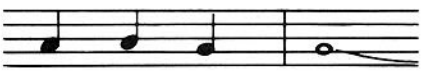


Bring to class a butter knife and eight empty glass jars that are the same size. Label the jars "1" through "8." Explain to your students that these jars represent the notes of a scale, and after they are filled with different amounts of water, each jar gives a different tone when tapped with a butter knife. Fill jar "1" three-quarters full with water; this will be the lowest note in the scale. Leave jar "8" empty; this will be the highest note in the scale. Tap both jars lightly with a butter knife to demonstrate the different tone of each jar. Explain that the larger the volume of water in the jar, the lower the sound will be. Now have students estimate how much water should be poured into jar "4" to make a sound that falls in between jar "1" and jar "8." Do this for each of the jars, always checking the progression of the scale by tapping the jars with the butter knife. If the sequence is not right, the sounds in the jars can always be changed by adding or pouring out water.

Because students are estimating the sounds through trial and error, the experiment may get a bit messy as you pour water from one jar to another to ensure the correct progression of the scale. It will be worth it, though, when students finally hear the water scale they have created.



• If you know how to write music, try this activity with your students. On the chalkboard, write the scale of C, and label each note on the staff. After students have correctly played a song that challenged them in the "Play a Tune" program, pass out music paper and instruct kids to write the notes in the scale of C, using the staff on the chalkboard as a guide. The note bars will remain on the screen, as an extra guide, until the students press the space bar. To see if the students wrote the correct notes, have them exchange papers and play each other's songs.



ROCK 'N' RHYTHM

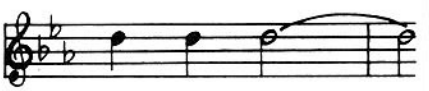
Computers: Commodore 64; Atari (joystick required)
Level: Grade 4–Adult
Price: $32.95.
Contact: Spinnaker Software, One Kendall Square, Cambridge, MA 02138; 617/494-1200.

Rock 'N' Rhythm turns your computer into a recording studio. It lets kids use sounds from three different instruments: two keyboards (melody) and drums (rhythm) to compose songs. As real recording engineers do, children can edit their songs until they like the way they sound. They can also transcribe their original compositions, save the songs on disk, and play them back later.

To compose songs with *Rock 'N' Rhythm,* you enter notes from the computer keyboard (a cutout keyboard overlay shows where the notes are located). The notes are displayed as letters on a special melody screen. Using the space bar, you can actually tap out the rhythm of a melody.

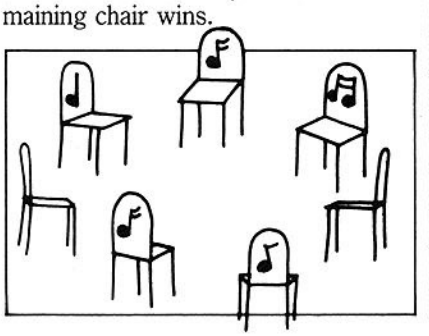
From the melody screen, you can travel to the control room. The control room features a tape recorder that lets you play and rewind compositions. It also has a metronome that helps you keep a steady beat. Other equipment allows you to change the song's tempo and volume, and to alter the lighting in the performance room.

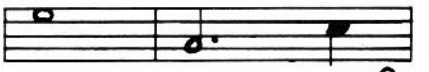
The performance room is where you make an actual recording of your song. There you use the joystick to play the drums along with a melody of your choice. You can save your compositions in a jukebox which holds up to 27 songs, including nine songs already on the disk.

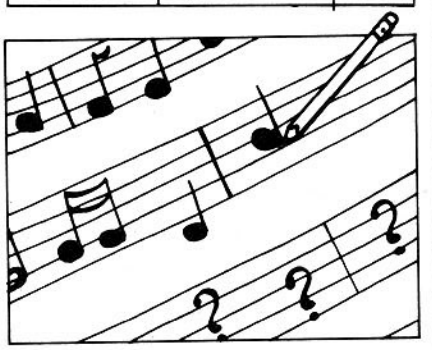


Supplementary Activities

• Here's a variation of Musical Chairs that helps kids recognize changes in rhythm. Arrange the chairs in the classroom as if you were playing Musical Chairs: in a circle, with one chair less than the number of participants. Play the drum track from an original song one of your students created with *Rock 'N' Rhythm* or from one of the prerecorded songs on *Rock 'N' Rhythm.* Instruct your students to march to the beat. After the kids have marched around the chairs a few times, change the tempo. Instruct students that as soon as the tempo changes, they should scramble for one of the seats. The child that remains standing must sit out for the rest of the game. Remove one chair and repeat the game until only one kid is standing and one is sitting. The one who successfully sits in the remaining chair wins.

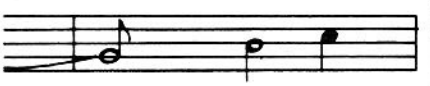






• *Rock 'N' Rhythm* can be used to encourage kids to compose their own music. Have students work in pairs and instruct them to think of a feeling, a theme, or an idea they would like to write a song about. The tricky part of this activity is that children may use only sounds, not words, to express themselves. When the students have completed their compositions, select one student from each pair to play the original score for the class. Let the class guess what feeling or thought the writers are trying to convey.

• Here is a variation of Name That Tune that encourages students to listen carefully for melodic patterns. Use the *Rock 'N' Rhythm* program to record segments of 10 popular songs. Play back the recordings and have students try to guess each song. Did anyone correctly name all 10? To make the game a little more challenging, play the songs in a slightly different way from the popular version; change the tempo or experiment with the note, tone, and octave controls (on the Commodore 64 version only).

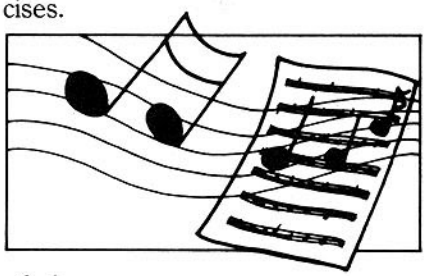


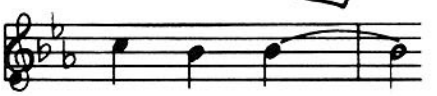
MECC MUSIC PROGRAMS

Computer: *Music Theory* for the Apple; *Music I, II, III* for the Atari.
Level: Grades 5–12
Price: *Music Theory* $49; *Music I, II, III* $46 each.
Publisher: MECC, 3490 Lexington Ave. North, St. Paul, MN 55112; 612/481-3500.

For the more advanced music class, I recommend these programs by MECC: *Music Theory,* for Apple users, and similar programs for Atari users called *Music I, Music II,* and *Music III.* Each program offers a wonderful variety of quizzes on subjects including aural intervals, counting, enharmonics, key signatures, and rhythm. The programs use musical tones and graphics to quiz students.

Each set of exercises has levels of difficulty, and students choose the level and the number of questions they would like to try. If a student answers incorrectly, the computer gives the correct answer. The computer also keeps track of the student's score for each set of exercises.





Supplementary Activity

• A fun way to test students on the music facts they learned with *Music Theory* and *Music I, II, III* is through an adaptation of the game Mother May I? I instruct students to stand in a straight line in the the back of the classroom. I randomly call on students to answer music questions. For example, "How many beats does a dotted eighth-note receive?" or "What does *mezzo* mean?" The student may advance one step if he or she answers the question correctly. If the student answers incorrectly, he or she must move back one step. The first student to reach the finish line (i.e., the computer) gets to play his or her favorite music program.

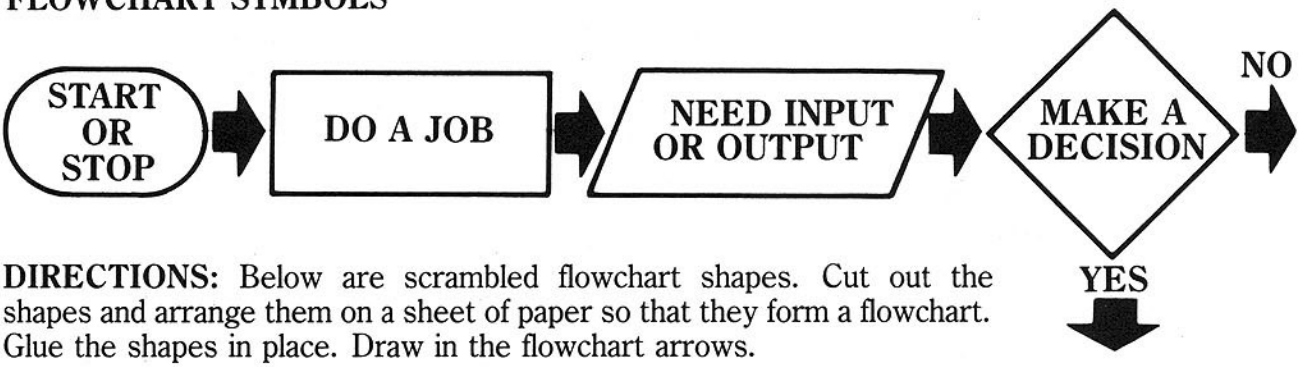
Lane Weiss

MAKE A LUCKY FLOWCHART WORKSHEET

SAINT PATRICK'S DAY **MARCH 17**

NAME: _____

FLOWCHART SYMBOLS



DIRECTIONS: Below are scrambled flowchart shapes. Cut out the shapes and arrange them on a sheet of paper so that they form a flowchart. Glue the shapes in place. Draw in the flowchart arrows.

GO BACK INSIDE

LOOK FOR A RAINBOW

LOOK OUTSIDE

DO YOU SEE A RAINBOW?

NO

YES

PLAY COMPUTER GAMES WITH A FRIEND

WATCH TV WITH A FRIEND

FOLLOW IT TO THE END

GO OUTSIDE

END

GET AN UMBRELLA

START

IS IT RAINING?

NO

YES

IS THERE A POT OF GOLD AT THE END OF THE RAINBOW?

NO

YES

CUT OUT THE 13 SHAPES.

SHEEP COUNTER WORKSHEET

LAST DAY OF MARCH **MONTH OF MARCH**

NAME: _____

As the saying goes, March comes in like a lion and goes out like a lamb. Because a lamb is actually a baby sheep, the end of March is a good time to try our *Sheep Counter* program.

What is a *Sheep Counter* program good for? Well, some people believe that if they count sheep, they will fall asleep faster. But most people don't have many sheep on hand to count. The *Sheep Counter* program creates 10 sheep on the computer screen. The sheep appear one at a time so that they're easier to count. Not only that, but the computer will count along with you!

Are we trying to pull the wool over your eyes with this program, or does sheep counting really make you sleepy? Try *Sheep Counter* and decide for ewe-self!

This program will run on most brands of computers. If you use a TRS-80 Model III, leave out lines 30, 200, 210, and 220.

WHAT TO DO

1. Put your computer in BASIC.
2. Type NEW and press RETURN or ENTER.
3. Type in the *Sheep Counter* program listing. Be careful to include all the spaces between quotation marks.
4. Type RUN and press RETURN or ENTER.

***SHEEP COUNTER* PROGRAM LISTING**

```
10  FOR SHEEP = 1 TO 10
20  PRINT "SHEEP #";SHEEP
30  PRINT
40  PRINT "            **"
50  PRINT "          * .*"
60  PRINT "         *()  )"
70  PRINT "          *   *"
80  PRINT "     ****     *"
90  PRINT "   **         *"
100  PRINT " *           *"
110  PRINT " @           *"
120  PRINT " *           *"
130  PRINT "  **        *"
140  PRINT "     *********"
150  PRINT "      !!  !!"
160  PRINT "      !!  !!"
170  PRINT
180  PRINT
190  PRINT
200  PRINT
210  PRINT
220  PRINT
230  FOR D = 1 TO 800
240  NEXT D
250  NEXT SHEEP
260  END
```

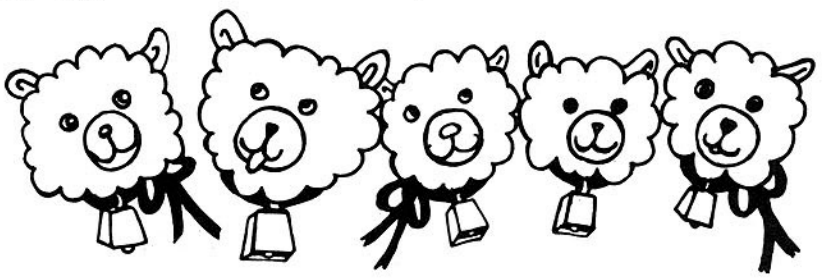
***SHEEP COUNTER* CHALLENGES**

Try these programming challenges. How many can you do?

- You don't feel the least bit sleepy yet. Make the program count 100 sheep.
- Make the program count sheep *backward.*
- "Cool" sheep counters count by fives. Be a cool sheep counter and change the program to count by fives.
- Write a program that counts cows, pandas, or any other animal.

***SHEEP COUNTER* SUPERCHALLENGE**

Use computer graphics to draw a sharp-looking sheep in a colorful meadow. Put a fence around the sheep. Add clouds and a sun in the sky. Can you make the sheep say, "baa"?



Answer: Your teacher has the answer. It is on page 156 of the book, **Holiday Computer Activities.**

APRIL

KNOCK KNOCK JOKE TELLER
WORKSHEET

NATONAL HUMOR MONTH — MONTH OF APRIL

NAME: _____

April is National Humor Month. Celebrate with this *Knock! Knock!* program. The program makes the computer tell *really* funny knock knock jokes. No kidding!

WHAT TO DO

1. Put your computer in BASIC.
2. Type in the *Knock!, Knock!* program listing exactly as it appears below.
3. Type RUN and press RETURN or ENTER.

KNOCK, KNOCK!
PROGRAM LISTING

This program listing will work for most brands of computers.

```
10 READ X$,Y$
20 IF X$="STOP" THEN 100
30 PRINT " KNOCK, KNOCK!"
40 INPUT A$
50 PRINT X$
60 INPUT A$
70 PRINT Y$
80 PRINT
90 GOTO 10
100 PRINT " THAT'S ALL, FOLKS...."
110 END
120 DATA AMOS, A MOSQUITO BIT ME.
130 DATA CHIP, CHIP CHIP HOORAY!
1000 DATA STOP, STOP
```

KNOCK, KNOCK!
CHALLENGES

How many of these programming challenges can you do?

- Add this joke to the program:

Knock, Knock!
Who's There?
Amos.
Amos Who?
Amos Begoing.

- Add your own knock knock joke to the program.
- Change the program so that the computer tells the jokes in a random order. (A random order is an order that varies or changes.)
- Change the program so that the player can input a guess at the answer. Have the computer say if each guess is right or wrong.

Also, let the player "give in" at any time. If the player gives in, the computer should print the punch line.

- Write a program that makes the computer tell other kinds of jokes, such as riddles.

Lorraine Hopping

WRITE YOUR OWN JOKE

DIRECTIONS: Write your own knock knock joke in the space below. Add it to the program.

1. _____
2. _____
3. _____
4. _____
5. _____

PASSOVER BREAD WORKSHEET

PASSOVER **BEGINS IN APRIL OR MARCH**

NAME: _____

Passover is a Jewish holiday that lasts for seven to eight days. It starts on the 15th day of the Hebrew month Nissan. During Passover, Jews celebrate the escape of their ancestors, the Israelites, from Egypt. The escape took place more than 3000 years ago. The Israelites secretly fled from Egypt because the Egyptians had forced them to become slaves.

Jews celebrate Passover with a feast called a Seder (*sād-er*). At the Seder, the story of the Israelites' escape is read aloud. Food that symbolizes, or stands for, their flight from Egypt is placed on the table. One of the most important foods is unleavened (flat or unraised) bread called *matzah*. According to the Bible, the Israelites left Egypt in such a hurry that they did not have time to let their bread rise. They made flat, unleavened bread instead.

You can make *matzah* on the Logo screen. Follow these steps.

WHAT TO DO

1. Load Logo into your computer. (You can use almost any version of Logo.)

2. Type in the following BREAD and HOLE procedures exactly as they appear.

```
TO BREAD
  REPEAT 2 [FD 100 RT 90
FD 139 RT 90]
END

TO HOLE
  REPEAT 10 [FD 1 RT 36]
END
```

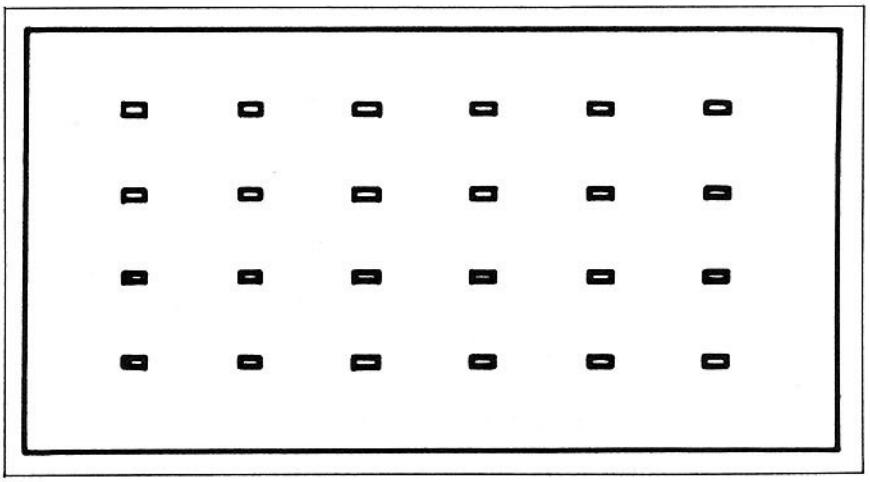
3. Type BREAD and press RETURN or ENTER to see the outline of the *matzah*. Type HOLE and press RETURN or ENTER to see the hole.

4. Combine the BREAD and HOLE procedures into a new procedure called MATZAH. The MATZAH procedure should draw the picture of *matzah* at below.

***MATZAH* CHALLENGE**

During the Seder, the father of the family breaks a piece of *matzah* in half. He hides one half of the bread somewhere in the house. The first child to find the piece of broken *matzah* wins a prize. Can you break the *matzah* on the Logo screen exactly in half?

Lorraine Hopping



Use Logo to make a piece of matzah bread. Here's how the matzah looks on a computer screen.

Answer: Your teacher has the answer. It is on page 156 of the book, **Holiday Computer Activities.**

EASTER

QUICK TIPS

DECORATE LOGO EASTER EGGS

The Easter bunny meets the Logo turtle. That's one way to describe this Apple Logo program. The program lets students use Logo turtle graphics to decorate egg shapes. A special INSTANT procedure in the program makes it especially appealing for younger users. This procedure lets kids move the turtle by pressing only one key. For instance, to move the turtle back 10 spaces, the user presses the "B" key rather than typing BK 10.

Boot up Apple Logo and enter the listing. To get the turtle on the screen, a student types INSTANT. When the student presses the "E" key, the turtle draws an egg. The student decorates the egg by using one-key commands that tell the turtle to pick its pen up and to move to a different spot on the egg. Using two more one-key commands, the student tells the turtle to put its pen down and to draw a shape.

Following is a list of the 15, one-key commands used in the program and an explanation of what each one does: "E" draws an egg; "A" draws a star; "T" draws a triangle; "S" draws a square; "O" draws a small circle; "H" sends the turtle to the center of the screen; "U" picks up the pen; "D" puts down the pen; "F" moves the turtle forward 10 spaces; "B" moves the turtle back 10 spaces; "G" randomly changes the background to any of the six colors in Apple Logo; "P" randomly changes the pen color to any of the six colors in Apple Logo; "R" turns the turtle right 15 degrees; "L" turns the turtle left 15 degrees; "C" clears the screen.

Make a list of these commands and place it by the computer, so students can refer to it.

```
TO PLAY
  LOOP PLAY LOOP
END

TO INSTANT
  MAKE "COLOR 0 MAKE "BCOLOR 0 CS
    FULLSCREEN SETBG 0 SETPC 1 PLAY
END

TO LOOP
  MAKE "X RC
  IF :X="S [SQ]
  IF :X="E [EGG]
  IF :X="A [STAR]
  IF :X="T [TRI]
  IF :X="O [O]
  IF :X="H [HOME]
  IF :X="U [PENUP]
  IF :X="D [PD]
  IF :X="F [FD 10]
  IF :X="B [BK 10]
  IF :X="R [RT 15]
  IF :X="L [LT 15]
  IF :X="C [CS]
  IF :X="P [CHANGEPC]
  IF :X="G [CHANGEBG]
END

TO CHANGEBG
  MAKE "COLOR REMAINDER :COLOR
    +1 6
  SETBG :COLOR
END

TO CHANGEPC
  MAKE "COLOR REMAINDER :COLOR
    +1 6
  SETPC :COLOR
END

TO SQ
  REPEAT 4[FD 20 RT 90]
END

TO STAR
  REPEAT 5[FD 20 RT 144]
END

TO TRI
  REPEAT 3[FD 20 RT 120]
END

TO O
  REPEAT 45[FD 2 RT 8]
END
TO EGG
  SETSCRUNCH 1.5 REPEAT 360 [FD 1 RT
    1]
  SETSCRUNCH .75
END
```

Joanne Davis

WISH STUDENTS A HAPPY EASTER

If you have an Atari computer, greet your students with a computerized Easter message. The BASIC program below displays HAPPY EASTER, the name of one of your students, and FROM YOUR FRIEND THE EASTER BUNNY in graphics mode on the monitor. A few seconds later it repeats this message but replaces the student's name with the name of another student.

To use the program, type in the listing below. When you reach line 800, type the word DATA and substitute the names CAROL,TIM,ELLEN, FRED, for your students' names. List the names one after the other, separating each by a comma. Type in CLASS as the last name. (Line 70 tells the computer to display the names again when it reaches CLASS.) To stop the display, press the BREAK key.

```
10 DIM A$(100),Z$(100)
20 GRAPHICS 18:SETCOLOR 2,4,8
30 POSITION 0,1:? #6;" "
40 POSITION 1,3:? #6;"   HAPPY EASTER
50 POKE 77,0
60 READ A$
70 IF A$="CLASS" THEN RESTORE 800
80 POSITION 0,7:? #6; "  FROM YOUR
   FRIEND"
90 POSITION 0,9:? #6: "  THE EASTER
   BUNNY"
100 FOR X=1 TO 6
110 POSITION 7,5:? #6; "              "
120 FOR W=1 TO 100:NEXT W
130 POSITION 7,5:? #6;A$
140 FOR W=1 TO 300:NEXT W
150 NEXT X
160 POSITION 7,5:? #6;A$:FOR W=1 TO
    800:NEXT W:GOTO 60
800 DATA  CAROL,TIM,ELLEN,FRED,
    CLASS
```

Jim Alvaro

GRAPH A BAG OF JELLY BEANS

Give your students a lesson on how to read graphs using an old-time Easter favorite—jelly beans. The only tools you'll need for the lesson are a bag of jelly beans and this Apple BASIC program that creates a simple bar graph.

Assign students to work in pairs. Give each pair a handful of jelly beans to sort by color. Have them count the number of beans in each color. These amounts are the data students will use in the program.

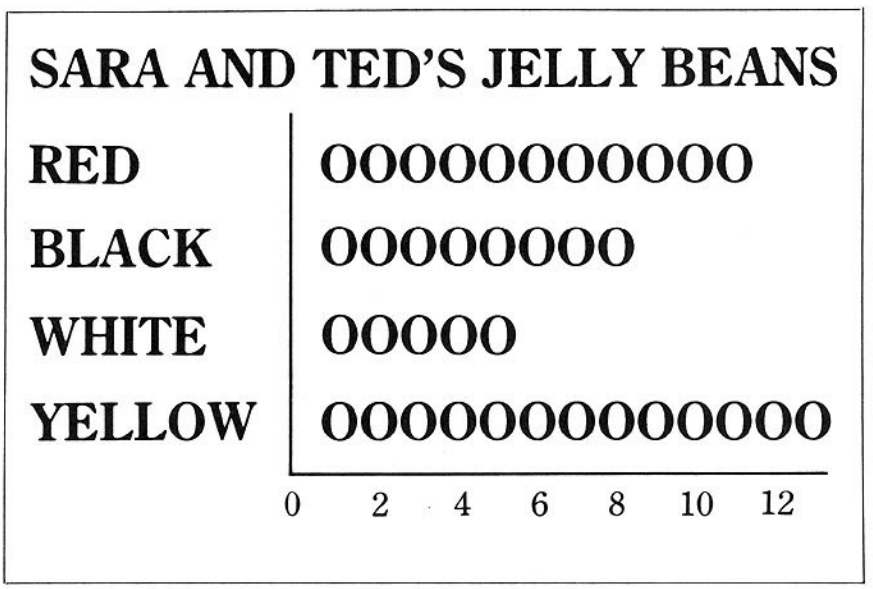
When students run the program, the computer asks for the number of categories in the graph. Tell students to enter the number of different colored beans in their supply. Next, the computer asks for a color word (*i.e.* red, black, white) for each category and the number of their jelly beans that are each color. After students have entered this information, the computer displays the data in a bar graph on the monitor and makes a printout of the display.

```
10 HOME:CLEAR
20 INPUT "WHAT IS THE TITLE OF YOUR
   GRAPH?";T$
30 PRINT:INPUT "HOW MANY CATEGO-
   RIES ARE IN THIS GRAPH?";NC:HOME
40 FOR Z=1 TO NC
50 PRINT:PRINT "ENTER THE COLOR OF
   CATEGORY ";Z;"."
60 INPUT ST$(Z)
70 PRINT:PRINT "ENTER THE AMOUNT
   OF ";ST$(Z);" JELLY BEANS.":INPUT
   AMT(Z)
80 NEXT Z
90 HOME:PRINT T$
100 FOR Z=1 TO NC
110 PRINT ST$(Z)
120 FOR N=1 TO AMT(Z)
130 IF AMT(Z)=0 THEN PRINT " "
140 PRINT "O";
150 NEXT N
160 PRINT:PRINT:NEXT Z
170 PR#0:VTAB 23:INPUT "PRESS RE-
    TURN TO CONTINUE.";Z$
180 HOME:PRINT "DO YOU WANT TO
    MAKE A PRINTOUT OF THE GRAPH?"
190 INPUT Q$
200 IF Q$="N" OR "NO" THEN END
210 PRINT:INPUT "MAKE SURE YOUR
    PRINTER IS READY AND PRESS RE-
    TURN.";Z$
220 PR#1:GOTO 90
```

After students have created a color graph, they can create a flavor graph. Start by having students bite into each of their jelly beans. Point out to students that one color bean might have two different tastes. For example, some white jelly beans taste like pineapple, while other white jelly beans taste like coconut. After students have sampled their beans, have them total up the number of beans that fell into each flavor category. Tell students to run the graph program again, substituting their flavor data wherever color data is called for.

Now have students compare the two graphs they've made. Are there more color categories or flavor categories? Which has more: the red category or the cherry category?

Richard Devir



Students graph the number of colored jelly beans in a jar.

BICYCLE SAFETY

A PROGRAM LISTING

Spring is here, the weather is warmer, and kids are getting ready to ride their bicycles once again. Before they take those two-wheelers out of the garage, however, bikers need to be reminded of the bicycle safety rules that govern the road.

To make bike enthusiasts aware of the bicycle safety rules they must obey, the National Safety Council has designated the third week in April as National Bicycle Safety Week. During this week, use this *Bicycle Safety* program with your students to remind them of a few bicycle safety rules.

HOW THE PROGRAM WORKS

The *Bicycle Safety* program presents five potentially hazardous biking situations. In each situation, students must choose between four possible courses of action. If they make the right choices, they proceed easily and safely to their final destination. If they make any incorrect decisions, they run into complications (*e.g.* loss of time, minor crashes) along the way.

INTRODUCING THE PROGRAM

Thousands of accidents involving bicycles occur each year. Almost half of them happen to kids under 14 years old. Many of these accidents could have been avoided if the children involved had followed a few simple safety rules.

Hang up the bicycle safety mini-poster on the next page. Discuss each of the rules with the class. Demonstrate hand signals for stopping and turning.

USING THE PROGRAM

Type in and save the *Bicycle Safety* program listed on pages 138 and 139. Have students go through the program individually.

When students have finished, review the five rules covered in the program: (1) Keep the bike in working order; (2) Coast on slippery pavement; (3) Give pedestrians the right-of-way; (4) Never carry passengers on the handlebars; (5) Obey traffic signs and signals.

Ask if anyone can think of other bike-riding situations in which riders must make safety decisions. If you have experienced programmers in your class, have them incorporate these situations into the *Bicycle Safety* program.

SOURCES FOR ADDITIONAL INFORMATION

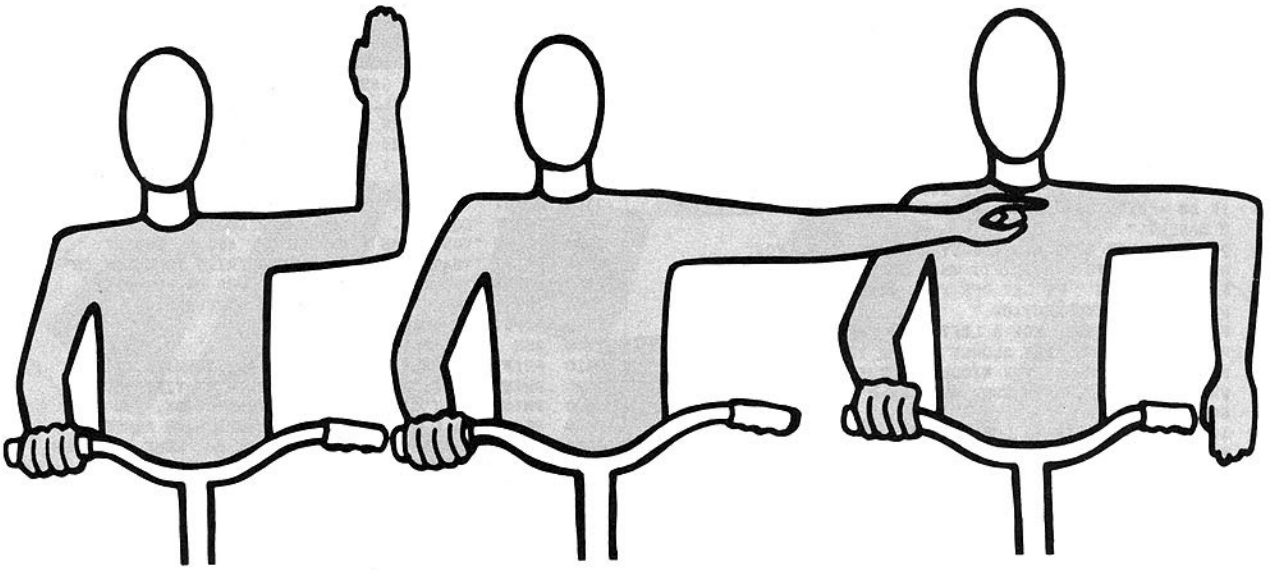
The following companies and associations offer free or low-cost materials on bicycle safety.

- American Automobile Assoc., Falls Church, VA 22042; 703/222-6000. Call or write for the location of your local branch. Local branches have free printed matter and posters.
- Lutheran Brotherhood, 701 Second Ave. South, Minneapolis, MN 55402; 612/332-0211. Send for an order blank. Materials include 16mm films, filmstrips, pamphlets, posters, handbooks, and other low-cost items.
- National Safety Council, 444 N. Michigan Ave., Chicago, IL 60611; 312/527-4800. Ask for the free "Bicycle Safety" packet.
- Schwinn Bicycle Co., Consumer Relations Dept., 1856 N. Kostner Ave., Chicago, IL 60639; 312/292-2900. Ask for free pamphlets on bicycle safety.
- U.S. Consumer Product Safety Commission, Washington, DC, 20207; 800/638-2666 (outside Maryland) or 800/492-2937 (Maryland residents). Ask for free pamphlet "Bicycling: Fun With Safety."

Richard Bollinger

NATIONAL BIKE SAFETY WEEK — THIRD WEEK IN APRIL

Bicycle Safety Rules



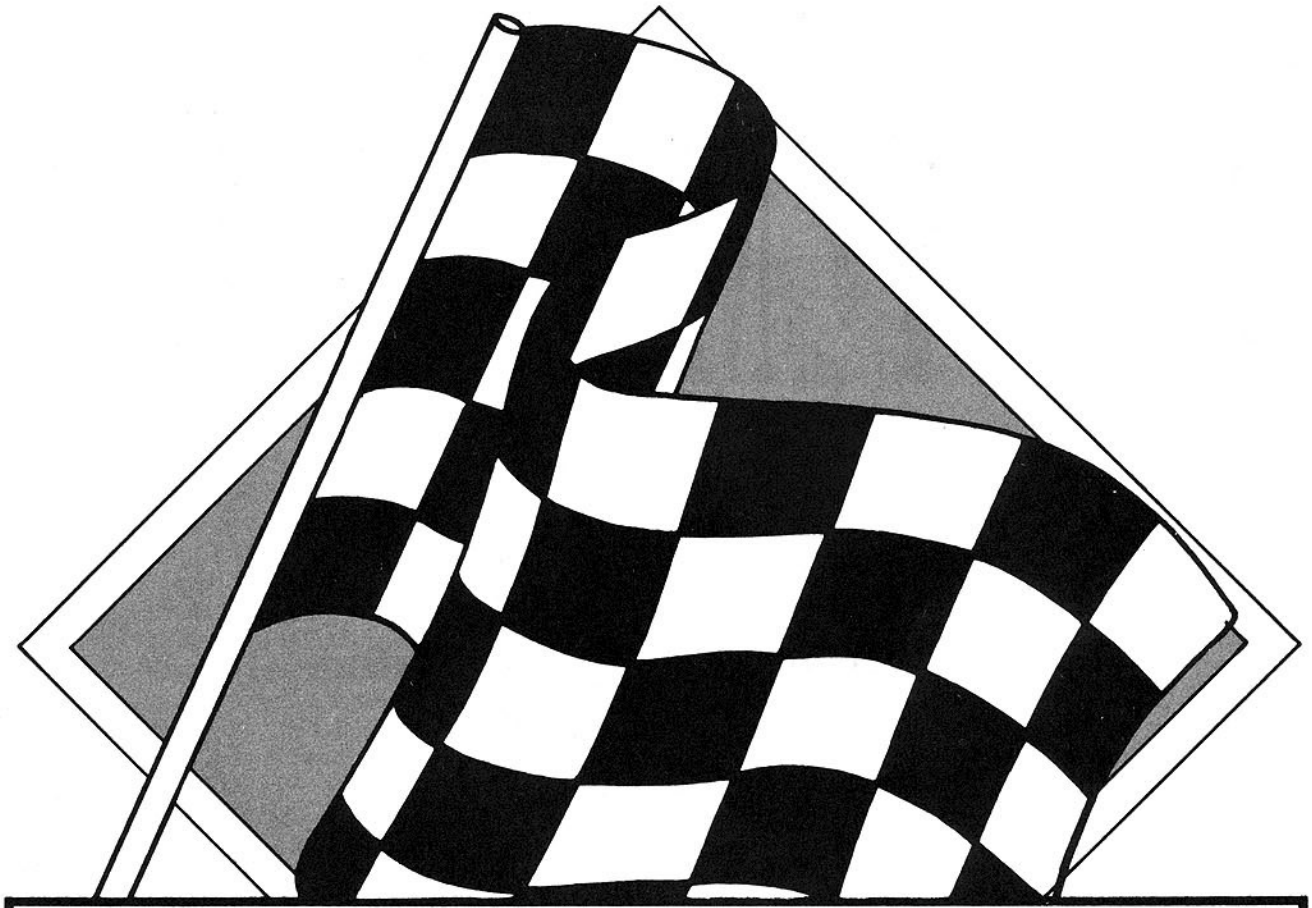
The kids above use bicycle hand signals to turn right, to turn left, and to stop.

1. Keep your bicycle in good shape. Check the brakes, handlebars, seat, chain, and tires regularly.
2. Ride defensively. Watch out for cars, motorcycles, and other bikers.
3. Obey all traffic signs, signals, road markings, and laws. Use bicycle lanes whenever possible.
4. Ride with the traffic and not against it. Stay near the curb or shoulder of the road.
5. Use legal hand signals for turning and stopping. *(See illustration.)*
6. At intersections, slow down, look and listen, and give cars and pedestrians the right-of-way. Walk your bike across busy streets.
7. Watch for drain gates, soft shoulders, slippery pavement, and other hazards.
8. Watch for car doors opening and for cars pulling into traffic from side streets and parking spaces.
9. When biking with others, ride in single file.
10. Do not carry passengers or packages in front of you. They can block your line of vision.
11. At night, wear bright-colored clothes and use a light and reflectors on your bicycle.

PROGRAM LISTING FOR *BICYCLE SAFETY*

This program listing is for use on Apple computers. To convert the program for use on Atari, Commodore, and Radio Shack computers, see the Program Conversions, page 155.

```
10  REM   BICYCLE SAFETY @1985 SCHOLASTIC INC.
20  CLEAR : HOME
30  PRINT "  YOU ARE GETTING READY TO RIDE YOUR"
40  PRINT "BIKE OVER TO YOUR FRIEND JENNY'S HOUSE."
50  PRINT "WHAT DO YOU DO FIRST?"
60  PRINT : PRINT "  1 CHECK THE PRESSURE IN THE TIRES."
70  PRINT "  2 MAKE SURE THE HANDLEBARS AND SEAT"
80  PRINT "ARE TIGHT."
90  PRINT "  3 TEST THE BRAKES."
100  PRINT "  4 ALL OF THE ABOVE."
110  GOSUB 1000
120  IF A$ = "1" THEN  GOSUB 2000
130  IF A$ = "2" THEN  GOSUB 2100
140  IF A$ = "3" THEN  GOSUB 2200
150  PRINT "  ALL PARTS CHECK OUT FINE AND YOU"
160  PRINT "START TO RIDE DOWN THE STREET. YOU SEE"
170  PRINT "A PILE OF WET LEAVES IN YOUR PATH. IT'S"
180  PRINT "TOO LATE TO AVOID THEM. WHAT DO YOU DO?"
190  PRINT : PRINT "  1 COAST THROUGH THE LEAVES, READY TO"
200  PRINT "BRAKE IF NEEDED."
210  PRINT "  2 BRAKE HARD IMMEDIATELY."
220  PRINT "  3 DO A WHEELIE OVER THE LEAVES."
230  PRINT "  4 NOTHING SPECIAL."
240  GOSUB 1000
250  IF A$ <  > "1" THEN  GOSUB 2300
260  IF A$ = "1" THEN  PRINT "  YOU COAST THROUGH THE LEAVE
     S SAFELY."
270  PRINT "  YOU APPROACH A BUSY INTERSECTION. YOU"
280  PRINT "WANT TO TURN LEFT. WHAT DO YOU DO?"
290  PRINT : PRINT "  1 GET OFF YOUR BIKE AND WALK ACROSS"
300  PRINT "THE INTERSECTION."
310  PRINT "  2 SIGNAL FOR A LEFT TURN AND PROCEED."
320  PRINT "  3 MOVE LEFT SLOWLY BEFORE TURNING."
330  PRINT "  4 STOP IN THE MIDDLE OF THE INTER-"
340  PRINT "SECTION. THEN TURN QUICKLY."
350  GOSUB 1000
360  IF A$ <  > "1" THEN  GOSUB 2400
370  PRINT "  YOU CONTINUE DOWN THE STREET. YOU SEE"
380  PRINT "A PEDESTRIAN WALKING IN THE CROSSWALK."
390  PRINT "HE DOESN'T SEE YOU. WHAT DO YOU DO?"
400  PRINT : PRINT "  1 GO AROUND HIM QUICKLY."
410  PRINT "  2 RING YOUR BELL. THEN GO AROUND HIM."
420  PRINT "  3 STOP AND LET HIM PASS."
430  PRINT "  4 RIDE ONTO THE SIDEWALK."
440  GOSUB 1000
450  IF A$ = "1" OR A$ = "2" THEN  GOSUB 2500
460  IF A$ = "4" THEN  GOSUB 2600
470  PRINT "  YOU ARRIVE AT JENNY'S HOME. SHE WANTS"
480  PRINT "TO RIDE ON YOUR HANDLEBARS. WHEN IS IT"
490  PRINT "SAFE FOR SOMEONE TO RIDE ON HANDLEBARS?"
500  PRINT : PRINT "  1 WHENEVER THERE IS ENOUGH ROOM."
510  PRINT "  2 ANYTIME, AS LONG AS THE BIKE IS IN"
520  PRINT "GOOD CONDITION."
530  PRINT "  3 WHEN THE RIDER IS HALF YOUR WEIGHT."
540  PRINT "  4 NEVER."
550  GOSUB 1000
560  IF A$ <  > "4" THEN  GOSUB 2700
570  PRINT "  IT'S TIME FOR YOU TO LEAVE. ON THE"
580  PRINT "WAY BACK, YOU SEE WORKERS PUTTING IN A"
590  PRINT "STOP SIGN. WHAT DO YOU DO?"
600  PRINT : PRINT "  1 KEEP GOING."
610  PRINT "  2 STOP AND GET OFF THE BIKE."
620  PRINT "  3 SIGNAL THAT YOU ARE GOING TO STOP"
630  PRINT "BEFORE STOPPING."
640  PRINT "  4 SPEED UP SO THAT THE WORKERS DON'T"
650  PRINT "SEE YOU PASS."
660  GOSUB 1000
670  IF A$ = "1" OR A$ = "4" THEN  GOSUB 2800
680  IF A$ = "2" THEN  GOSUB 2900
690  PRINT "  YOU ARRIVE HOME SAFELY....": END
1000  REM  ENTER ANSWER
1010  PRINT : PRINT "ENTER THE NUMBER OF THE BEST ANSWER AND"
1020  PRINT "PRESS <RETURN>."
1030  INPUT A$
1040  IF A$ <  > "1" AND A$ <  > "2" AND A$ <  > "3" AND A$
      <  > "4" THEN 1030
1050  HOME : RETURN
2000  REM  CHECK PRESSURE
2005  PRINT "  YOU CHECK THE TIRES AND THEN PROCEED"
2010  PRINT "DOWN THE DRIVEWAY. YOU ARE HAVING"
2020  PRINT "TROUBLE STEERING. YOUR HANDLEBARS ARE"
2030  PRINT "LOOSE! THE BIKE GOES OUT OF CONTROL AND"
2040  PRINT "YOU RUN OVER THE CURB INTO A BUSH. YOU"
2050  PRINT "WALK BACK TO THE HOUSE AND TIGHTEN THE"
2060  PRINT "HANDLEBARS AND SEAT. YOU ALSO CHECK THE"
2070  PRINT "BRAKES BEFORE RIDING. PRESS <RETURN>."
2080  INPUT Z$: HOME : RETURN
2100  REM  CHECK HANDLEBARS AND SEAT
2110  PRINT "  THE HANDLEBARS AND SEAT ARE FINE. YOU"
2120  PRINT "RIDE INTO THE STREET. NEARING A STOP"
2130  PRINT "SIGN, YOU SIGNAL FOR A STOP AND APPLY"
2140  PRINT "THE BRAKES. THE BRAKES DON'T WORK! FOR-"
2150  PRINT "TUNATELY, NO CARS ARE AROUND. YOU"
2160  PRINT "MANAGE TO STOP THE BIKE AND WALK IT"
2170  PRINT "HOME. YOU BORROW YOUR SISTER'S BIKE."
2180  PRINT "THIS TIME, YOU REMEMBER TO CHECK ALL"
2190  PRINT "PARTS BEFORE RIDING. PRESS <RETURN>."
2195  INPUT Z$: HOME : RETURN
2200  REM  CHECK BRAKES
2210  PRINT "  THE BRAKES WORK FINE. HALF WAY TO"
2220  PRINT "JENNY'S HOUSE, YOU NOTICE THAT THE REAR"
2230  PRINT "TURE IS LOW. YOU WALK THE BIKE TO THE"
2240  PRINT "NEAREST GAS STATION, TWO MILES AWAY."
2250  PRINT "AFTER FILLING THE TIRE WITH AIR, YOU"
2260  PRINT "CHECK THE HANDLEBARS AND SEAT TO MAKE"
2270  PRINT "SURE THEY ARE TIGHT. PRESS <RETURN>."
2280  INPUT Z$: HOME : RETURN
2300  REM  WET LEAVES
2310  PRINT "  YOU HIT THE LEAVES AND SKID OUT OF"
2320  PRINT "CONTROL, NEARLY SMASHING INTO A CAR."
2330  PRINT "YOU BRUSH YOURSELF OFF AND REMEMBER"
2340  PRINT "THAT COASTING AND PREPARING TO BREAK IS"
2350  PRINT "THE SAFEST WAY TO PROCEED ON SLIPPERY"
2360  PRINT "OR LOOSE ROADS. PRESS <RETURN>."
2370  INPUT Z$: HOME : RETURN
2400  REM   BUSY INTERSECTION
2410  PRINT "  HONK! HONK! AS YOU ARE TURNING, A BIG"
2420  PRINT "TRUCK NEARLY HITS YOU. NEXT TIME YOU"
2430  PRINT "MUST CROSS A BUSY INTERSECTION, YOU"
2440  PRINT "WILL REMEMBER TO WALK THE BIKE ACROSS."
2450  PRINT "PRESS <RETURN>.": INPUT Z$: HOME : RETURN
2500  REM  PEDESTRIAN IN CROSSWALK
2510  PRINT "  JUST AS YOU START TO GO AROUND THE"
2520  PRINT "PEDESTRIAN, HE LOOKS UP. HE JUMPS IN"
2530  PRINT "THE WRONG DIRECTION, TRYING TO AVOID"
2540  PRINT "YOU. CRASH! YOU KNOCK HIM DOWN. FOR-"
2550  PRINT "TUNATELY HE IS OKAY. YOU APOLOGIZE AND"
2560  PRINT "HELP HIM TO HIS FEET. YOU REMEMBER TOO"
2570  PRINT "LATE THAT THE PEDESTRIAN HAS THE RIGHT"
2580  PRINT "OF WAY. PRESS <RETURN>."
2590  INPUT Z$: HOME : RETURN
2600  REM  ON SIDEWALK
2610  PRINT "  YOU RIDE UP THE CURB AND ONTO THE"
2620  PRINT "SIDEWALK. A WOMAN APPEARS SUDDENLY FROM"
2630  PRINT "AROUND THE CORNER. YOU TURN SHARPLY TO"
2640  PRINT "AVOID HER AND CRASH INTO SOME BUSHES."
2650  PRINT "YOU REMEMBER TOO LATE THAT BIKES BELONG"
2660  PRINT "IN THE STREET. NEXT TIME, YOU WILL STOP"
2670  PRINT "AND LET PEDESTRIANS CROSS THE STREET"
2680  PRINT "FIRST. PRESS <RETURN>."
2690  INPUT Z$: HOME : RETURN
2700  REM  RIDE ON HANDLEBARS
2710  PRINT "  JENNY CLIMBS ON THE HANDLEBARS AND"
2720  PRINT "YOU START DOWN THE DRIVEWAY. THE BIKE"
2730  PRINT "STARTS TO WOBBLE. JUST AS YOU ARE ABOUT"
2740  PRINT "TO FALL, JENNY'S MOTHER COMES RUNNING"
2750  PRINT "OUT OF THE HOUSE AND STEADIES THE BIKE."
2760  PRINT "AS JENNY GETS DOWN, HER MOTHER REMINDS"
2770  PRINT "YOU THAT RIDING ON HANDLEBARS IS ALWAYS"
2780  PRINT "DANGEROUS. PRESS <RETURN>."
2790  INPUT Z$: HOME : RETURN
2800  REM  STOP SIGN
2810  PRINT "  THE WORKERS SPOT YOU AS YOU GO BY."
2820  PRINT "THEY REMIND YOU THAT YOU MUST OBEY ALL"
2830  PRINT "TRAFFIC SIGNS AND LIGHTS, JUST AS CARS"
2840  PRINT "DO. PRESS <RETURN>."
2850  INPUT Z$: HOME : RETURN
2900  REM  SIGNAL STOP
2910  PRINT "  YOU STOP SHARPLY. AS YOU ARE GETTING"
2920  PRINT "OFF THE BIKE, A CAR PULLS UP BEHIND"
2930  PRINT "YOU. THE DRIVER REMINDS YOU THAT YOU"
2940  PRINT "MUST SIGNAL WITH YOUR HANDS BEFORE"
2950  PRINT "STOPPING. SHE ALSO MENTIONS THAT YOU"
2960  PRINT "DON'T HAVE TO GET OFF YOUR BIKE WHEN"
2970  PRINT "YOU STOP. PRESS <RETURN>."
2980  INPUT Z$: HOME : RETURN
```



MAY

L O G O OLYMPICS

Celebrate the 1984 Summer Olympics with four gold-medal Logo activities. The activities also will help students "go that extra mile" in developing language arts and math skills.

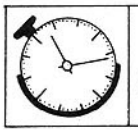
May is National Fitness and Sports month. What could be more *fit*ting than to celebrate with a takeoff on the Summer Olympic Games?

With the help of this Logo teaching unit, you'll be able to challenge students to sprint faster than speeding turtles, to leap turtle hurdles in a single bound, and to last the duration in a grueling Maraturtlethon! They'll also get a chance to light a Logo Olympic torch, to create five Logo designs in a special Logo event called the Penturtlethon, and to write their own procedures for Olympic Minute commercials.

All of these activities will develop your students' Logo programming skills. But that's not all! The events will also help students learn research and writing skills, estimation, angles, slope, geometry, and problem solving.

You can use almost all versions of Logo for the Logo Olympics events. Popular Logo versions include Commodore, Krell, and Terrapin Logos (all are licensed by MIT; Krell and Terrapin Logos run on Apple computers); Apple and Atari Logos (developed by Logo Computer Systems, Inc.); TI Logo (Texas Instruments); and Color Logo (Tandy/Radio Shack).

So what are you waiting for? Help kids go that extra mile with Logo.



EVENT 1
Olympic Minute

Subject: Language Arts (Writing, Research Skills)
Objective: Students use the Logo text screen to write short fact files on events and contenders in the Summer Olympics.
Prerequisites: Students must know how to use the PRINT command and to define procedures.
Preparation: Gather reference materials on Summer Olympics, including books, magazine and newspaper articles, and pamphlets.

Olympic Minutes are 60-second television spots containing interesting facts on an Olympic contender or event. A good way for students to learn more about the Summer Olympics is to have them create Olympic Minutes of their own.

Have students use your Olympic resources to find important facts about contenders or events in past or future Summer Olympics. Tell them to organize these facts into Olympic Minute procedures. The procedures should present less than one reading minute of material on the Summer Olympics. Here's an example:

```
TO OLYMPIC.MINUTE.1
```

```
  PRINT [DID YOU KNOW THAT MUHAM-
    MAD ALI, ONCE]
  PRINT [KNOWN AS CASSIUS CLAY, WON
    THE GOLD]
  PRINT [MEDAL FOR BOXING IN ROME,
    ITALY,]
  PRINT [DURING THE 1960 SUMMER
    OLYMPICS?]
  PRINT [MUHAMMAD ALI LATER BE-
    CAME THE HEAVYWEIGHT]
  PRINT [BOXING CHAMPION OF THE
    WORLD.]
END
```

After students have entered their facts, have them add illustrations, flashing borders, or animated sprites.

Call up Olympic Minutes between other Logo Olympic events or at the beginning and end of each day you conduct your Logo Olympics.

Students can also use the Olympic Minutes to create data base files on athletes and sports events. For example, they could type in the word WOMEN.GYMNASTICS and have Logo respond with the Olympic Minutes that provide information on that event. Here is a possible WOMEN.GYMNASTICS program:

```
TO WOMEN.GYMNASTICS
  OLYMPIC.MINUTE.22
  OLYMPIC.MINUTE.31
END
TO OLYMPIC.MINUTE.22
  PRINT [WOMEN COMPETE IN THE FOL-
    LOWING]
  PRINT [GYMNASTICS EVENTS: VAULT,
    UNEVEN]
  PRINT [BARS, BALANCE BEAM, FLOOR
    EXERCISE,]
  PRINT [RHYTHMIC, AND THE ALL-
    AROUND EVENT]
  PRINT [WHICH COMBINES ALL OF
    THESE SKILLS.]
END

TO OLYMPIC.MINUTE.31
  PRINT [MARY LOU RETTON WAS THE
    FIRST]
  PRINT [AMERICAN WOMAN TO WIN AN
    INDIVIDUAL]
  PRINT [OLYMPIC GYMNASTICS MEDAL.
    SHE WON]
  PRINT [THE WOMEN'S ALL-AROUND
    GOLD MEDAL AT]
  PRINT [THE 1984 SUMMER OLYMPICS.]
END
```

EVENT 2
Turtle Track

Subject: Math (Estimation, Time, and Measurement Skills)
Objective: Students maneuver the Logo turtle around racetracks and over hurdles.
Prerequisites: Students must be able to use FORWARD, BACK, RIGHT, and LEFT commands.
Preparation: Make one screen-size transparency of each racecourse illustrated on the opposite page. Tape Racecourse 1 to the computer screen. Boot Logo into your computer and move the turtle to the starting line for the beginning of the first race.

The Turtle Track events consist of maneuvering the Logo turtle around progressively more difficult racecourses. The object of each race is to complete the course, from start to finish, as quickly and as accurately as possible. To do this, students will have to use FORWARD, BACK, LEFT, and RIGHT commands. If the turtle steps off the track three times in the race, the student must start over.

Turtles, take your mark, get set, go!

Use a stopwatch to time students, starting from the moment they touch the keyboard. Make bronze, silver, and gold medals out of aluminum foil and construction paper, and award them to the three fastest competitors in each event.

Use Racecourse 1 for the following events: 100 meter race (a quarter of the track); 200 meter race (half the track); 400 meter race (once around); 800 meter race (twice around); and 400 meter relay (each member of a four-person team moves the turtle one-quarter of the track).

Allow each student a practice run to get the "feel" of the course. Students should discover that using as few turtle commands as possible and staying as close as they can to the inside of the track will result in a more efficient run and better time.

Conduct separate events for the 200, 400, and 800 meter races and the 400 meter relay.

A relay is an event in which each member of a team completes part of the course. Competitors carry a baton around their portion of the racetrack and then pass the baton to the teammate who will run next. In the Turtle Relay, students must switch places at the computer when the turtle arrives. The intervals are marked with dotted and solid lines on the track.

The next Turtle Track event is the Turtle Hurdles. Hurdle events are a little harder, because students must determine a path to clear the hurdles, without "tripping" over them, and then touch the "ground" at least once before clearing the next hurdle. The more hurdles, the harder the event.

Students can compete in the 110 meter hurdles (three hurdles), the 200 meter hurdles (six hurdles), and the 400 meter hurdles (10 hurdles). Use Racecourse 2 for the 110 meter hurdles and the 200 meter hurdles, and Racecourse 3 for the 400 meter hurdles.

Allow students time to practice "jumping" the hurdles. Encourage students to write a hurdle procedure in which the turtle clears a hurdle, lands on the "ground," and races the appropriate distance to the next turtle hurdle.

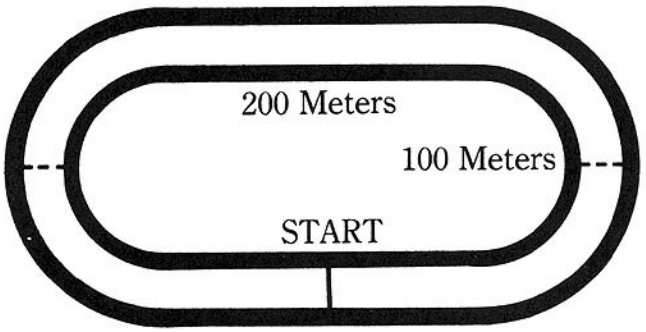
Once again, conduct timed races, adding one second to a competitor's score for each hurdle his or her turtle touches.

The final Turtle Track event, the Maraturtlethon, provides practice at more intricate turtle movement. Tape Racecourse 4 to the screen and position the turtle at the starting line. Students try to stay on the course by manipulating the turtle through hairpin turns, a dense forest, and rocky roads.

TURTLE TRACK RACECOURSES

Directions: Make screen-size transparencies of each of the four courses below. One at a time, tape the courses to the Logo screen and have students run the turtle through each.

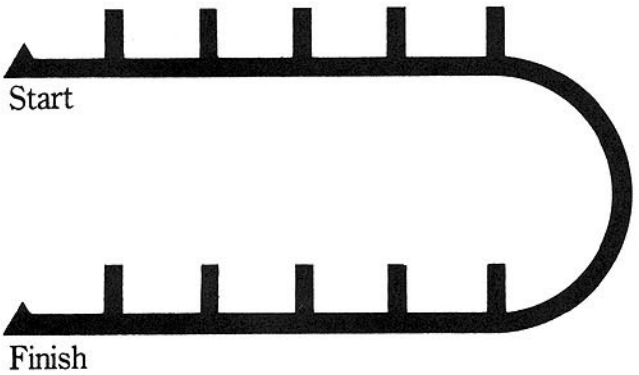
RACECOURSE 1
Events: Sprints and Middle Distances



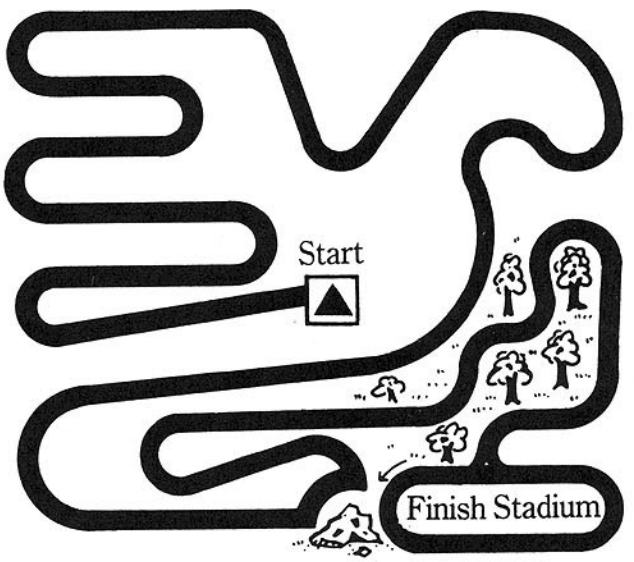
100 Meters = One-quarter Track
200 Meters = Half the Track
400 Meters = Once Around
800 Meters = Twice Around

RACECOURSE 2
Events: 110, 200 Meter Turtle Hurdles

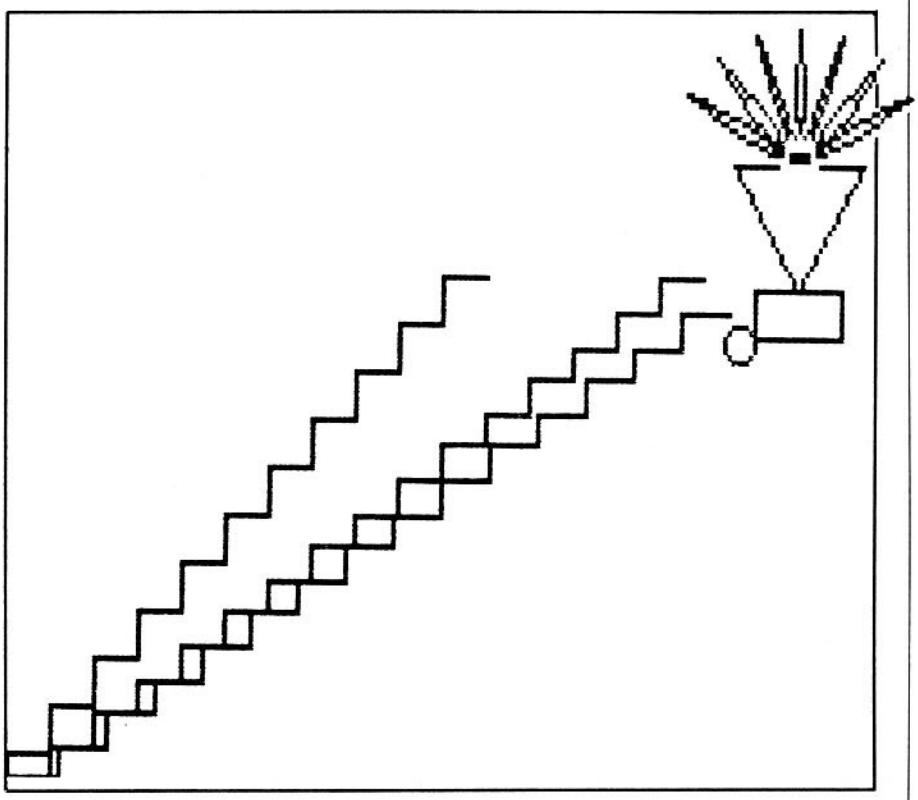
RACECOURSE 3
Event: 400 Meter Turtle Hurdles



RACECOURSE 4
Event: Maraturtlethon



Students light the torch by using Logo to create steps with the proper slope. In this example, a student reached the torch on the third try.



EVENT 3
Light the Torch

Subject: Math (Slope, Estimation)
Objective: Students explore slope (the slant of a line) by programming the turtle to climb steps and light a torch.
Prerequisites: Students must be able to use FORWARD, BACK, RIGHT, and LEFT commands and to define procedures.
Preparation: Type in the *Light the Torch* program for your Logo version. *(See next page.)* The program listing labeled LCSI Logo is for Atari and Apple Logos; the MIT listing is for Commodore, Krell, and Terrapin Logos.

Have students use rulers to measure the height and depth of steps in the school. What makes some steps easier to climb than others? *(The shorter the height from step to step, the easier they are to climb.)*

Have students use Logo to draw steps. Start with single turtle movement commands, such as FD 20 RT 90 FD 20 LT 90 FD 20. Then use the REPEAT command to make several steps, such as REPEAT 10 [FD 20 RT 90 FD 20 LT 90].

Now have students create a STEP procedure, such as:

```
TO STEP
  FD 20 RT 90 FD 20 LT 90
END
```

To run the procedure, students type STEP.

Now challenge students to write a STEP procedure with variables that will allow them to create steps of any depth and breadth. Here's one possible example:

```
TO STEP :UP :OVER
  FD :UP RT 90 FD :OVER LT 90
END
```

To run this procedure, students type STEP followed by two numbers: the first for the distance up, and the second for the distance over.

Tell students to make steps from the lower-left to the upper-right corner of the screen.

Once students have had a chance to explore various inputs in the STEP procedure, have them play *Light the Torch*. Type SETUP to begin the game. Logo will draw a torch at a random location in the upper-right corner and then place the turtle at a random location in the lower-left corner. Students type STEP followed by two numbers: the first for the distance up, and the second for the distance over. The turtle creates steps based on the student's input values. If the steps reach the torch, the turtle lights it. If not, the turtle returns to the starting position and waits for new input numbers.

Directions: Type in the listing for your Logo version and follow the program instructions discussed on page 143.

MIT Version (Commodore, Krell, Terrapin)

```
TO SETUP
TORCH.STAND
TURTLE.STAND
END

TO TORCH.STAND
PU SETX (100 - RANDOM 50)
SETY (100 - RANDOM 50)
PD SETH 90 STAND
END

TO STAND
REPEAT 2 [FD 30 RT 120] FD 30 BK 30 LT 60 FD 10 LT 90
   FD 10
MAKE "X XCOR
MAKE "Y YCOR
CORNER
LT 90 FD 20 LT 90 FD 10 LT 90 FD 10 PU
END

TO CORNER
REPEAT 8 [FD 3 RT 45]
END

TO TURTLE.STAND
PU SETX ((RANDOM 30) - 120
SETY ((RANDOM 30) - 60
SETH 0
MAKE "TX XCOR
MAKE "TY YCOR
PD
END

TO GOBACK
PU SETX :TX SETY :TY SETH 0 PD
END

TO FIRE
PU SETX :X SETY :Y SETH 0
FD 10 RT 90 FD 10 LT 90 FD 26 RT 60 PD
REPEAT 7 [FLAME LT 20]
RT 75
PRINT [YOU GOT IT!]
END

TO FLAME
RT 5 FD 15 LT 10 FD 15 RT 10 BK 15 LT 10 BK 15 RT 5
END

TO STEP :UP :OVER
FD :UP RT 90
FD :OVER LT 90
CHECK :UP :OVER
END

TO CHECK :UP :OVER
IF ( :X - XCOR ) < 10 CHECK.Y :UP :OVER STOP
IF YCOR > ( :Y + 10 ) PRINT [TRY AGAIN.] GOBACK STOP
   ELSE STEP :UP :OVER
END

TO CHECK.Y :UP :OVER
IF XCOR > :X + 10 PRINT [TRY AGAIN.] GOBACK STOP
IF YCOR > :Y + 10 PRINT [TRY AGAIN.] GOBACK STOP
IF :Y - YCOR < 10 FIRE STOP ELSE STEP :UP :OVER
END
```

LCSI Version (Apple, Atari)

```
TO SETUP
TORCH.STAND
TURTLE.STAND
END

TO TORCH.STAND
PU SETX (100 - RANDOM 50)
SETY (100 - RANDOM 50)
PD SETH 90 STAND
END

TO STAND
REPEAT 2 [FD 30 RT 120] FD 30 BK 30 LT 60 FD 10 LT 90
   FD 10
MAKE "X XCOR
MAKE "Y YCOR
CORNER
LT 90 FD 20 LT 90 FD 10 LT 90 FD 10 PU
END

TO CORNER
REPEAT 8 [FD 3 RT 45]
END

TO TURTLE.STAND
PU SETX ((RANDOM 30) - 120)
SETY ((RANDOM 30) - 60)
SETH 0
MAKE "TX XCOR
MAKE "TY YCOR
PD
END

TO CHECK :UP :OVER
IF (:X - XCOR) < 10 [CHECK.Y :UP :OVER STOP]
IF YCOR > (:Y + 10) [PRINT [TRY AGAIN] GOBACK STOP]
   [STEP :UP :OVER]
END

TO CHECK.Y :UP :OVER
IF XCOR > (:X + 10) [PRINT [TRY AGAIN] GOBACK STOP]
IF YCOR > (:Y + 10) [PRINT [TRY AGAIN] GOBACK STOP]
IF (:Y - YCOR) < 10 [FIRE STOP] [STEP :UP :OVER]
END

TO GOBACK
PU SETX :TX SETY :TY SETH 0 PD
END

TO FIRE
PU SETX :X SETY :Y SETH 0
FD 10 RT 90 FD 10 LT 90 FD 26 RT 60 PD
REPEAT 7 [FLAME LT 20]
RT 75
PRINT [YOU GOT IT!]
END

TO FLAME
RT 5 FD 15 LT 10 FD 15 RT 10 BK 15 LT 10 BK 15 RT 5
END

TO STEP :UP :OVER
FD :UP RT 90
FD :OVER LT 90
CHECK :UP :OVER
END
```

EVENT 4
Penturtlethon

Subject: Math (Geometry, Problem Solving)
Objective: Student teams create five geometric shapes.
Prerequisites: Students must be able to define procedures for squares, triangles, rectangles, circles, and stars.
Preparation: Draw each of the five Logo designs at right on separate sheets of paper. Give each student a copy.

Explain to students that the modern pentathlon is an Olympic event that includes five sports: swimming, shooting, horseback riding, fencing, and running. (*Penta* stands for five.) The Penturtlethon contains five events, too. These events require the construction of five designs that students create, first out of paper, and then on the screen with the Logo turtle.

Have student teams of two or three cut out different-size squares, rectangles, triangles, circles, and stars from construction paper or felt. They then use these shapes to construct each of the five Logo designs in the box below. Have teams describe in words how they make each design, step by step. Here's how a student team could describe how to make a star design.

To Make a Star Design:
First find five stars that are all the same size.
Then put one point of each star together on the same spot.
The stars should all be exactly the same distance apart.
That's all.

When student teams have finished creating the designs on paper, they are ready to transfer them to the Logo screen. Encourage them to write "building block" procedures to create squares, rectangles, stars, circles, triangles, and other shapes of any size. *(See box for sample procedures.)* Students then combine these procedures with other procedures to create the more intricate Logo designs.

Remind students that there are many possible solutions to creating the shapes with Logo, just as there are many ways to piece them together on paper. Note that each solution given for a design on the opposite page is only one of many possibilities.

When each team has completed the five projects, bring in a panel of judges — an art teacher, a math teacher, and a Logo teacher, for example — to judge team entries on a scale of one (lowest) to 10 (highest). Categories can include accuracy of overall design, quality of paper design and description, use of color, and quality of procedures.

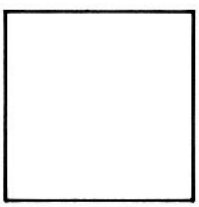
Tom Lough, Steve Tipps, and Rebecca Poplin

BUILDING BLOCK PROCEDURES FOR PENTURTLETHON DESIGNS

Students can create these simple variable procedures and use combinations of them along with other procedures to form the geometric patterns on the next page.

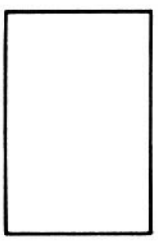
Square:
Procedure for a square of any size. Type SQUARE followed by one number.

```
TO SQUARE :SIZE
  REPEAT 4 [FD :SIZE RT 90]
END
```



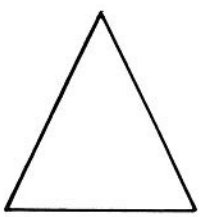
Rectangle:
Procedure for a rectangle of any size. Type RECTANGLE followed by two numbers.

```
TO RECTANGLE :SIDE1 :SIDE2
  REPEAT 2 [FD :SIDE1 RT 90 FD :SIDE2
    RT 90]
END
```



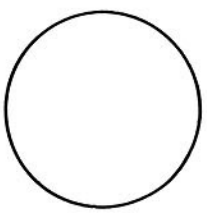
Triangle:
Procedure for an equilateral triangle of any size. Type TRIANGLE followed by one number.

```
TO TRIANGLE :SIZE
  REPEAT 3 [FD :SIZE RT 120]
END
```



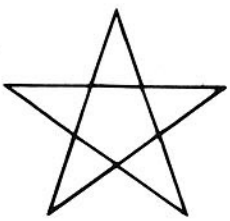
Circle:
Procedure for a circle of any size. Type CIRCLE followed by one number.

```
TO CIRCLE :SIZE
  REPEAT 36 [FD :SIZE RT 10]
END
```



Star:
Procedure for a five-pointed star of any size. Type STAR followed by one number.

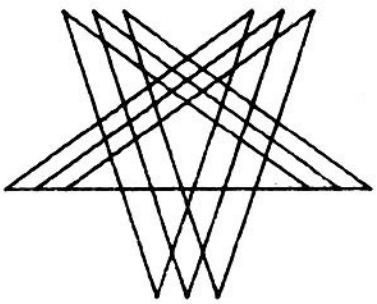
```
TO STAR :SIZE
  REPEAT 5 [FD :SIZE RT 144]
END
```



PENTURTLETHON LOGO DESIGNS

DIRECTIONS: Give students a copy of the following designs (cover up the solutions) and have them write procedures to create them.

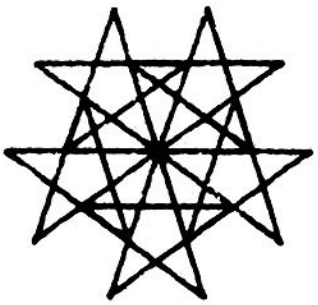
DESIGN 1



One possible solution:

```
TO STARS
  REPEAT 3 [STAR 80 FD 8]
  HT
END
```

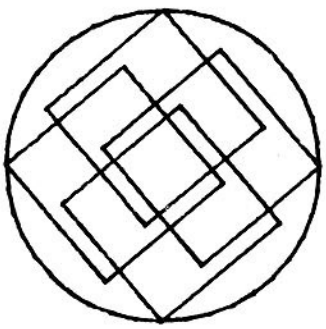
DESIGN 2



One possible solution:

```
TO MEDAL :SIZE
  REPEAT 5 [STAR :SIZE RT 72]
  HT
END
```

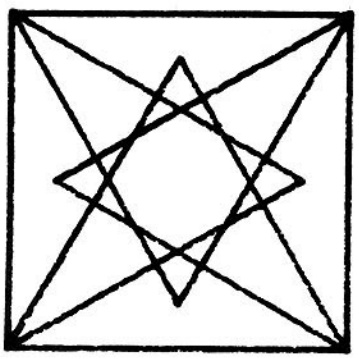
DESIGN 3



One possible solution:

```
TO CIRCLE.SQUARE :SIZE
  REPEAT 4 [RT 45 SQUARE :SIZE LT 45
  REPEAT 9 [FD 6 RT 10]]
END
```

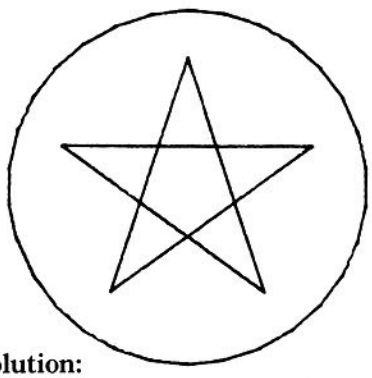
DESIGN 4



One possible solution:

```
TO SQUARE.STAR
  REPEAT 4 [RT 30 TRIANGLE 60 LT 30 FD
    60 RT 90]
  HT
END
```

DESIGN 5



One possible solution:

```
TO CIRCLE.STAR
  LT 52
  CIRCLE 8
  PU RT 72 FD 10 PD
  STAR 70
  HT
END
```

MOTHER'S DAY

QUICK TIPS

MAKE A BOOKMARK FOR MOM

With this BASIC program, construction paper, and strips of ribbon, your students can make attractive bookmarks to give their moms on Mother's Day

First type the program below into the computer. When a student runs the program, the computer tells the printer to print out the word MOM. The word MOM is actually made up of smaller words that spell out HAPPY MOTHER'S DAY. *(See illustration.)* Have each student make two printouts of the display.

This listing is for use on Apple II computers. To run the program on Radio Shack computers, change HOME to CLEAR 5000 in line 10; remove PR#1 and PR#0 in lines 20 and 110 respectively; and change PRINT in lines 20, 30, 40, 50, 60, 70, 80, 90, and 100 to LPRINT.

```
10 HOME:PRINT "TURN YOUR PRINTER
   ON AND PRESS RETURN OR ENTER."
   :INPUT P$
20 PR#1:PRINT:PRINT"HAPP  APPY":
   PRINT "HAPP  APPY"
30 PRINT "        AP YH PP":PRINT
   " AP    PP"
40 PRINT "HAPP  APPY":PRINT "HAP-
   P  APPY"
50 PRINT:PRINT " MOTHER'S":PRINT
   " MOTHER'S"
60 PRINT " MO    'S":PRINT " MO    'S"
70 PRINT " MOTHER'S":PRINT  " MOTH-
   ER'S"
80 PRINT:PRINT "DAYD  DAY!":PRINT
   "DAYD  DAY!"
90 PRINT " AY AY AY":PRINT
   " AY    AY"
100 PRINT "DAYD  DAY!":PRINT
    "DAYD  DAY!"
110 PR#0:PRINT "DO YOU WANT TO
    MAKE ANOTHER PRINTOUT? (Y/N)."
    :INPUT Q$
120 IF Q$="Y" THEN 10 END
```

To complete the bookmarks, have each child cut out two 1-by-3-inch rectangles from construction paper.

Then give every child two ½-by-5-inch strips of ribbon and have them glue the strips between the two rectangles, leaving four inches of each ribbon dangling from the bottom of the rectangles. Tell students to trim their printouts to fit on the rectangles and to glue one printout to each side.

Before students present the bookmarks to their moms, have them decorate the printouts with flowers and hearts.

GENERATE MOTHER'S DAY POEMS

This BASIC program helps students write poems about mom for Mother's Day. It also drills kids on the parts of speech.

When a student runs the program, the computer first asks for two adjectives that describe the child's mother. After entering the adjectives, the student is told to type in three verbs ending in *-ing* that are representative of his or her mother. Next, the computer asks for a four-word description of the poet's mom. To complete the poem, the student must insert a noun that reminds him or her of mom. Once the poem is finished, the computer tells the user to turn the printer on and then proceeds to print out the poem.

This listing is for use on Apple II computers. To run the program on Radio Shack computers, change HOME to CLEAR 5000 in line 10; remove PR#1 and PR#0 in lines 70 and 100 respectively; and change PRINT to LPRINT in lines 70, 80, 90, and 100.

```
REM MOM
10 HOME
20 PRINT:PRINT "TYPE IN TWO ADJEC-
   TIVES THAT DESCRIBE YOUR MOTH-
   ER AND PRESS RETURN OR ENTER."
   :INPUT A$
30 PRINT:PRINT "TYPE IN THREE VERBS
   ENDING IN 'ING' THAT DESCRIBE
   YOUR MOM AND PRESS RETURN OR
   ENTER.":INPUT V$
40 PRINT:PRINT "TYPE IN A FOUR-WORD
   PHRASE THAT DESCRIBES YOUR
   MOTHER AND PRESS RETURN OR EN-
   TER.":INPUT P$
50 PRINT:PRINT "INSERT A NOUN THAT
   DESCRIBES YOUR MOM AND PRESS
   RETURN OR ENTER.":INPUT N$
60 PRINT:PRINT "TURN YOUR PRINTER
   ON AND PRESS RETURN OR ENTER."
   :INPUT R$
70 PR#1:PRINT:"MOTHER"
80 PRINT:PRINT A$:PRINT:PRINT V$
90 PRINT:PRINT P$:PRINT:PRINT N$
100 PRINT:PRINT:PRINT "HAPPY MOTH-
    ER'S DAY!":PR#0
```

Tell kids to glue their poems onto the inside of homemade Mother's Day cards.

Jean Tennis

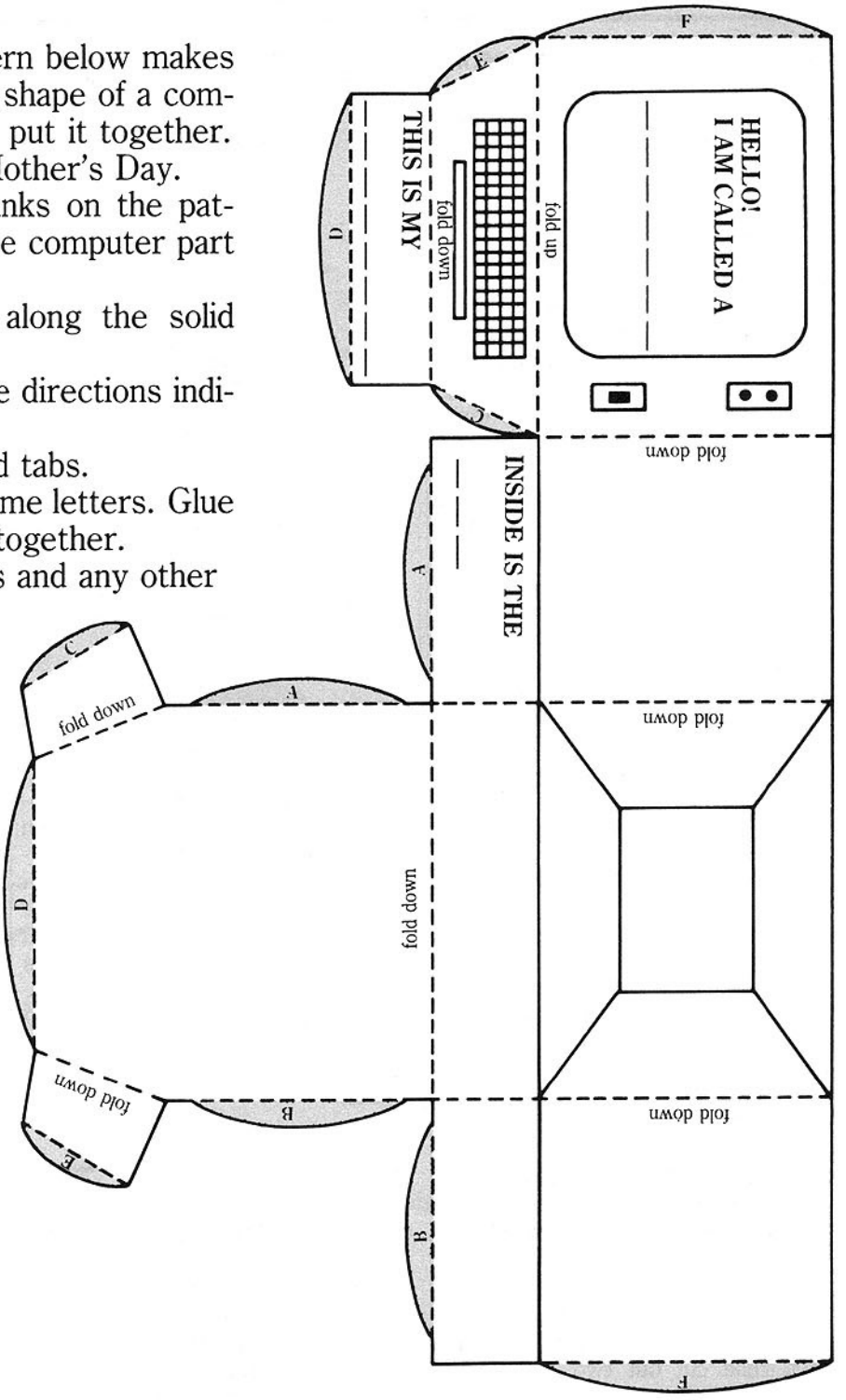
MAKE A COMPUTER PENCIL HOLDER
WORKSHEET

MOTHER'S DAY **SECOND SUNDAY IN MAY**

NAME: _____

DIRECTIONS: The pattern below makes a nifty pencil holder in the shape of a computer. Follow the steps to put it together. Then give it to Mom on Mother's Day.

1. Look at the three blanks on the pattern. Write the name of the computer part that goes in each blank.
2. Cut out the pattern along the solid lines.
3. Fold dotted lines in the directions indicated.
4. Fold down the lettered tabs.
5. Match tabs with the same letters. Glue each set of matching tabs together.
6. Put tape along corners and any other areas that look like they need to be stronger.
7. Give the pencil holder to your mom with a card that says "Happy Mother's Day!"



MICRO NINE AUTO RACE WORKSHEET

MEMORIAL DAY — **LAST MONDAY IN MAY**

NAME: _____

On Memorial Day weekend, race car drivers will compete in the Indianapolis 500 auto race. They will drive their cars 500 miles at speeds up to 200 miles per hour.

More than 350,000 people will attend the race. If you aren't one of them, don't feel left out. We've created an auto race just for you.

We call our race the *MICRO NINE*, because it takes place on a computer screen, and because there are nine cars in it. To get ready for the race, all you need to do is type in the program listing on this page.

So, ladies and gentlemen, start your computers, type in the program listing, get ready, and RUN!

WHAT TO DO

Put your computer in BASIC. Type in the *MICRO NINE* program listing. Type RUN and press RETURN or ENTER.

The race cars will zoom up the screen. When the race stops, the car you see on the screen is the winner. The winner will change from race to race.

MICRO NINE PROGRAM LISTING

This program works for most types of computers. If you have a TRS-80 Model I/III or a Radio Shack Color Computer, change line 40 to 40 NUMBER = RND(9) and leave out lines 190, 200, 220, and 230.

```
10 NUMBER = 0
20 LAP = 0
30 FOR LAP = 1 TO 10
40 NUMBER =
INT(9*RND(1))+1
50 PRINT "OOO          OOO"
60 PRINT "OOO          OOO"
70 PRINT "OOO*******OOO"
80 PRINT "  *********"
90 PRINT "  **       **"
100 PRINT-
 "  ** # ";NUMBER;" **"
110 PRINT "  **       **"
120 PRINT "  *********"
130 PRINT "  *********"
140 PRINT "OOO*******OOO"
150 PRINT "OOO !!!!! OOO"
160 PRINT "OOO  !!!  OOO"
170 PRINT "       !"
180 PRINT
190 PRINT
200 PRINT
210 NEXT LAP
220 PRINT
230 PRINT
240 PRINT "THE WINNER
IS...# ";NUMBER;"!"
250 END
```

MICRO NINE CHALLENGES

How many of these programming challenges can you do? If you do them all, take the *Micro Nine* Superchallenge.

- Use a clock or a stopwatch to time the race. How long does it take from start to finish? _____
- The race runs for 10 laps. Change the number of laps to 50. Now how long does the race take? _____
- Run the race 10 times. Write down the number of the winner of each race:

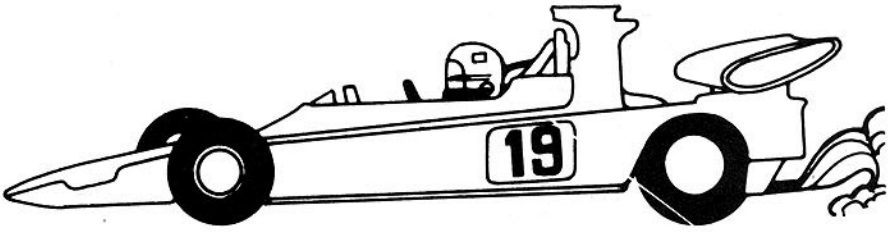
Race 1: _____
Race 2: _____
Race 3: _____
Race 4: _____
Race 5: _____
Race 6: _____
Race 7: _____
Race 8: _____
Race 9: _____
Race 10: _____

Which racer won the most races? _____

- Add 10 more cars.

MICRO NINE SUPERCHALLENGE

May is also the time for the Kentucky Derby horse race. Write a BASIC program that races horses on the screen.



ELECTRONIC FORTUNE TELLER
WORKSHEET

END OF SCHOOL **MAY OR JUNE**

NAME: _____

Summer's almost here. Do you know what's in store for you? Consult our *Electronic Fortune Teller* program to find out!

WHAT TO DO

1. Put your computer in BASIC.

2. Type in the *Electronic Fortune Teller* program listing. (If you are using an Atari computer, Color Computer, or TRS-80 Model III, remember to make the changes listed at the end of the program.)

3. Type RUN and press RETURN or ENTER.

***ELECTRONIC FORTUNE TELLER* PROGRAM LISTING**

```
10  PRINT "     ********************
     **********"
20  PRINT "     *      MADAME BEEP
     'S       *"
30  PRINT "     *  CRYSTAL BALL CO
     MPUTER   *"
40  PRINT "     ********************
     **********
50  PRINT : PRINT "PRESS <RETURN>
     FOR YOUR SUMMER FORTUNE."
60  INPUT Z$
70  PRINT : PRINT "  I'M GAZING IN
     TO MY CRYSTAL BALL...."
80  FOR D = 1 TO 5000: NEXT D
90  PRINT : PRINT "  I SEE..."
100  FOR D = 1 TO 4000: NEXT D
110  PRINT
120 P =  INT (3 *  RND (1)) + 1
130  ON P GOSUB 160,230,290
140  PRINT : PRINT "  PLEASE COME
     AGAIN SOON...."
150  END
160  PRINT "  ...A ROOM!...IT'S A
     BEDROOM....IT'S A"
170  PRINT "VERY MESSY BEDROOM....
     SOMEONE IS CLEAN-"
180  PRINT "ING THE ROOM....I SEE
     THAT IT'S..."
190  FOR D = 1 TO 10000: NEXT D
200  PRINT "...YOU! YOU WILL SPEND
      THE SUMMER"
210  PRINT "CLEANING YOUR ROOM!"
220  RETURN
230  PRINT "  ...A BASEBALL FIELD!
      YOU ARE AT BAT."
240  PRINT "THE BALL IS PITCHED...
     .IT'S A..."
250  FOR D = 1 TO 6000: NEXT D
260  PRINT : PRINT "  ...HOME RUN!
      I PREDICT THAT YOU WILL"
270  PRINT "HIT A HOME RUN THIS SU
     MMER."
280  RETURN
290  PRINT "  ...A BIG STAGE!...IT
     'S A CONCERT. I"
300  PRINT "CAN'T MAKE OUT THE STA
     R....WAIT!..."
310  PRINT "  ...IT'S...IT'S..."
320  FOR D = 1 TO 10000: NEXT D
330  PRINT "YOU! YOU'LL BE A BIG S
     TAR THIS SUMMER!"
340  RETURN
```

Note: If you are using an Atari computer, add this line: 1 DIM Z$(1)

If you are using a Color Computer or a TRS-80 Model III, change line 120 to 120 RANDOM:P = RND(3)

***FORTUNE TELLER* SUPERCHALLENGE**

Make your own predictions for this summer, both good and bad. Then add them to the program. (Hint: Change the 3 in line 120 to the total number of predictions. Add a subroutine for each new prediction.)

May all your good predictions come true!

MY SUMMER PREDICTIONS

DIRECTIONS: Write your own predictions below. Add them to the program.

1. _____

2. _____

3. _____

4. _____

5. _____

PROGRAM CONVERSIONS

HOW TO CONVERT PROGRAM LISTINGS TO OTHER MACHINES

Some of the program listings in this book are specific to one computer brand. The following program conversions tell you how to convert these listings for use on other computer brands. For more details on how to use commands, refer to your user's manual.

EMERGENCY! (page 6, Apple)

Atari Series

1. Change line 20 to: 20 PRINT CHR$(125):CLR
2. Add these lines:

```
25 DIM FD$(10),PD$(10),AM$(10),DO$(10),
   MD$(10)
26 DIM NE$(10),FI$(10),Z$(1),A$(2),P$(10)
```

3. Change HOME to PRINT CHR$(125) in lines 300, 420, 530, 650, 770, 900, 1020, 1150, and 1250.

Note: Do not put spaces between greater than, less than, and equal signs. For example: 2030 INPUT A$: IF A$<>"1" AND A$<>"2" AND A$<>"3" THEN 2030

Commodore 64, VIC-20

1. Change line 20 to: 20 PRINT CHR$(147):CLR
2. Change HOME to PRINT CHR$(147) in lines 300, 420, 530, 650, 770, 900, 1020, 1150, and 1250.

TRS-80 Model III, Color Computer

1. Change line 20 to: 20 CLS:CLEAR 5000
2. Change HOME to CLS in lines 300, 420, 530, 650, 770, 900, 1020, 1150, and 1250.
3. Change "PRESS RETURN" to "PRESS ENTER" in lines 150, 170, 190, 210, 230, 250, 280, 290, 410, 520, 640, 760, 890, 1010, 1140, 1240, and 2020.

WHAT'S FOR BREAKFAST? (page 12, Apple)

Atari Series

Editor's Note: The *What's For Breakfast?* program relies on the use of the subscripted string variable FI$(F) to dis-

play the 12 breakfast foods and keep track of the three foods that the user has chosen. Because this type of variable functions differently in Atari BASIC, Atari conversions are too complicated to include.

Commodore 64

1. Change HOME to PRINT CHR$(147) in lines 580, 690, 830, 970, and 1510.
2. Substitute the following lines for corresponding lines in the Apple program listing.

```
20 PRINT CHR$(147):CLR:F=12
1020 CLOSE 3:PRINT:PRINT "BON APPETIT,
     ";N$;"....":END
20080 INPUT Z$:IF Z$<>"Q" THEN OPEN 3,4
```

3. Add this line:

```
675 IF Q$="1" THEN OPEN 3,3
```

4. Change PRINT to PRINT#3, in lines 690 to 980 and lines 2000 to 13030. (Note: Don't forget the comma after #3. No space after PRINT.)

TRS-80 Model III

1. Change HOME to CLS in lines 580, 690, 830, 970, and 1510.
2. Substitute the following lines for corresponding lines in the Apple program listing.

```
20 CLS:CLEAR 5000:F=12
1020 CMD "Z","OFF":PRINT "BON APPETIT, ";
     N$;"....":END
20080 INPUT Z$:IF Z$<>"Q" THEN CMD "Z",
     "ON"
```

3. Change "PRESS RETURN" to "PRESS ENTER" in lines 220, 300, 330, 370, 410, 650, 830, 970, 20050, and 20070.

COMPUTER FIRE DRILL (page 32, Apple)

Atari Series

1. Change line 20 to: 20 PRINT CHR$(125):CLR:DIM A$(2),Z$(2)
2. Change HOME to PRINT CHR$(125) in lines 810, 940, and 2040.

Note: Do not put spaces between greater than, less than, and equal signs. For example: 2030 IF A$<>"1" AND A$<>"2" THEN 2020

Commodore 64, VIC-20

1. Change line 20 to: 20 PRINT CHR$(147):CLR
2. Change HOME to PRINT CHR$(147) in lines 810, 940, and 2040.

TRS-80 Model III, Color Computer

1. Change line 20 to: 20 CLS:CLEAR 1000
2. Change HOME to CLS in lines 810, 940, and 2040.
3. Change "PRESS RETURN" to "PRESS ENTER" in lines 930 and 2010.

RESCUE MUFFIN (page 35, Apple)

Atari Series

1. Change line 20 to: 20 PRINT CHR$(125):CLR:DIM A$(2),Z$(1)
2. Change HOME to PRINT CHR$(125) in lines 520, 670, and 1040.

Note: Do not put spaces between greater than, less than, and equal signs. For example: 1030 IF A$<>"1" AND A$<>"2" THEN 1020

Commodore 64, VIC-20

1. Change line 20 to: 20 PRINT

2. Change HOME to PRINT CHR$(147) in CHR$(147):CLR
lines 520, 670, and 1040.

TRS-80 Model III, Color Computer

1. Change line 20 to: 20 CLS:CLEAR 1000
2. Change HOME to CLS in lines 520, 670, and 1040.
3. Change "PRESS RETURN" to "PRESS ENTER" in lines 660 and 1010.

COMPUTERIZED VOTING BOOTH (page 58, Apple)

Atari 800, 800XL

Editor's Note: The *Computerized Voting Booth* program relies on the use of the subscripted string variable CN$(N) to record and display the candidate's names. Because this type of variable functions differently in Atari BASIC, Atari conversions are too complicated to include.

Commodore 64

1. Change HOME to PRINT CHR$(147) in lines 200, 270, 370, 660, 750, 830, and 910.
2. Change line 20 to: 20 PRINT CHR$(147):CLR

TRS-80 Model III

1. Change HOME to CLS in lines 200, 270, 370, 660, 750, 830, and 910.
2. Substitute the following lines for corresponding lines in the Apple program listing.

```
20 CLS:CLEAR 32000
30 DIM G(50),BG(50),CND(50),C(50)
40 DIM GC(50),BC(50),G1(50),G2(50),G3(50),
   G4(50)
890 PRINT "TYPE 'R' TO REVIEW THE RE-
SULTS      OR 'E' TO END THE PROGRAM."
900 PRINT "THEN PRESS ENTER."
```

3. Change "PRESS RETURN" to "PRESS ENTER" in lines 260, 310, 420, 470, 740, and 820.
4. Add this line:

```
925 IF Z$<>"E" THEN 910
```

Note: The standard TRS-80 Model III with 48K of memory allows for only 50 voters (lines 30 and 40 in the program listing). If your machine has additional memory space, the program can accommodate additional voters.

ELECTRONIC MAILBOX (page 62, Apple)

Atari Series

Editor's Note: The *Electronic Mailbox* program relies on the use of subscripted string variables, including W$(X), M$(X), and S$(X), to keep track of and display the valentines. Because this type of variable functions differently in Atari BASIC, Atari conversions are too complicated to include.

Commodore 64, VIC-20

1. Change line 20 to: 20 PRINT CHR$(147):CLR
2. Change HOME to PRINT CHR$(147) in lines 150, 200, 260, and 370.

TRS-80 Model III, Color Computer

1. Change line 20 to: 20 CLS:CLEAR 5000
2. Change HOME to CLS in lines 150, 200, 260, and 370.
3. Change "PRESS RETURN" to "PRESS ENTER" in lines 250 and 360.

COMPUTER BLOOD BANK (page 93, Apple)

Atari Series

1. Change line 20 to: 20 PRINT CHR$(125):CLR:DIM R$(30),I$(2),RB$(3),D$(30),DB$(3),RH$(2),DH$(3),CH$(3)

2. Change HOME to PRINT CHR$(125) in lines 70, 190, 220, 340, 390, 460, and 600.

Note: Do not put spaces between greater than, less than, and equal signs. For example: 720 IF CH$<>"3" THEN 3120

Commodore 64, VIC-20

1. Change line 20 to: 20 PRINT CHR$(147):CLR

2. Change HOME to PRINT CHR$(147) in lines 70, 190, 220, 340, 390, 460, and 600.

TRS-80 Model III, Color Computer

1. Change line 20 to: 20 CLS:CLEAR 5000

2. Change HOME to CLS in lines 70, 190, 220, 340, 390, 460, and 600.

3. Change "PRESS RETURN" to "PRESS ENTER" in lines 60, 170, 250, 680, 1050, and 2030.

4. Change line 510 to: 510 RANDOM: X=RND(100)

BLACK AMERICAN HISTORY QUIZ (page 98, Apple)

Atari Series

1. Change line 20 to: 20 PRINT CHR$(125): CLR:P=4:DIMZ$(1),A$(25),C$(50),G$(25)

2. Change HOME to PRINT CHR$(125) in lines 170, 280, and 320.

3. Remove quotation marks from DATA statements in lines 1000 to 1300. For example: 1000 DATA HARRIET TUBMAN. Eliminate the comma in lines 1070, 1170, and 1190.

Note: Do not put spaces between greater than, less than, and equal signs. For example: 410 INPUT Z$:IF Z$<>"Y" AND Z$<>"N" THEN 410

Commodore 64, VIC-20

1. Change line 20 to: 20 PRINT CHR$(147): CLR:P=4

2. Change HOME to PRINT CHR$(147) in lines 170, 280, and 320.

TRS-80 Model III, Color Computer

1. Change line 20 to: 20 CLS:CLEAR 5000:P=4

2. Change HOME to CLS in lines 170, 280, and 320.

3. Change "PRESS RETURN" to "PRESS ENTER" in lines 110, 260, 300, 360, and 410.

DENTAL CHECK-UP (page 101, Apple)

Atari Series

1. Substitute the following lines for corresponding lines in the Apple program listing.

```
20 PRINT CHR$(125):CLR:DIM N$(40),Z$(1),
   C$(2)
860 GRAPHICS 3:SETCOLOR 4,12,4:FOR D=1
    TO 1000:NEXT D:GRAPHICS 0:PRINT
    CHR$(125)
1440 SOUND 3,100,6,8:FOR D=1 TO 100: NEXT
     D:SOUND 3,0,0,0
```

2. Change HOME to PRINT CHR$(125) in lines 200, 1350, 1490, and 10040.

Note: Do not put spaces between greater than, less than, and equal signs. For example: 960 IF C$<>"1" THEN SC=SC+1

Commodore 64

1. Substitute the following lines for corresponding lines in the Apple program listing.

```
20 PRINT CHR$(147):CLR
```

2. Change HOME to PRINT CHR$(147) in lines 200, 1350, 1490, and 10040.

3. Substitute these lines for corresponding lines in the Apple program listing.

```
860 POKE 53281,0:FOR D=1 TO 1000:NEXT
    D:POKE 53281,7:PRINT CHR$(147)
1440 POKE 54296,8:POKE 54273,47:POKE 54272,
     107:POKE 54276,33:FOR D=1 TO
     100:NEXT D:POKE 54276,0
```

VIC-20

1. Make the changes listed in steps 1 and 2 for the Commodore 64.

2. Substitute the following lines for corresponding lines in the Apple program listing.

```
860 POKE 36879,8:FOR D=1 TO 1000:NEXT
    D:POKE 36879,27:PRINT CHR$(147)
1440 POKE 36878,8:POKE 36876,155:FOR D=1
     TO 100:POKE 36878,0
```

TRS-80 Model III

1. Change line 20 to: 20 CLS:CLEAR 1000

2. Change HOME to CLS in lines 200, 1350, 1490, and 10040.

3. Change "PRESS RETURN" to "PRESS ENTER" in lines 90, 190, 850, 1330, 1480, 1670, 10020.

4. Delete lines 860 and 1440.

Color Computer

1. Make the changes listed in steps 1, 2, and 3 for the TRS-80 Model III.

2. Substitute the following lines for corresponding lines in the Apple program listing.

```
860 SCREEN 1,1:FOR D=1 TO 1000:NEXT
    D:CLS
1440 PLAY "A"
```

BICYCLE SAFETY (page 136, Apple)

Atari Series

1. Change line 20 to: 20 PRINT CHR$(125): CLR:DIM A$(2),Z$(1)

2. Change HOME to PRINT CHR$(125) in lines 1050, 2080, 2195, 2280, 2370, 2450, 2590, 2690, 2790, 2850, and 2980.

Note: Do not put spaces between greater than, less than, and equal signs. For example: 250 IF A$<>"1" THEN GOSUB 2300

Commodore 64, VIC-20

1. Change line 20 to: 20 PRINT CHR$(147):CLR

2. Change HOME to PRINT CHR$(147) in lines 1050, 2080, 2195, 2280, 2370, 2450, 2590, 2690, 2790, 2850, and 2980.

TRS-80 Model III, Color Computer

1. Change line 20 to: 20 CLS:CLEAR 1000

2. Change HOME to CLS in lines 1050, 2080, 2195, 2280, 2370, 2450, 2590, 2690, 2790, 2850, and 2980.

3. Change "PRESS RETURN" to "PRESS ENTER" in lines 1020, 2070, 2190, 2270, 2360, 2450, 2480, 2680, 2780, 2840, and 2970.

WORKSHEET ANSWERS

Following are answers to the reproducible worksheets in this book.

CORNY CORNSTALK! (page 21)

There are many ways to do the exercises on this sheet. Here is a sample program to make an entire cornfield.

```
TO CORNFIELD
  HT RT 90 FD 277 LT 90
  CORNSTALK 14
  SETH 0 BK 95
  RT 90 FD 60 LT 90
  CORNSTALK 14
  SETH 0 BK 95
  LT 90 FD 120 RT 90
  CORNSTALK 14
END
TO CORNSTALK :S
  RLEAF :S
  IF :S > 10 RCORN
  LLEAF :S
  IF :S > 10 LCORN
  FD :S
  IF :S <= 6 TASSEL STOP
  CORNSTALK :S-1
END
```

Note: Apple Logo users add brackets around RCORN, LCORN, and TASSEL STOP.

```
TO RLEAF :S
  REPEAT 2 [RT 30 FD :S]
  RT 60 FD :S
  BK :S LT 60
  REPEAT 2 [BK :S LT 30]
END

TO LLEAF :S
  REPEAT 2 [LT 30 FD :S]
  LT 60 FD :S
  BK :S RT 60
  REPEAT 2 [BK :S RT 30]
END

TO RCORN
  RT 90
  REPEAT 2 [FD 4 LT 45 FD 12 LT 45 FD 4 LT
    90]
  SETH 0
END

TO LCORN
  LT 90
  REPEAT 2 [FD 4 RT 45 FD 12 RT 45 FD 4 RT
    90]
  SETH 0
END

TO TASSEL
  LT 45
  REPEAT 6 [FD 10 BK 10 RT 20]
END
```

JOHNNY'S APPLE TREE (page 22)

Here is the completed TREE procedure:

```
TO TREE
  GROUND
  TRUNK
  BRANCHES
END
```

CARVE A PUMPKIN (page 49)

Here is a sample program to turn the pumpkin into a jack-o'-lantern.

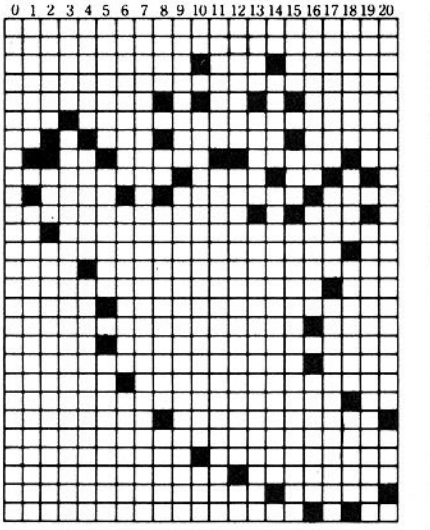
```
10  HOME
20  PRINT "              ##"
30  PRINT "             ##"
40  PRINT "         000 ## 000"
50  PRINT "      000    0##0    000"
60  PRINT "   00                   00"
70  PRINT "  0                       0"
80  PRINT " 0                        0"
90  PRINT "0                          0"
100  PRINT "0                         0"
110  PRINT "0                         0"
120  PRINT "0                         0"
130  PRINT "0                         0"
140  PRINT "0                         0"
150  PRINT " 00                     00"
160  PRINT "   000                000"
170  PRINT "      00000000000000"
180  FOR D = 1 TO 3000
190  NEXT D
200  HOME
210  PRINT "              ##"
220  PRINT "             ##"
230  PRINT "         000 ## 000"
240  PRINT "      000    0##0    000"
250  PRINT "   + + + + + + + + + + +"
260  PRINT "  0                     0 "
270  PRINT " 0      ***       ***     0"
280  PRINT "0       ***       ***      0"
290  PRINT "0                          0"
300  PRINT "0            *             0"
310  PRINT "0           ***            0"
320  PRINT "0    U                 U    0"
330  PRINT "0      U             U      0"
340  PRINT " 00        U   U        00"
350  PRINT "   000                000"
360  PRINT "      00000000000000"
370  END
```

PARTS OF A COMPUTER WORKSHEET 1 (page 50)

1. Monitor or CRT; 2. Disk drive; 3. Printer; 4. Cassette recorder; 5. Keyboard or CPU.

PARTS OF A COMPUTER WORKSHEET 2 (page 51)

PLOTTING SQUARES WORKSHEET 1 (page 52)



PLOTTING SQUARES WORKSHEET 2 (page 53)

A. 3,3; B. 4,6; C. 13,10; D. 9,2; E. 10,5; F. 13,3.

HALLOWEEN GRID (page 54)

Q: What did the robot dress up as on Halloween?
A: Little Boo Beep!

FIND THE COMPUTERS (page 73)

THANSKGIVING MENU READER (page 74)

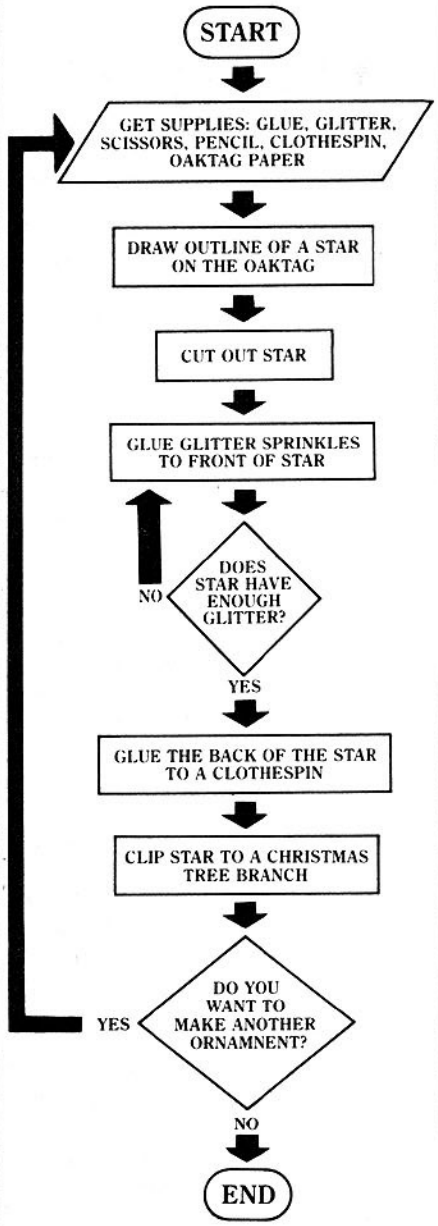
1. Turkey, white meat, no gravy; 2. Roasted ham, no mustard; 3. Turkey, dark meat, no gravy; 4. Boiled ham, mustard; 5. Turkey, dark meat, gravy;

SOFTWARE WORKSHEET 1 (page 84)

1. Cassette; 2. Disk; 3. Cartridge; 4. Card.

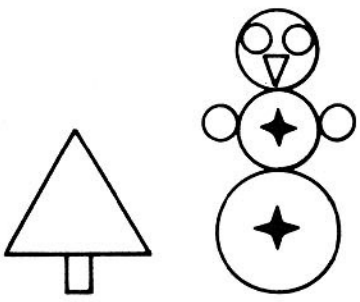
SOFTWARE WORKSHEET 2 (page 85)

CHRISTMAS FLOWCHART (page 86)



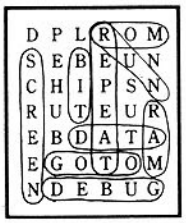
WINTER PUZZLE (page 89)

Here are two drawings that can be made with the puzzle shapes:



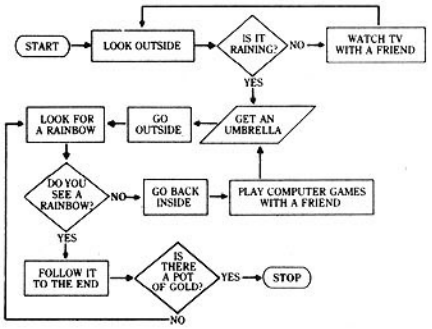
WINTER MICRO PUZZLE (page 90)

The winter greeting is "Bundle up."



LUCKY FLOWCHART (page 129)

This is one way to structure the flowchart. Other answers are possible.



SHEEP COUNTER (page 130)

To make the program count 100 sheep, change line 10 to: `10 FOR SHEEP = 1 TO 100.`

To make the program count sheep backward, change line 10 to: `10 FOR SHEEP = 100 TO 1 STEP -1.`

To count sheep by fives, change line 10 to: `10 FOR SHEEP = 1 TO 100 STEP 5`

PASSOVER SYMBOLS (page 133)

This program will create the *matzah* picture on the Logo screen. Other solutions to the exercise are possible.

```
TO MATZAH
  HT BREAD
  SETY 20 ROW
  SETX 0 SETY 40 ROW
  SETX 0 SETY 60 ROW
  SETX 0 SETY 80 ROW
END

TO BREAD
  REPEAT 2 [FD 100 RT 90 FD 139 RT 90]
END

TO ROW
  SETH 90
  REPEAT 6 [PU FD 20 PD HOLE]
  PU
END

TO HOLE
  REPEAT 10 [FD 1 RT 36]
END
```

INDEX

INDEX

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On page 61, the final lines of "Computerized Voting Booth" are missing, but a very similar program can be found in the October 1984 issue of Teaching and Computers magazine. Lines 520-560 from the Commodore 64 version below probably represent the intended ending.

ALL-SCHOOL VOTE

BY RICHARD DEVIR

Who says ten-year-olds are too young to vote? With this simple voting program, your school can become a computerized polling place where *everyone* can vote. The program was written for students in first to eighth grade. You can also use it for a single class election.

```
10 DIM G(2000),BG(2000),CND(2000)
20 CODE$="P":V=0
30 PRINT CHR$(147)
40 PRINT "     ****************************"
50 PRINT"        PRESIDENTIAL ELECTION"
60 PRINT"     ****************************"
70 PRINT:PRINT" PRESS RETURN TO BEGIN VOTING.":INPUT Z$
80 PRINTCHR$(147):V=V+1
90 PRINT"VOTER #";V
100 PRINT:PRINT"WHAT GRADE ARE YOU IN?(ENTER A NUMBER
110 PRINT"FROM 1 TO 8 AND PRESS RETURN)"
120 INPUT G(V):IF G(V)>8 OR G(V)<1 THEN 100
130 PRINT:PRINT"ARE YOU A GIRL OR A BOY?
    (ENTER 1 FOR GIRL, 2 FOR BOY ";
140 PRINT"AND PRESS RETURN)"
150 INPUTBG(V):IF BG(V)<>2 AND BG(V)<>1 THEN 130
160 PRINT:PRINT"HERE ARE YOUR CHOICES FOR PRESIDENT
    AND VICE PRESIDENT:"
170 PRINT:PRINT"1 MONDALE-FERRARO (DEMOCRATS)"
180 PRINT:PRINT"2 REAGAN-BUSH (REPUBLICANS)"
190 PRINT:PRINT"(ENTER 1 OR 2. PRESS RETURN.)"
200 INPUT CND(V):IF CND(V)<>1 AND CND (V) <> 2 THEN 190
210 PRINT:PRINT"PRESS 'C' TO CLEAR THE SCREEN FOR THE"
220 PRINT"NEXT VOTER.":INPUT X$
230 IF X$="C" THEN 80
240 IF X$<>CODE$ THEN 210
250 PRINTCHR$(147)
260 FOR Y=1 TO V
270 IF CND(Y)=1 THEN C1=C1+1
280 IF CND(Y)=2 THEN C2=C2+1
290 IF BG(Y)=2 AND CND(Y)=1 THEN DB=DB+1
300 IF BG(Y)=2 AND CND(Y)=2 THEN RB=RB+1
310 IF BG(Y)=1 AND CND(Y)=1 THEN DG=DG+1
320 IF BG(Y)=1 AND CND(Y)=2 THEN RG=RG+1
330 FOR W=1 TO 8
340 IF G(Y)=W AND CND(Y)=1THEN D(W)=D(W)+1
350 IF G(Y)=W AND CND(Y)=2THEN R(W)=R(W)+1
360 NEXT W
370 NEXT Y
380 PRINT "A TOTAL OF ";V;" VOTES WERE CAST."
390 PRINT:PRINT"THE DEMOCRAT TICKET RECEIVED ";C1;"
    VOTES"
400 PRINT:PRINT"THE REPUBLICAN  TICKET RECEIVED ";C2;"
    VOTES"
410 PRINT:PRINT:PRINT"PRESS RETURN FOR THE BREAKDOWN
    BY GRADE":INPUT Z$:PRINT CHR$(147)
420 PRINT"GRADE  REPUBLICAN  DEMOCRAT"
430 FOR W=1 TO 8
440 PRINT
450 PRINT" ";W;".........";R(W);".........";D(W)
460 NEXT W
470 PRINT:PRINT"PRESS RETURN FOR BREAKDOWN BY GENDER."
    :INPUT Z$:PRINTCHR$(147)
480 PRINT"      REPUBLICAN   DEMOCRAT"
490 PRINT:PRINT"BOYS.........";RB;".........";DB
500 PRINT:PRINT"GIRLS.........";RG;".........";DG
510 PRINT:PRINT"ENTER 'R' TO REVIEW RESULTS."
520 PRINT "ENTER 'Q' TO QUIT."
530 INPUT X$:PRINTCHR$(147)
540 IF X$="R" THEN 380
550 IF X$<>"Q" THEN 510
560 PRINT"GOODBYE....":END
```


HOW TO CONVERT T & C PROGRAMS TO OTHER MACHINES

ELECTION '84, (Commodore 64)

Machine	Lines	Conversion
Apple	1, 30, 80, 250, 410, 470, 530	Change PRINT CHR$(147) to HOME.
Atari	1, 30, 80, 250, 410, 470, 530	Change PRINT CHR$(147) to PRINT CHR$(125).
	1	Add 1 DIM CODE$(1), 2$(1), X$(1).
	10	Change line to DIM G (500), BG (500), CND(500). (This changes the program so it holds 500 votes.)
	120	Change line to INPUT N:G(V) = N: IF N <8 OR N< 1 THEN 100.
	150	Change line to INPUT NN: BG(V) = NN: IF NN< >2 AND NN< >1 THEN 130.
	200	Change line to INPUT M: CND(V) = M: IF M< >1 AND M< >2 THEN 190.
PET/ VIC-20	70,410, 470	Change line to PRINT "PRESS ANY KEY THEN PRESS RETURN TO BEGIN VOTING." (PET only.)
	10	Change line to 10 DIM G(100), BG (100), CND(100). (This changes the program so it holds 100 votes.)
VIC-20 users, rewrite PRINT statement to 22 characters per line.		
TRS-80 Models I, III, 4	1, 30, 80, 250, 410, 470, 530	Change PRINT CHR$(147) to CLS.
	10	Change line to DIM G(500), BG (500), CND(500). (This changes the program so it holds 500 votes.)