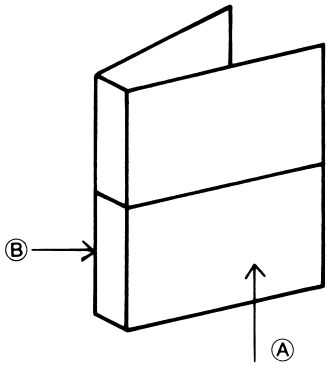
no. A-775

ez logo
revised edition

instructional computing courseware
for the **apple® II** computer

How to use your MECC folder cover inserts



Tear cover on perforated lines. Place half-page title section in the clear vinyl pocket Ⓐ on the front of the binder. Insert finger-sized title in the clear plastic pocket on the spine Ⓑ.

ez logo

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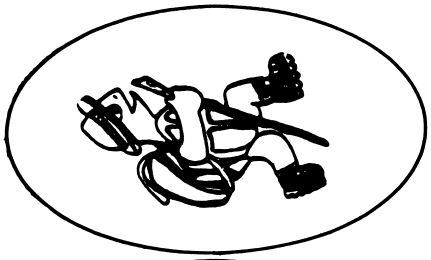
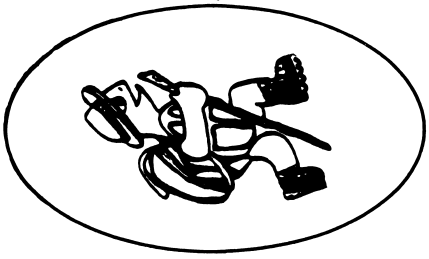
E	Q	W	E	R	T	Y	U	I	O	P	
			END	RIGHT	TURTLE		UP			PRINT	
P	A	S	D	F	G	H	J	K	L	;	
	ACTIVITY	SAVE	DOWN	FORWARD	GET	HIDE			LEFT		
D	Z	X	C	V	B	N	M	,	.	/	
DISK	ZAP	ERASE	CLEAR		BACK	NAME					

E Z Logo

monitor	monitor
computer	computer
disk drive	disk drive





E Z Logo

	1	2	3	4	5	6	7	8	9	0	
E	Q	W	E	R	T	Y	U	I	O	P	
			END	RIGHT	TURTLE		UP			PRINT	
P	A	S	D	F	G	H	J	K	L	;	
	ACTIVITY	SAVE	DOWN	FORWARD	GET	HIDE			LEFT		
D	Z	X	C	V	B	N	M	,	.	/	
DISK	ZAP	ERASE	CLEAR		BACK	NAME					

E Z Logo

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instructional computing courseware
for the **apple® II** computer

This manual is compatible

with

the EZ Logo diskette

Version 2.x

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INTRODUCTION

EZ Logo has become a very popular program among teachers interested in introducing young children to the Logo language by using a simplified and easy-to-understand approach. The original version of EZ Logo was programmed to be used in conjunction with the Apple Logo Software. Because EZ Logo was incompatible with later versions of Apple Logo, MECC created an independent version.

This revised version of EZ Logo runs in essentially the same way and allows you to do exactly the same activities included in the original version. Four new features that have been added to the revised edition are:

- ability to draw using five different colors
- ability to print the pictures created while using EZ LOGO 2
- status message showing pen status, the color being used, and memory and diskette space available while using EZ LOGO 2
- improved error handling

EZ Logo has two levels: EZ LOGO 1 and EZ LOGO 2. Criteria for selecting the appropriate level should be based on the students' familiarity with EZ Logo rather than on age or ability level. It is suggested that students begin exploring with EZ LOGO 1 and then progress to EZ LOGO 2.

EZ Logo can be used on the Apple II+, Apple //e, or Apple //c computer with 64K memory. Some activities would benefit from the availability of a printer.

BACKGROUND INFORMATION

What EZ LOGO Is All About

EZ Logo provides children at the primary level (ages 4-8) the opportunity to use the computer in self-directed ways. With a simple set of one-letter commands, children can control the computer and explore its capabilities. Children who are just beginning to read and compute can successfully explore turtle graphics. After an introduction to turtle commands and movement, children begin directing the turtle's motion on the computer screen. EZ Logo includes a series of activities where these commands can be used in a variety of combinations. Activity sheets are provided for keeping a record of new ideas discovered in each activity. These activity sheets can be bound and used as student journals.

EZ Logo prepares children for using the Logo language. It is not a substitute or replacement for Logo. Many young children are not prepared for Logo's two-letter commands, rigid syntax, turtle degrees, number inputs, variables, and workspace management routines. However, young children are capable of exploring many aspects of turtle graphics. The skills (listed below) that children develop using EZ Logo are an excellent introduction and preparation for Logo:

- recognizing left and right directions
- estimating distances and degrees
- using procedures as building blocks
- drawing shapes
- recognizing repeating patterns and designs
- recognizing symmetry
- gaining familiarity with the computer keyboard
- developing problem-solving strategies

Children who are just beginning to read and compute can successfully explore turtle graphics; however, to aid children's exploration, two prerequisite skills would be helpful:

- knowing left and right directions and
- knowing the sounds of these letters:

  F,B,L,R,C,H,T,U,D,A,S,G,Z,N, and M.

LEARNING OBJECTIVES

EZ Logo is designed to encourage students to:

- develop trial and error problem solving;
- develop alternative thinking strategies;
- discover the capabilities and the limitations of the computer;
- recognize right and left directions;
- associate a letter with the initial sound of the word;
- develop estimation skills in terms of distance and angles;
- work independently;
- attend to detail;
- develop reading readiness;
- develop decision-making skills;
- identify shapes;
- develop pattern recognition skills;
- recognize sequential commands;
- recognize symmetric designs.

USE IN AN INSTRUCTIONAL SETTING

How to Introduce Children to EZ LOGO

It is the goal of EZ Logo to provide children with the opportunity to develop problem-solving skills while discovering, through turtle graphics, the capabilities and limitations of computers.

The teacher's role is seen as someone who creates an atmosphere of curiosity and of discovery learning. In this setting the teacher is a facilitator, a guide, someone who fosters thinking strategies and cooperative learning among the students.

Experience has shown that a combination of both large and small group sessions seems to work best. If the children work at the computers in small groups of two or three, they can help each other to "figure it out." Large group sessions, where discoveries and problem-solving strategies can be shared, help to guide and stimulate everyone's interest and "try it and see" behavior.

Very young children may need some preparation before using EZ Logo. Without any help, some children may experience some initial difficulty with the concepts of right and left and with using a letter to represent a word. Using the letter "R" for Right and "B" for Back, for example, may be unfamiliar to them.

Children could be introduced to EZ Logo by having them give turtle commands to a human turtle and by acting out turtle movements (playing turtle). Introduce and explain the commands Forward, Back, Right, Left, and Clear. Ask for a student volunteer to be the "human turtle" or take the role of turtle yourself and try several different activities using the turtle commands.

Give the student-turtle the EZ LOGO commands to reach another student in the room. Have this student be the next human turtle. Discuss how left and right are determined by the turtle's current heading and position. Four to five year-old children may find it easier to begin by sitting in a semi-circle and giving commands to the teacher-turtle, who is in the middle. When the children are ready to play turtle, give them paper bracelets labeled "Left" and "Right." Play "Simon Says" using EZ LOGO commands.

USE IN AN INSTRUCTIONAL SETTING (continued)

Suggested Sequence for Using EZ LOGO

Introduce the commands F, B, R, L, and C using the human turtle activities explained on the previous page.

Allow the students some time to use the F, B, R, L, and C commands at the computer before beginning the activities. Introduce students to the color commands after they have finished doing Activity 4.

The activities are organized into the following three modules:

MODULE 1:	Meet Turtle	Commands used:	F, B, R, L, C, M, Semicolon, Comma, Period, and Slash
	Activities 1-4	Mazes	
	Activities 5-6	Patterns	
	Activities 7-10	Shapes	
	Activities 11-17	Letters	
MODULE 2:	Turtle Tricks	Commands added:	H, T, U, D, and X
	Activities 18-19	Patterns	
	Activities 20-21	Words	
	Activities 22-23	Pictures	
MODULE 3:	Shapes	Commands added:	Shape Commands
	Activity 24	Shape commands	

How to Use the Activity Sheets

The teacher should encourage and place special emphasis on each student's individual projects beyond the given activities. The activities are intended to be used as a springboard for each child's own creative work. Since most activities suggest multiple solutions, be sure to have the students discuss various ways of completing each activity to accept a variety of solutions.

The Activity Sheets are designed as student recording sheets that can be bound and used as a student journal. The Activity Sheets are not intended to be used as worksheets. Each Activity Sheet provides the children with a facsimile of the screen display. The children can draw "turtle tracks" on the sheet and record the turtle commands used to complete the activity. A second sheet ("Exploring with Turtle") provides a blank box for the student to plan an individual project and to record their commands.

USE IN AN INSTRUCTIONAL SETTING (continued)

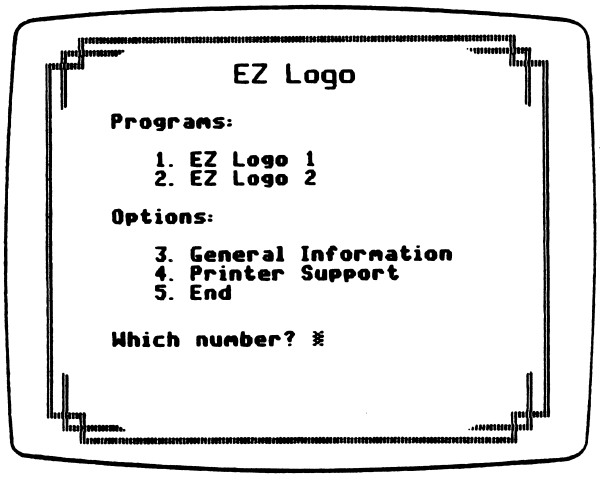
Classroom teachers should decide how these activity sheets can best be used with their children. Teachers working with four and five year-old children may not want their students to attempt to record their commands.

How to Get Started

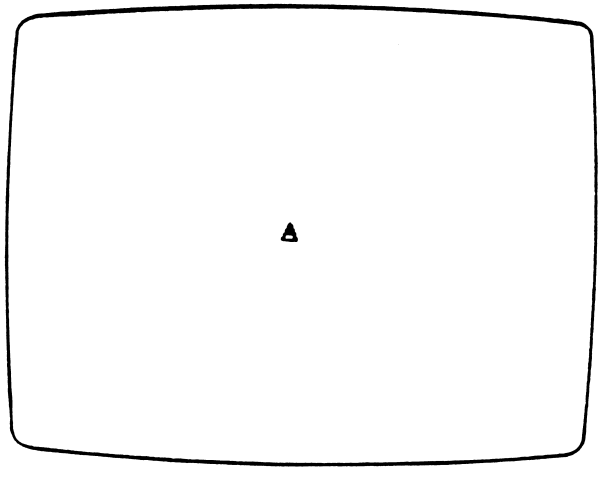
In order to use EZ Logo, follow the steps below:

1. Start up the Apple computer with the EZ LOGO diskette in the disk drive.

2. Select EZ LOGO 1 from the main menu by pressing 1.



3. The turtle will appear in the center of the screen. At this point you may either enter and experiment with EZ LOGO commands, or you may choose to load an activity.

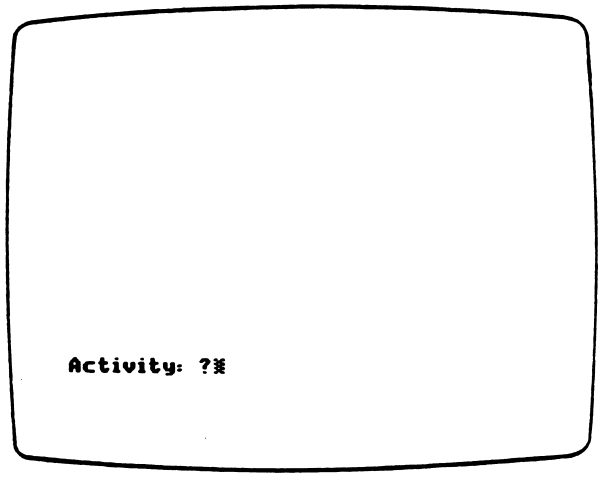


USE IN AN INSTRUCTIONAL SETTING (continued)

To load an activity, follow the steps below:

1. Press: A

2. When prompted to specify an activity number . . .



3. Type: The number of the activity (1-24).
   Press: Return

4. Complete the activity using the letter commands. (A summary of the commands can be found on page 8).

NOTE: You will probably find that until the children become familiar with EZ Logo, you or an assistant will need to load each activity for the children following the above instructions.

USE IN AN INSTRUCTIONAL SETTING (continued)

COMMAND SUMMARY

EZ LOGO 1

F	FORWARD	Moves Turtle 10 steps forward
B	BACK	Moves Turtle 10 steps back
R	RIGHT	Turns Turtle 30 degrees right
L	LEFT	Turns Turtle 30 degrees left
C	CLEARSCREEN	Clears the screen, moves Turtle to the middle of the screen
H	HIDETURTLE	Hides Turtle
T	TURTLE	Shows Turtle
U	UP	Puts pen up
D	DOWN	Puts pen down
X	ERASE	Puts eraser down
A	ACTIVITY	Enters Activity Mode
;	WHITE	Draws white
M	ORANGE	Draws orange
,	PURPLE	Draws purple
.	GREEN	Draws green
/	BLUE	Draws blue
*CTRL P	PRINT	Prints the picture shown on the screen
*CTRL G	CANCEL	Cancels current procedure

EZ LOGO 2

In addition to the commands shown above (except A), EZ LOGO 2 also includes:

S	SAVE	Saves a picture (procedure) in memory
G	GET	Gets a picture (procedure) from memory
N	NAMES	Lists names of procedures saved in memory
Z	ZAP	Erases all procedures in memory
*CTRL D	DISKETTE	Accesses diskette routines: save, load, or erase a file

*Press the Control Key and the P (or D or G) Key at the same time.

EZ LOGO 1
Activities 1-4: Mazes

Teacher Notes — Module 1

Meet Turtle

Expected Outcome: The student will . . .
- practice left and right turns;
- practice estimating distances;
- practice using turns of 30, 60, 90, and 120 degrees.

Materials Needed:
- Activity Sheets 1-4 (Masters are on pages 12-15)
- "Exploring with Turtle" sheets (Master on page 17)
- Transparencies and markers
- Command Cards for Modules 1 (Master on page 62)
- Keyboard Aids (Master on page 73)

Time Needed: 10-15 minutes per maze

Lesson Plan:

1. Before students work at the computer, have them help you make a maze on the floor for a human turtle. The maze could follow the lines of floor boards or floor tiles. Students could draw lines on brown wrapping paper. Masking tape or people could also be used as maze barriers. Place "bait" or some prize in the maze as a goal. Students can help the human turtle reach the goal by giving these verbal commands: F (FORWARD), B (BACK), R (RIGHT), and L (LEFT). The C (CLEAR) command returns the turtle to the starting position.

2. Set up EZ LOGO at your computer following the directions on page 6.
Press: A
Enter: The activity number (1, 2, 3, or 4)
Press: Return.

   You may want to supply some memory aids to help the children remember the commands (F, B, R, L), their meanings, and where the command keys can be found on the keyboard. A Command Card and Keyboard Guide (See Materials Needed) can be supplied at each computer and/or given to each child to keep as a part of their journals.

3.(a) Distribute copies of Activity Sheets 1, 2, 3, and 4, and copies of the "Exploring with Turtle" sheets. The Activity Sheets and "Exploring with Turtle" sheets form a set in each computer session. The emphasis in each session should be on the students'

creative exploration of Turtle's abilities. The Activity sheets introduce the students to Turtle. The "Exploring with Turtle" sheets provide a place to design and/or record discoveries.

You, the teacher, should make the judgment on how to use the sheets. You may or may not choose to use all of the activities based on the age and abilities of your students. The blanks furnished on the bottom of each sheet provide the students with a place to record Turtle commands.

(b) Go over the following directions with the students.

The first four activities present the students with a series of increasingly complex mazes. The goal in each activity is to "teach" Turtle how to move through the maze to reach the goal (getting the bug or getting out of the maze).

The students are to use the F, B, R, and L commands at the computer to discover ways to successfully move Turtle through each maze. Be sure to allow plenty of time for students to solve the mazes.

(c) After the students have successfully directed Turtle to the bug several options are possible. They could experiment to find different ways of directing Turtle to the bug, or they could design and use new mazes drawn on a transparency.

Unless the students' age and/or ability level precludes it, they should use the "Exploring with Turtle" sheets to draw mazes or designs for Turtle to follow or to record a pattern they have created with Turtle. Turtle commands could be written first as predictions to be tested or recorded as Turtle is successfully directed.

(d) Both the Activity sheets and "Exploring with Turtle" sheets should be saved as a record in their journals and can serve as a basis for general discussion.

4. At this stage, children have only been introduced to the commands F,B,R,L, and C. If they accidentally bump the other command keys (H,T,U,D,X,M, semicolon, comma, period, and slash), then surprising things happen—Turtle disappears, Turtle doesn't draw, or Turtle draws in color. Children enjoy stumbling onto these Turtle tricks, and news of the new discoveries spreads quickly.

5. The pictures the children draw while using EZ LOGO 1 can be printed if you have a printer available. A picture can be printed by pressing Control P. Make sure to set up the printer **before** students start working on the activities. Page 60 explains the procedure for setting up the printer and specifies the hardware needed.

6. To end the program, press Escape twice. When the message "Do you want to try again?" is displayed, type "N" or "No." The main menu will next appear.

Optional Follow-up Activities

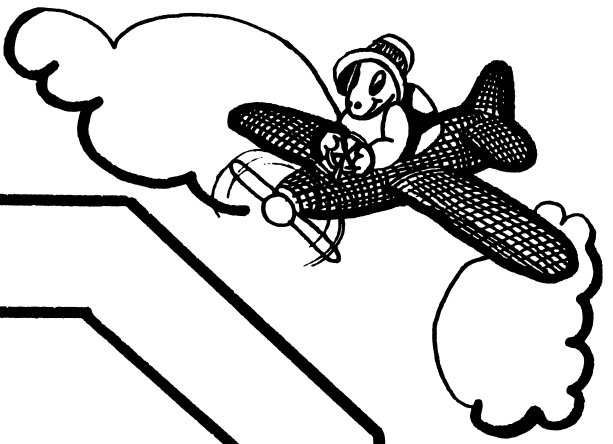
- Have students make mazes on a transparency with markers. Attach the completed transparency to the screen with a piece of tape. Students can exchange and solve the mazes.
- Have students draw mazes on paper or make mazes on the floor with masking tape. Have children work in pairs—one child giving the other child commands (F,B,R,L) that will direct a matchbox car or game piece through the maze.
- Have turtle races to see who can go through the maze in the fewest number of moves or in the quickest time.
- Direct Turtle through the maze backwards.
- Children can make a maze in wet sand or snow by dragging their feet. They can then give commands to one another.
- Several children can leave yarn turtle tracks from one location to another. (No two paths should be the same.) Compare yarn lengths to determine longest and shortest paths.
- Relate mazes to floor maps used with small cars and block villages.

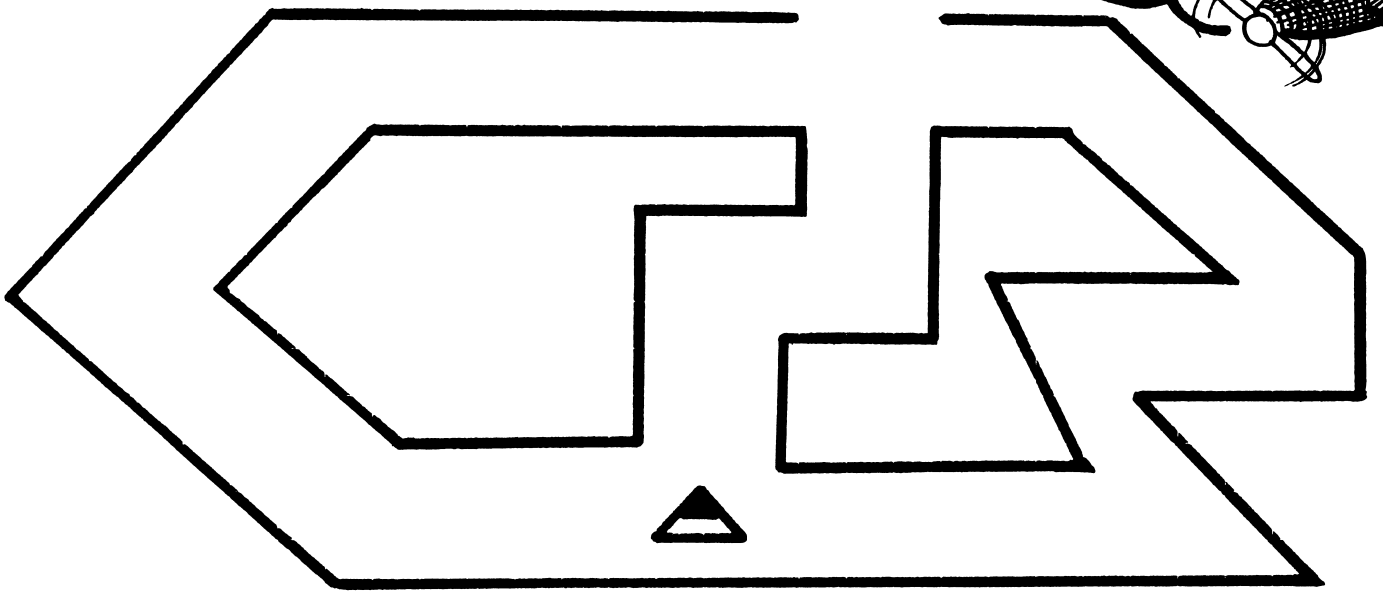
Module 1:

Meet Turtle

Name _____

E Z LOGO





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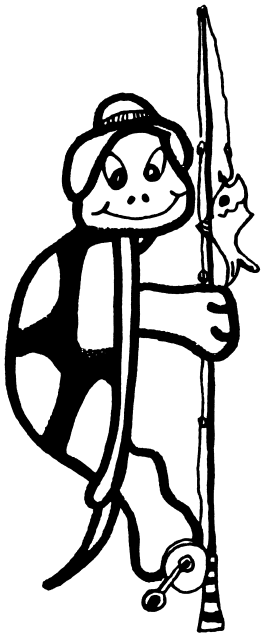
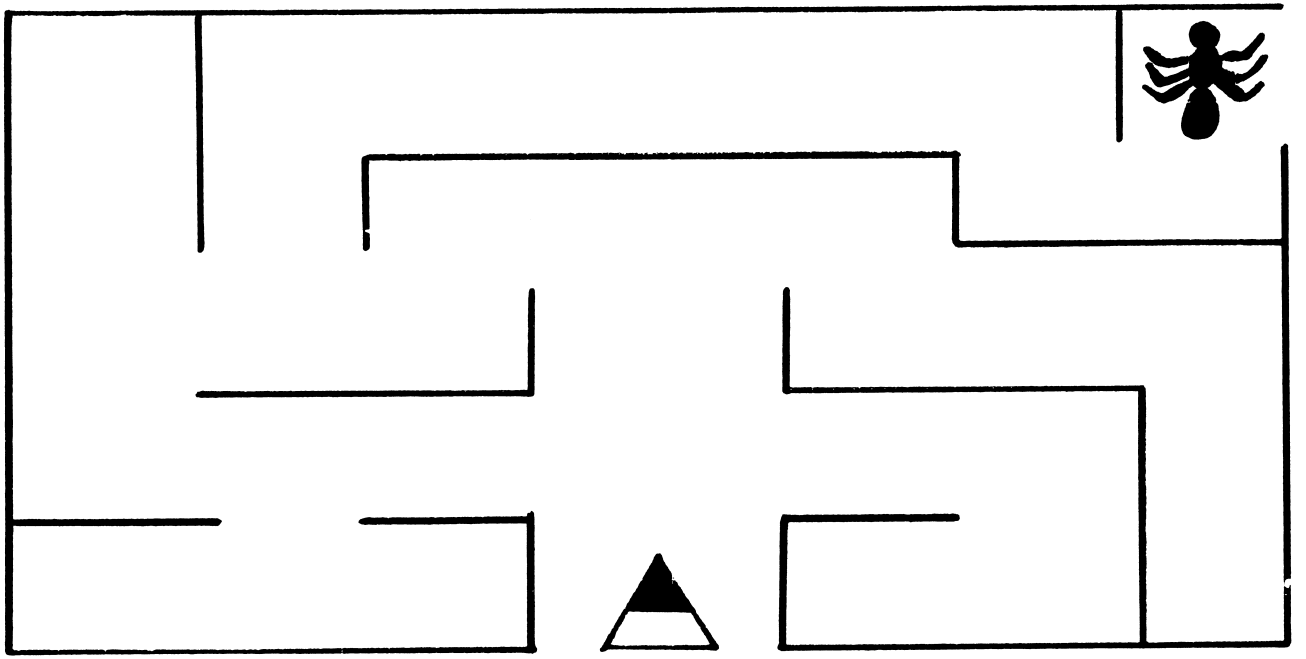
Module 1:

Meet Turtle

Name _____

E Z LOGO





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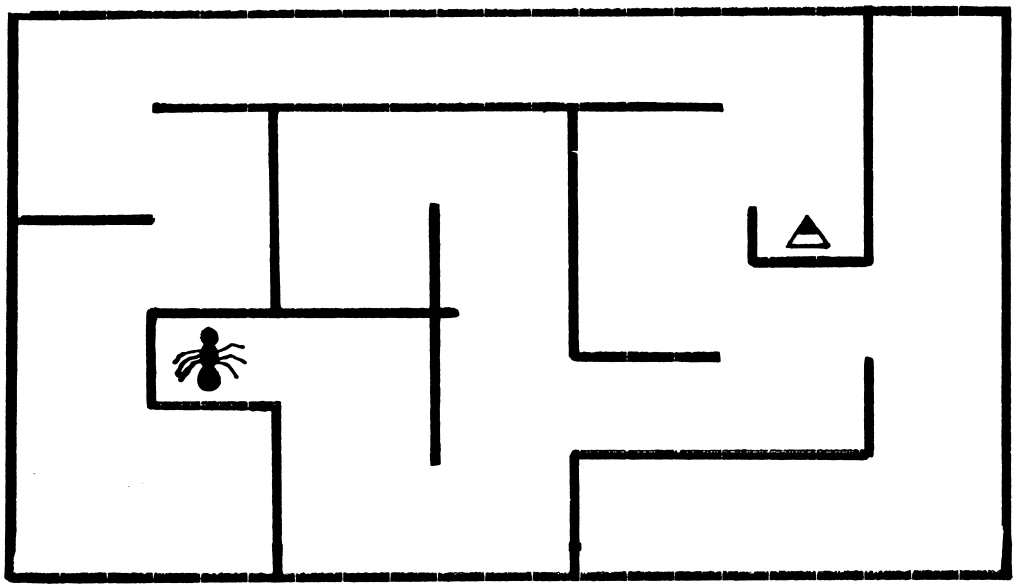
Module 1:

Meet Turtle

Name _____

E Z LOGO



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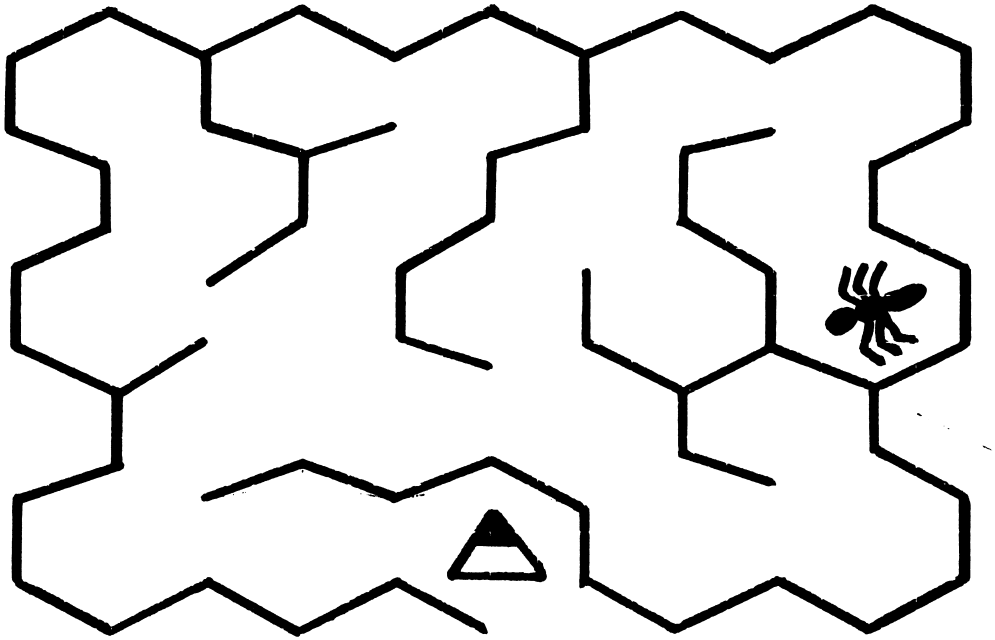
Module 1:

Meet Turtle

Name _____

E Z LOGO



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The following "Exploring with Turtle" sheet is needed throughout EZ LOGO 1 and 2, as a companion to the Activity Sheets. Be sure to duplicate enough sheets to supply the students in all the EZ Logo activities.

Exploring with Turtle

Name _____

E Z LOGO

mecc

Teacher Notes

Expected Outcome: The student will . . .

- recognize repetition in a pattern;
- use a repeating set of commands to draw a repeating pattern;
- recognize the repeated sequence in a series of commands;
- predict the repeating part of a sequence of commands;
- practice drawing white, orange, purple, green, and blue lines.

Materials Needed:

- Activity Sheets 5-6 (Masters on pages 20 and 21)
- "Exploring with Turtle" sheets (Master on page 17)
- Command Cards for Module 1 (Master on page 62)
- Keyboard Aids (Master on page 73)

Time Needed: 10-15 minutes per pattern

Lesson Plan:

1. Hand out Activity Sheet 5 or 6 and go over the directions with the students.

   The students are to use turtle commands (F, B, R, and L) to discover ways to successfully trace the step pattern shown in Activity 5 and the random pattern given in Activity 6. Introduce the color commands M (orange), semicolon (white), comma (purple), period (green), and slash (blue). You may use self-sticking labels to help students locate the color command keys. You can draw colored dots on the blank labels on page 73, and place them on top on the corresponding key. Encourage students to experiment using the color keys as they draw their patterns. As they experiment using color, students may observe that some unusual things happen. Sometimes the color of a line may change when drawn in certain areas of the screen or when drawn really close to another line. Unfortunately, these changes are due to technical aspects of the Apple Computer and cannot be avoided. After successfully completing their activities, the students should use the "Exploring with Turtle" sheets to design and/or record their continued efforts to discover Turtle's abilities. Allow plenty of time for students to complete both the activities and to explore further possibilities.

2. Load EZ LOGO (see p. 6)
   Press: A
   Enter: Activity number (5 or 6)
   Press: Return.

3. Student pictures can be printed using the Control P command. See page 60 for information about the procedure to follow and the hardware needed.

4. Students can return to activities 1-4 anytime by pressing the A Key, entering the number of the activity wanted, and pressing Return.

Optional Follow-up Activities:

- Discuss students' recorded commands. Point out the repeating part of each set of commands. After observing the repeated part of a sequence of commands, guide children to predict the next few commands.

- Relate the turtle patterns to the step patterns made when comparing and ordering cuisennaire rods.

- (Activity 5)
  Have children climb a set of stairs outside of school and then climb a hill. Ask which is easier. Compare those activities to teaching Turtle to climbing stairs. Ask whether it is easier to teach Turtle or a younger brother or sister. Relate this idea to how we learn to do things by practicing them.

- (Activity 6)
  Relate the turtle design to designs on placemats or paper towels.

- Children could decorate the edges of papers using vegetable prints.

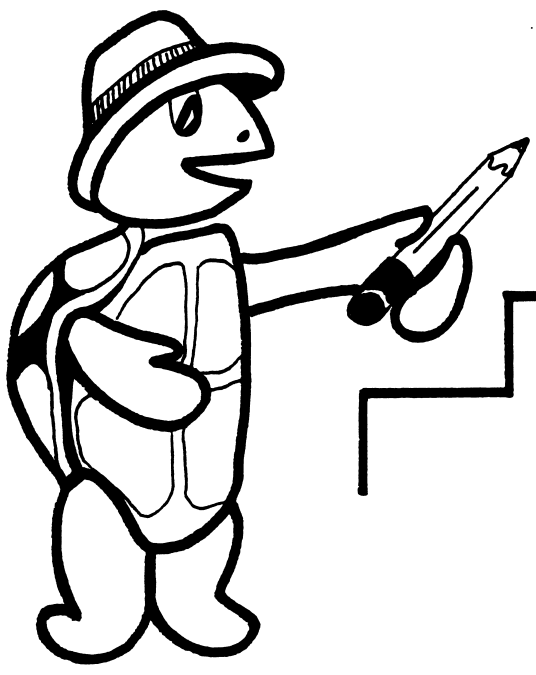
5

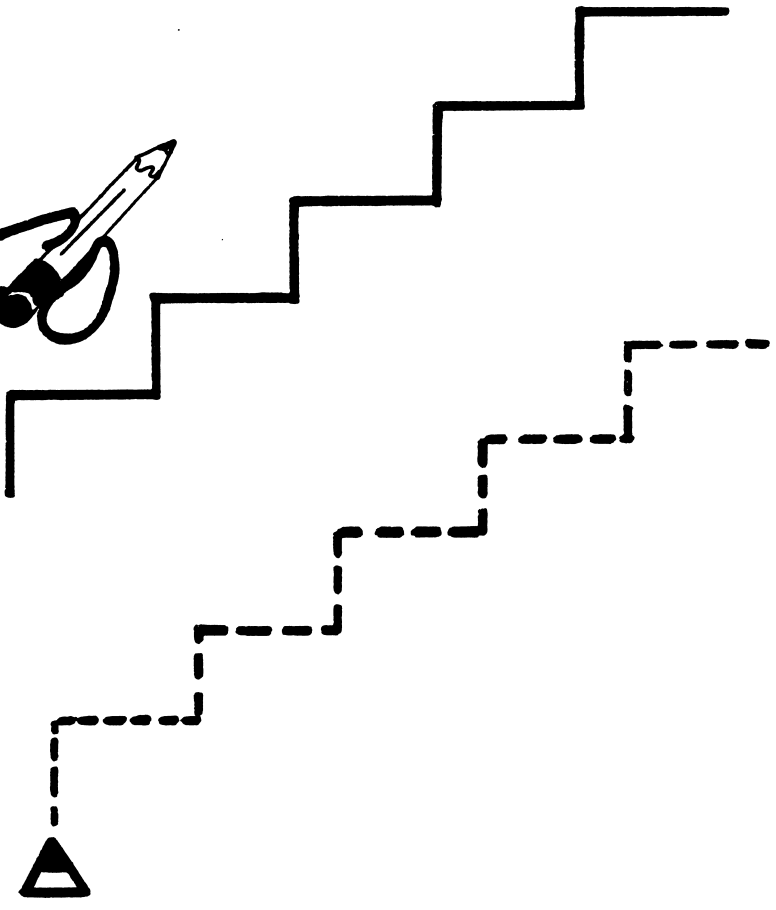
Name

Module 1:

Meet Turtle

E Z LOGO





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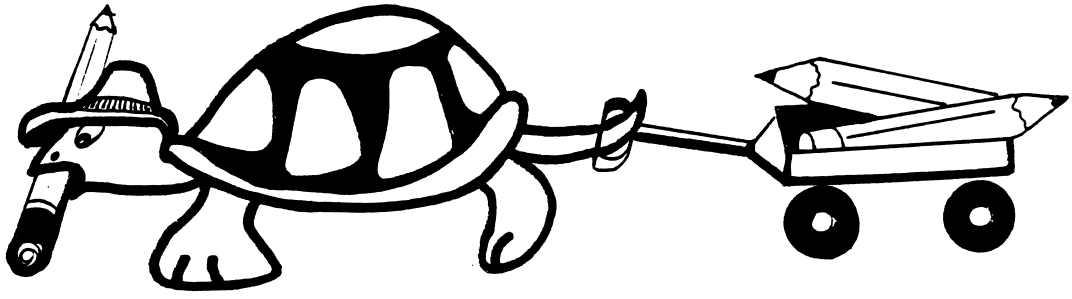
Name

Module 1:

Meet Turtle

E Z LOGO



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Teacher Notes

Module 1
Meet Turtle

Expected Outcome: The student will . . .

- draw shapes in different sizes (squares, rectangles, triangles, stars, etc.);
- discover and develop alternative problem-solving approaches;
- recognize and use repeating sets of commands.

Materials Needed:

- Activity sheets 7-10 (Masters on pages 24 to 27)
- "Exploring with Turtle" sheets (Master on page 17)
- Command Cards (Master on page 62)
- Keyboard Aids (Master on page 73)
- Activity Guide for Module 1 (Master on page 69)

Time Needed: 10-15 minutes per shape

Lesson Plan: 1.(a) Distribute Activity Sheet 7, 8, 9, or 10.
Go over the directions together.

In each of these four activities, the students are to repeat the pattern shown by directing Turtle to move from dot to dot. Each activity in the series presents students with an increasingly more complex geometric shape. Remind them to record their commands and to watch for repeated patterns in the shapes and in their series of commands. Encourage the students to experiment, to design their own patterns for Turtle to follow. Be sure to make "Exploring with Turtle" sheets available to them. Sheets from these activities should be added to their journals and discoveries shared in discussion.

(b) After completing ten activities, the children may want to go back and try some of those activities again. An Activity Guide has been supplied which can help them return to previous activities. The Activity Guide for Module 1 shows both the screen design and activity number for each activity. The guide should be added to the students' journals where it can also serve as a Table of Contents or Index. A copy of the guide could also be posted near each computer.

(c) Student pictures can be printed using the Control P command. Make sure to set up the printers **before** students start using the activities. Page 60 explains the procedure to follow and specifies the hardware needed.

2. Load EZ LOGO (see p. 6)
Press: A
Enter: Activity number (7, 8, 9, or 10)
Press: Return.

Optional Follow-up Activities:

- Discuss students' recorded commands and examples of repetition in the commands. Have the students suggest different ways of solving each problem.
- Encourage students to teach Turtle how to make many other shapes in a variety of sizes. Some students may want to draw a picture combining several geometric shapes.
- Have the students exchange their recorded commands to see if other students arrive at similar results.
- Have the students draw different shapes on "Explore with Turtle" sheets.
- Keep a box that will hold 3x5 or 5x7 cards. The box should be kept in some central location where all the students will have easy access. To this "classroom file," students could add ideas they have discovered with Turtle and problems they and Turtle have solved. One side of the card could have the turtle graphic design and the other side the turtle commands.

Activity 7-8:

- Students can cut out colorful shapes and put them in their journals.
- Children can trace template shapes to make pictures.
- Children may order sizes of property blocks.
- Children may build structures using only one shape of blocks (example: all squares).
- Review idea of equal length and longer and shorter lengths.
- String beads of all one shape or develop a pattern using shapes.

Activity 9-10:

- Relate stars to an astronomy unit.
- Make star-shaped sugar cookies.
- Trace pre-cut star shapes.
- Fingerpaint star shapes.

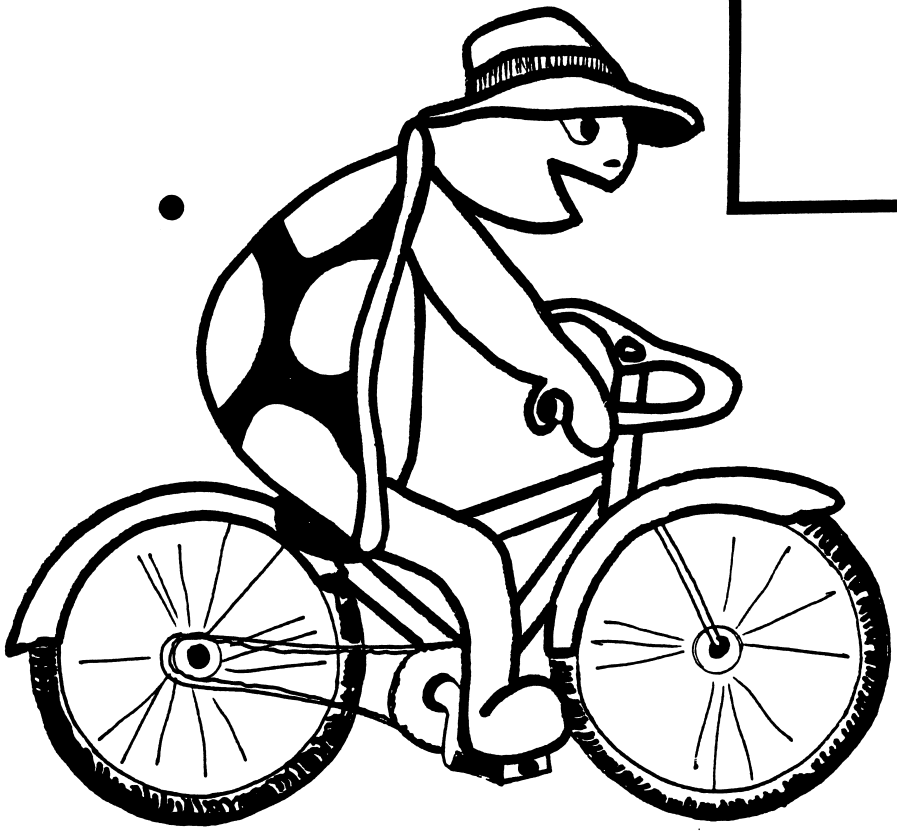
7

Name

Module 1:

Meet Turtle

E Z LOGO



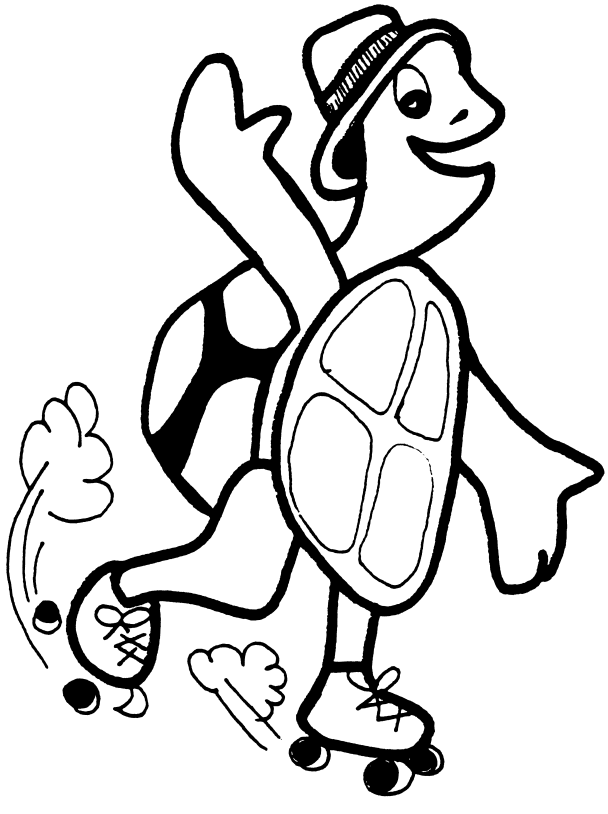
8

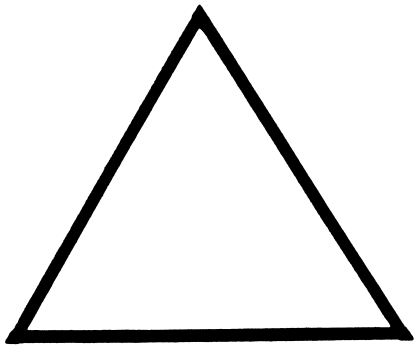
Name

Module 1:

Meet Turtle

E Z LOGO





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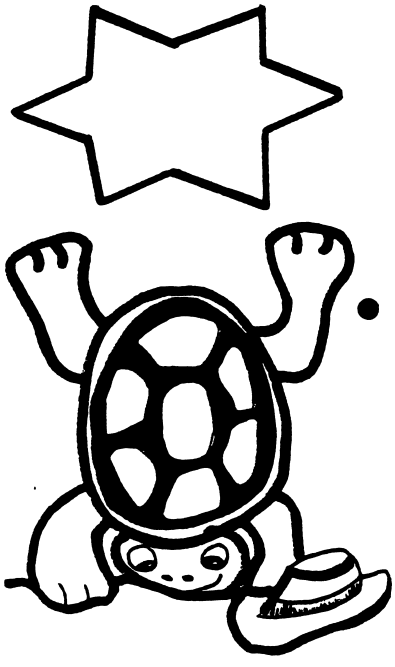
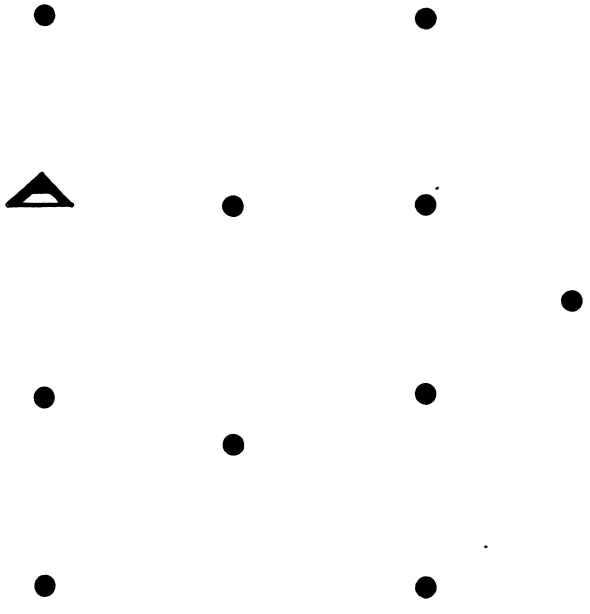
Name

Module 1:

Meet Turtle

E Z LOGO





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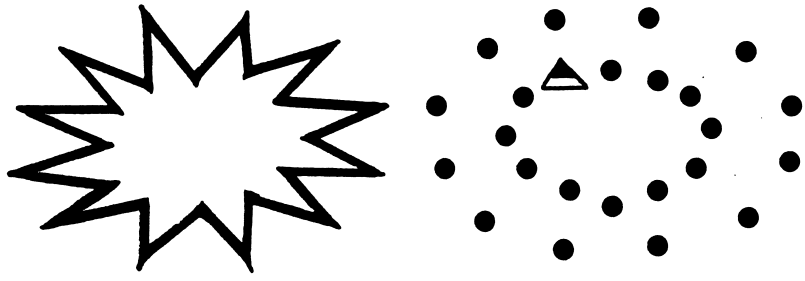
10

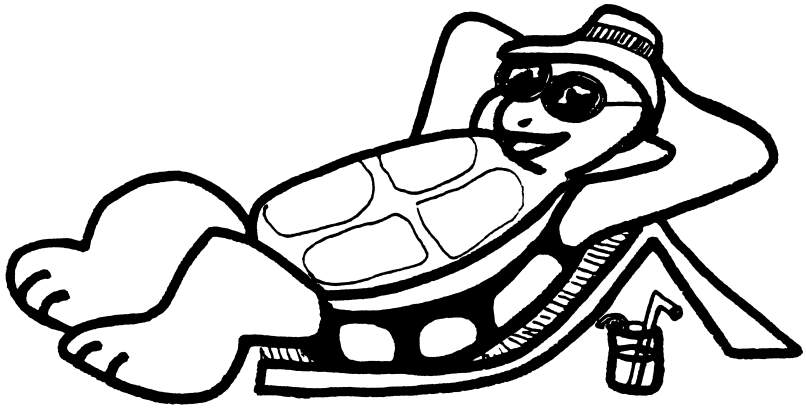
Name

Module 1:

Meet Turtle

E Z LOGO





mecc

Teacher Notes

Expected Outcome: The student will . . .

- practice using the letter commmands F, B, R, L, and the color commands M, semicolon, comma, period, and slash;
- demonstrate proficiency in the use of the commands F, B, R, and L by successfully directing Turtle to draw given letters of the alphabet.

Materials Needed:

- Activity sheets 11-17 (Masters on pages 30 to 36)
- "Exploring with Turtle" sheets (Master on page 17)
- Command Cards (Master on page 62)
- Keyboard Aids (Master on page 73)

Time Needed: 10 minutes per letter

Lesson Plan:

1. Distribute Activity Sheet 11, 12, 13, 14, 15, 16, or 17.
   Go over the directions together.

   The task in each of these seven activities is to direct Turtle to trace a different letter of the alphabet. Doing these activities, the students will get practice and become more proficient in the use of the F, B, R, L, and color commands before being introduced to new commands in Module 2. These activities should encourage and stimulate desire to find new things to "teach" Turtle.

2. Load EZ LOGO (see p. 6)
   Press: A
   Enter: Activity number (11, 12, 13, 14, 15, 16, or 17)
   Press: Return.

3. Student pictures can be printed by using the Control P command. See page 60 for detailed information.

Optional Follow-up Activities:

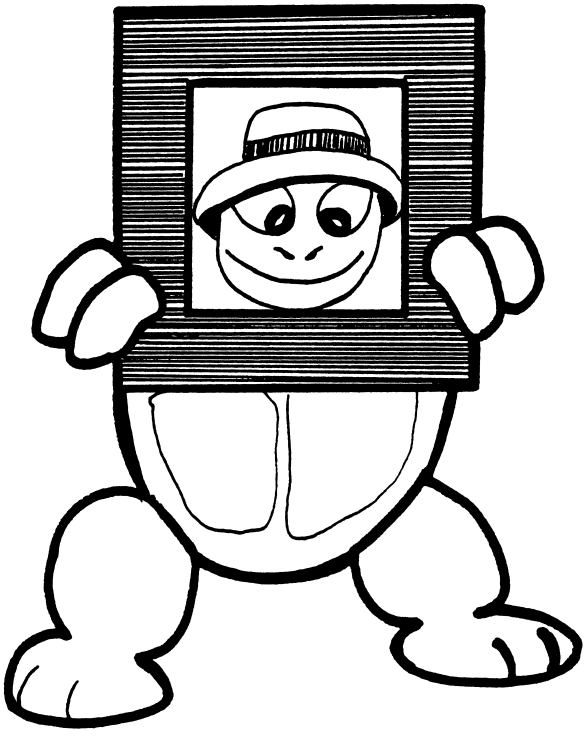
- Discuss students' recorded commands. Have the students suggest different ways of making the same letter.
- Encourage students to make all the letters of the alphabet. Make the letters in upper and lower case.
- In Module 2, "Turtle Tricks," students learn to put letters together to make words.
- Review letter names and consonant sounds.
- Practice printing letters. Emphasize straight, curved, and slanted lines, as well as where letters start and stop in relationship to lines on paper.
- Use printing sets and ink pads.
- Children can make letters out of clay.
- Children can cut letters out of magazines or newspapers.
- Children can paint large letters the teacher has outlined.
- Children can make letters using pegs and a pegboard.
- Children can write their initials.

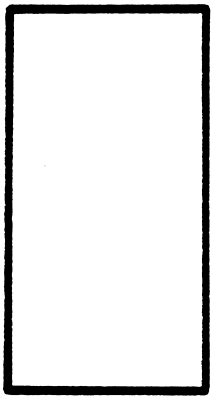
Name

Module 1:

Meet Turtle

E Z LOGO





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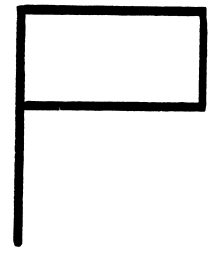
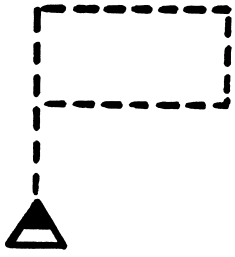
Name

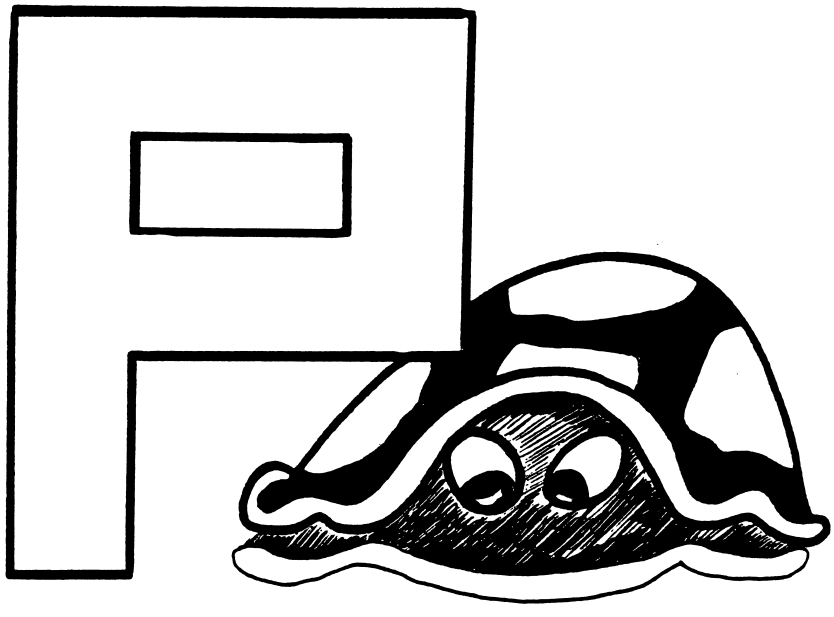
Module 1:

Meet Turtle

E Z LOGO







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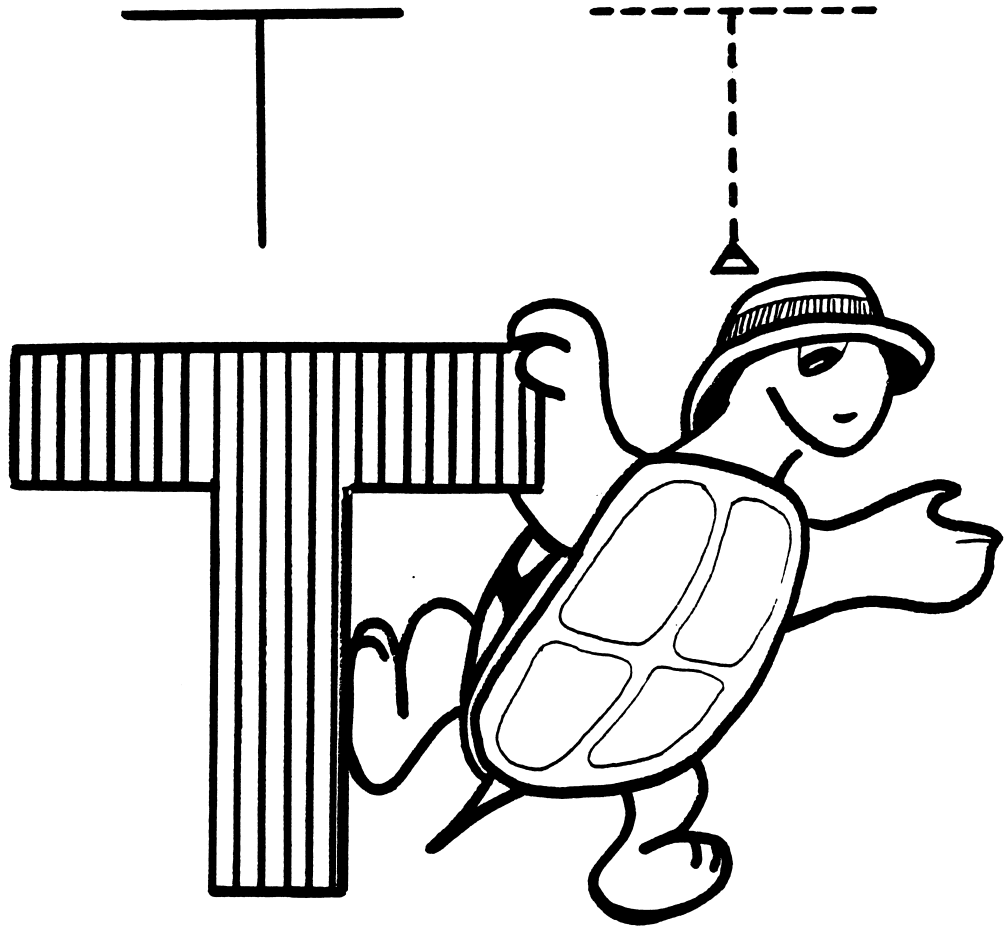
Name

Module 1:

Meet Turtle

E Z LOGO

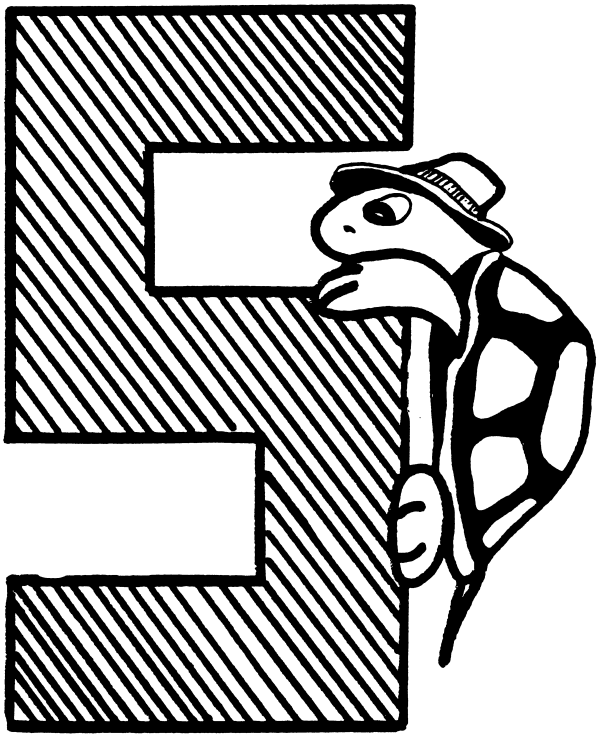


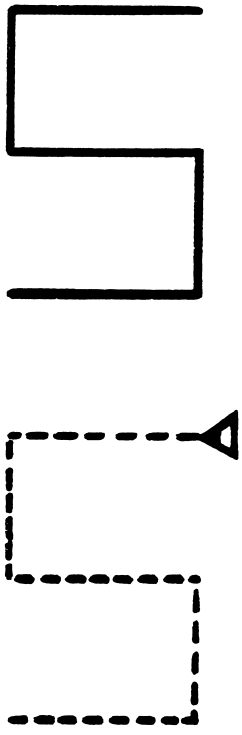
Name

Module 1:

Meet Turtle

E Z LOGO



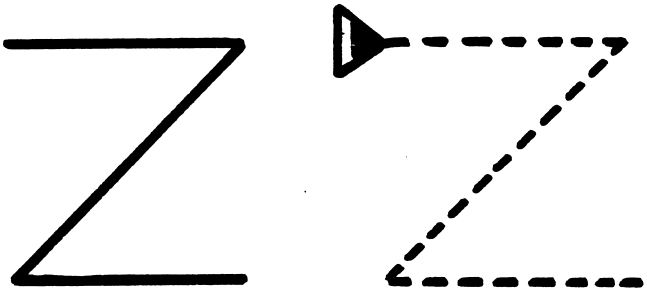


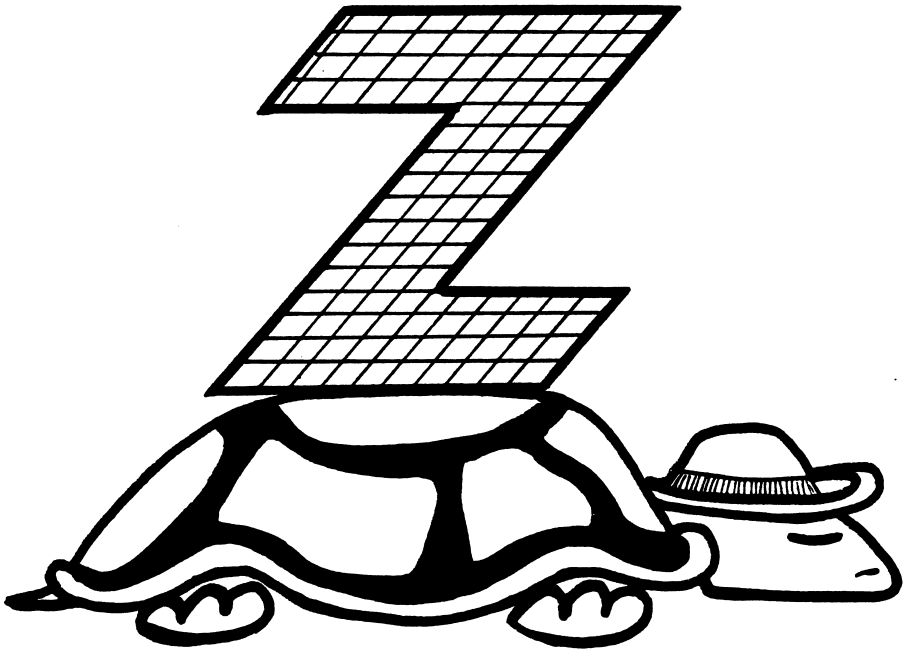
Name

Module 1:

Meet Turtle

E Z LOGO





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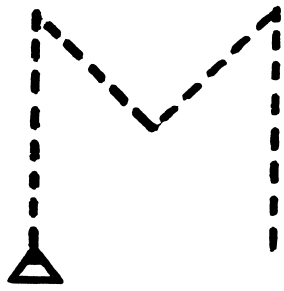
Name

Module 1:

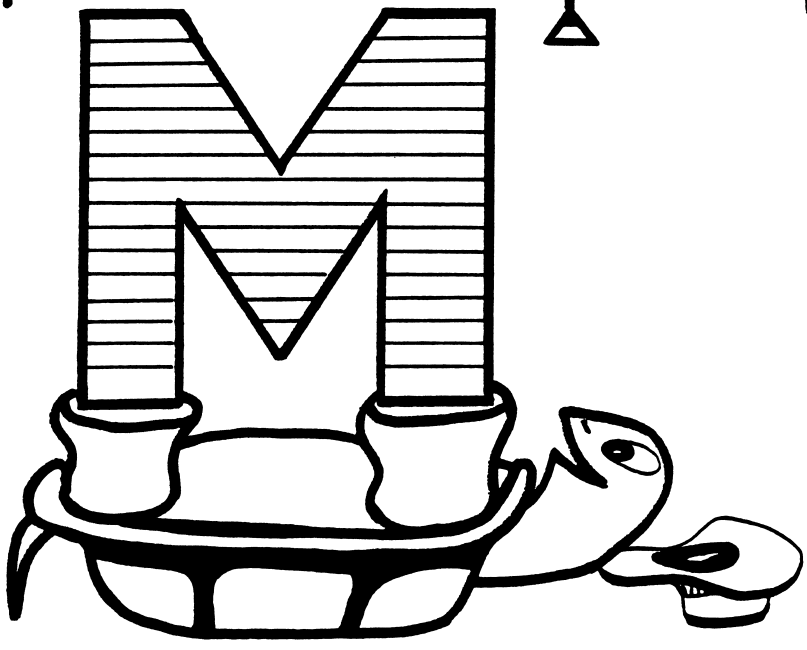
Meet Turtle

E Z LOGO

M



M



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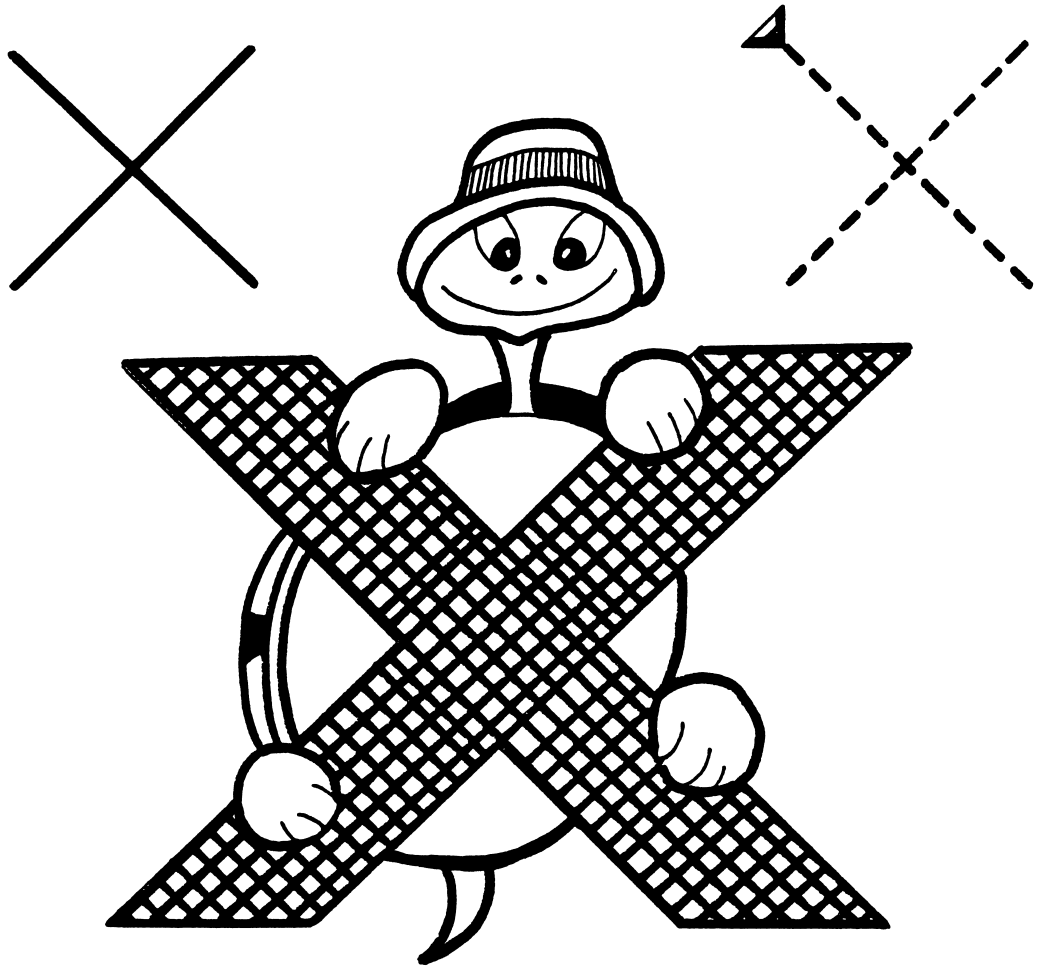
Name

Module 1:

Meet Turtle

E Z LOGO



Teacher Notes

Expected Outcome: The student will . . .

- practice using these letter commands:
  - H (HIDETURTLE)
  - T (SHOWTURTLE)
  - U (PENUP)
  - D (PENDOWN)
  - X (PENERASE);
- practice predicting outcomes for sets of commands;
- draw patterns using all the commands learned so far.

Materials Needed:

- Activity sheets 18-19 (Masters on pages 38 and 39)
- "Exploring with Turtle" sheets (Master on page 17)
- Command Cards for Module 2 (Master on page 63)
- Keyboard Aids (Master on page 73)

Time Needed: 20-30 minutes per pattern

Lesson Plan:

1. Distribute Activity sheet 18 or 19.
   Go over the directions together.

   Activities 18 and 19 introduce five new commands. Use of these additional commands greatly enhances the students problem-solving abilities. In these two activities, students are to first paint a dashed line on the road and, second, make a square within a square. Encourage the students to use the "Exploring with Turtle" sheets to discover new things for Turtle to do and new ways to do them. Provide an opportunity for them to share their discoveries with each other.

2.(a) Load EZ LOGO (see p. 6)
   Press: A
   Enter activity number (18 or 19)
   Press: Return.

   (b) Post or distribute copies of the Command Card for Module 2. The Command Card for Module 2 will help the children to remember all the commands available to them so far.

   (c) Students can print their pictures using the Control P command.

18

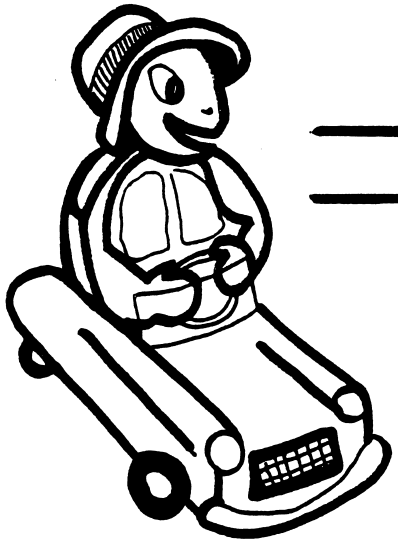
Name

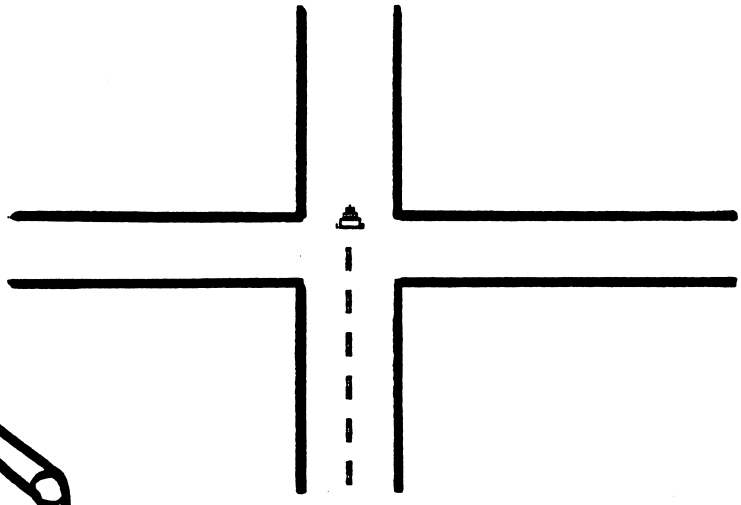
Module 2:

Turtle Tricks

E Z LOGO

Help Turtle paint the dotted line on the road.





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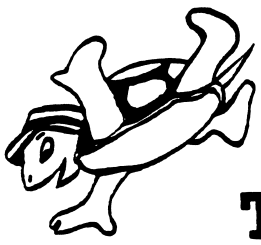


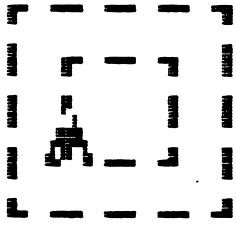
19

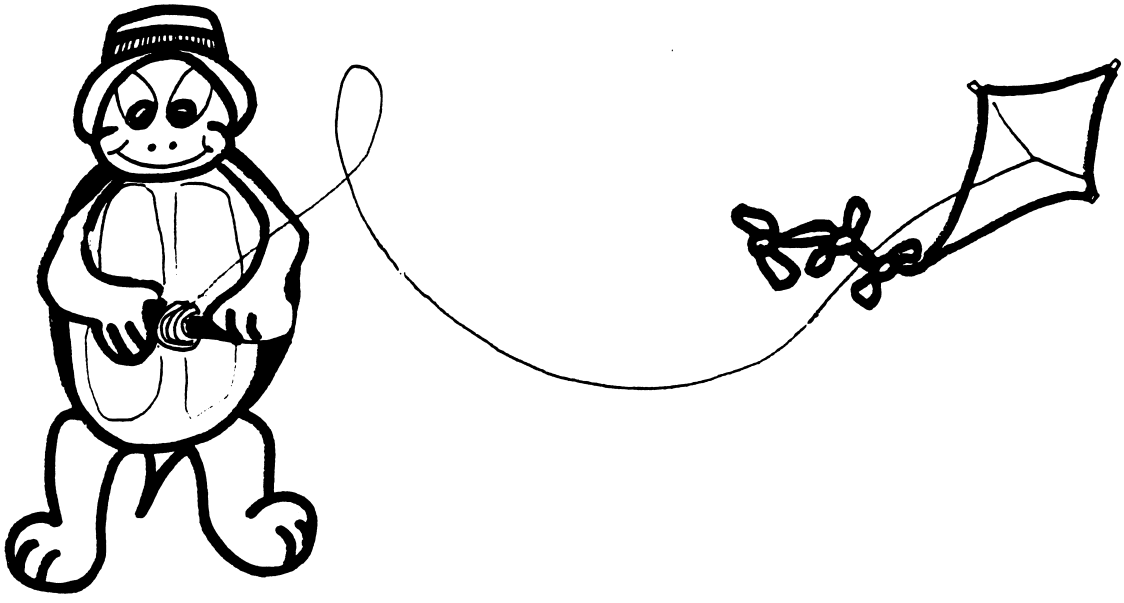
Name

Module 2:

Turtle Tricks

E Z LOGO





Teacher Notes

Module 2
Turtle Tricks

Expected Outcomes: The student will . . .

- practice using these letter commands:
  - H (HIDETURTLE)
  - T (SHOWTURTLE)
  - U (PENUP)
  - D (PENDOWN)
  - X (PENERASE);
- practice predicting outcomes for sets of commands;
- combine letters to make words or names.

Materials Needed:

- Activity sheets 20-21 (Masters on pages 42 and 43)
- "Exploring with Turtle" sheets (Master on page 17)
- Command Cards (Master on page 63)
- Keyboard Aids (Master on page 73)

Time Needed: 30 minutes per word.

Lesson Plan:

1. Distribute Activity Sheet 20, or 21.
   Go over directions together.

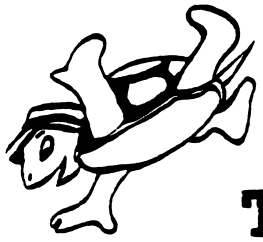
   Activities 20 and 21 provide additional practice using the newly learned commands. Have the students direct Turtle to write other words, their names, or initials. Have them write the words or names on the "Exploring with Turtle" sheets and write the commands in before going to the computer. Did their predicted series of commands direct Turtle correctly? The students should correct those commands or series of commands that they were not pleased with.

2. Load EZ LOGO (see p. 6)
   Press: A
   Enter: Activity number (20 or 21)
   Press: Return.

3. Student pictures can be printed using the Control P command.

Optional Follow-up Activities:

- Have students write other words or messages.
- Children can write their names or initials.
- Children can write their spelling words.



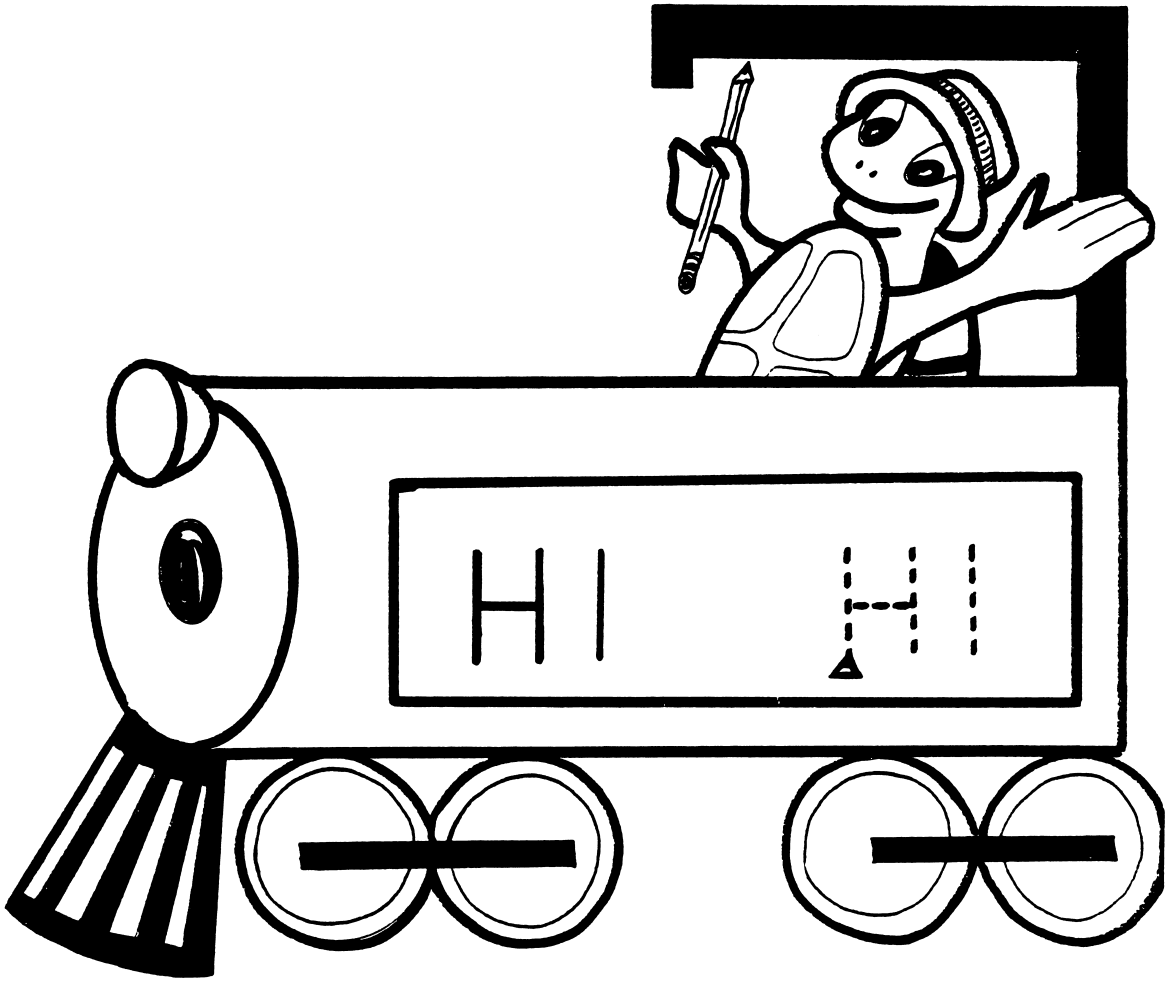
20

Name

Module 2:

Turtle Tricks

E Z LOGO



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21

Name

Module 2:

Turtle Tricks

E Z LOGO

LOGO

LOGO

mecc

Teacher Notes

Expected Outcome: The student will . . .

- practice using these letter commands:
  - H (HIDETURTLE)
  - T (SHOWTURTLE)
  - U (PENUP)
  - D (PENDOWN)
  - X (PENERASE);
- practice predicting outcomes for four sets of commands;
- combine shapes to make complex pictures or scenes.

Materials Needed:

- Activity Sheets 22-23 (Masters on pages 46 and 47)
- "Exploring with Turtle" sheets (Masters on page 17)
- Command Cards (Master on page 63)
- Keyboard Aids (Master on page 73)
- Activity Guide for Module 2 (Master on page 70)

Time Needed: 30 minutes

Lesson Plans: 1.(a) Distribute Activity Sheet 22 or 23.
Go over the directions together.

By now the students should have confidence in their ability to make individual geometric shapes as well as letters of the alphabet. In activities 22 and 23, the students' task is to use these skills to combine shapes and to make a complex drawing. The kinds of drawings possible are limited only by the time available and the students' ability. Encourage them to exchange and combine the ideas of other students with their own. Discussions of discoveries, successes, and problems will further serve to stimulate creative efforts.

(b) Distribute copies of the Activity Guide for Module 2. This guide will help the children quickly locate activity numbers for the six activities of Module 2. The guide should be added to their journals and can also be posted at each computer.

(c) Student pictures can be printed using the Control P command.

2. Load EZ LOGO (see p. 6)
Press: A
Enter: Activity number (22 or 23)
Press: Return.

Optional Activities: Follow-up

- Have students draw pictures using turtle commands or, if appropriate, have them first draw their pictures on "Exploring with Turtle" sheets.
- Students can practice making some of the pictures in Ed Emberley's Drawing Book of Animals.*
- Children can use the shape templates to make pictures.
- Children can use construction-paper shapes to make pictures.
- Children can use property blocks to make pictures.
- Children can draw faces for masks.
- Children can draw pictures of their own homes.

*Emberley, Edward R. Ed Emberley's Drawing Book of Animals. Boston: Little, Brown, and Company, 1970.

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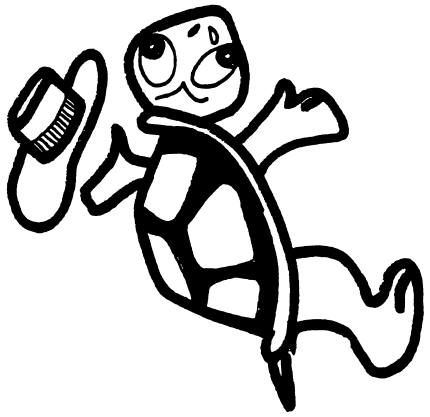
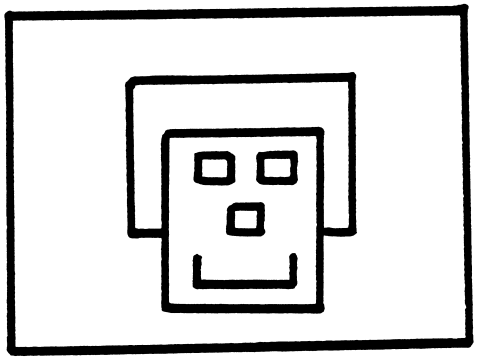
Name

Module 2:

Turtle Tricks

E Z LOGO





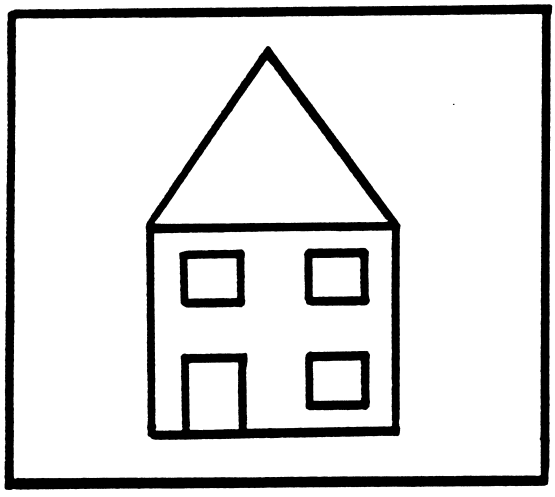
23

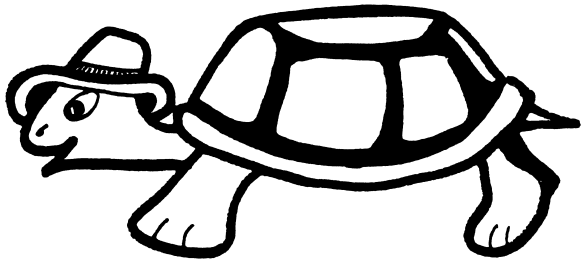
Name

Module 2:

Turtle Tricks

E Z LOGO





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Teacher Notes

Module 3
Shapes

Expected Outcome: The student will . . .

- practice using shape commands: 1, 2, 3, 4 for squares; 7, 8, 9, 0 for circles; Q, W, E for triangles; I, O, P for rectangles;
- develop a sequence of commands to have the turtle draw geometric designs;
- combine letter commands, shape commands, and color commands to draw pictures.

Materials Needed:

- Activity Sheet 24 (Master on page 50)
- Stickers for shape keys (page 73)
- "Exploring with Turtle" sheets (Master on page 17)
- Command Cards for Module 3 (Master on page 64)
- Keyboard Aids (Master on pages 73 to 76)
- Shape Key Guide (optional) (Master on page 78)

Time Needed: Several class periods

Lesson Plans: 1.(a) Having completed Modules 1 and 2, the students are now familiar with the commands and procedures for controlling Turtle. As the students became more confident, the activities in Modules 1 and 2 became less directed and more open-ended. The activities in Module 3 are totally student-directed.

Activity sheet 24 presents some possible projects for demonstration. These shapes and patterns should serve as ideas to stimulate the students' own projects. They are not intended to be assigned.

(b) In Module 3, students can produce some geometric shapes with one-key commands. The students can choose from four sizes of squares and circles and three sizes of triangles and rectangles. The Command Cards for Module 3, the Keyboard, and the Shape Key Guide will help the students to locate and use these new commands.

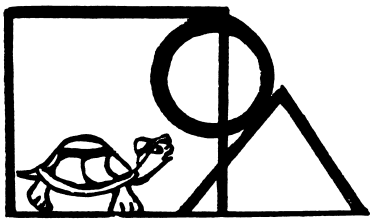
(c) Encourage the students to combine shape and letter commands to make repeating patterns and pictures of their own design.

Continue to encourage the sharing of discoveries, problems, and solutions. Allow plenty of time for students to develop and carry out their projects successfully.

2.(a) Modify keyboard by identifying the shape keys. Refer to pages 75-78.

(b) Load EZ LOGO (see p. 6)
Press: A
Enter: Activity number (24)
Press: Return

(c) When you have completed the activity, press Escape twice. When the message "Do you want to try again" appears, type "N" or "No." The main menu will appear next.



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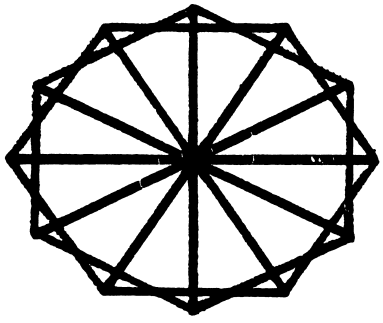
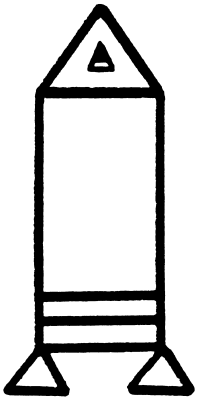
Name

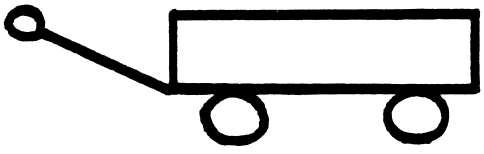
Module 3:

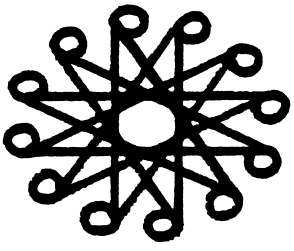
Shapes

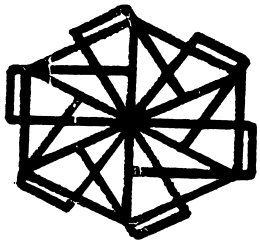
E Z LOGO

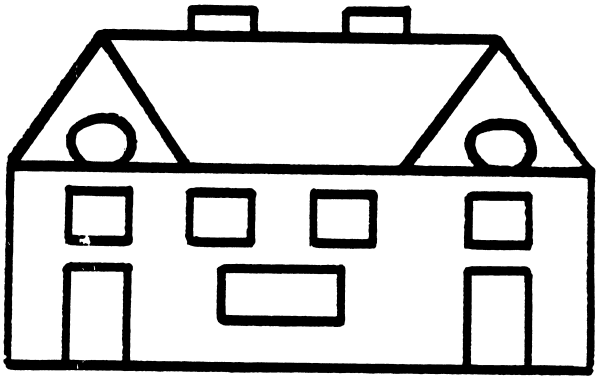


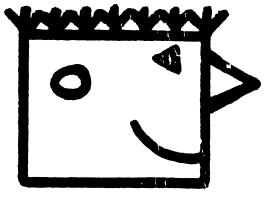












mecc

EZ LOGO 2

Activity: Open-Ended

Teacher Notes

Expected Outcome: The student will . . .

- combine letter, shape, and color commands to draw pictures;
- combine saved procedures (pictures) to build new procedures;
- use the save routine to make copies of their pictures.

Materials Needed:

- "Exploring with Turtle" sheets (Master on page 17)
- EZ LOGO 2 command card (Master on page 65)
- Keyboard Aids (Master on pages 73 to 78)

Time Needed: Several class periods
Open-ended

Lesson Plans:

1. Like Activity 24 of Module 3, EZ LOGO 2 is totally open-ended and student-directed. All of the commands and capabilities of Module 3 are also present in EZ LOGO 2. However, there are no activities. In addition, EZ LOGO 2, has the following capabilities:

   - saving pictures in memory (page 52)
   - saving pictures on diskette (page 53)
   - loading pictures from diskette (page 53)
   - erasing a file from diskette (page 53)
   - building procedures (pictures) (page 54)

2.(a) Boot the EZ LOGO diskette and select EZ LOGO 2 from the main menu.

(b) Begin using the letter, shape, and color commands to make pictures and designs. Students can press the Space Bar at any time to obtain information regarding the current pen status (up, down, and erase), the color being used, and the amount of memory and diskette space available.

(c) When the students are ready, help them through using the File Options. See the pages indicated above for step-by-step instructions.

(d) You may want to load the file "More Examples" and show students some nice pictures which have been created using EZ Logo. Students can use these pictures as inspiration for ideas of their own or they can try reproducing them.

3. To return to the activities of EZ LOGO 1, press Escape twice. When the message "Do you want to try again" appears, type "N" or "No." The main menu will appear next.

SAVE ROUTINE

I. SAVING IN MEMORY

Only EZ LOGO 2 has a SAVE routine. The SAVE routine allows children to SAVE, NAME, and GET a picture as a procedure in the computer's memory.

SAVE ROUTINE COMMANDS:

S SAVE

After having drawn a picture,

Press: S	(To save what you have drawn). When the message "Save procedure:" appears,
Type:	(A name for the picture; names can be up to fifteen characters long) and
Press: Return	The picture will then be erased from the screen and saved in the computer's memory.

If you change your mind about saving the picture simply press Return instead of naming the picture.

You can list, at any time, the names of the procedures saved in memory by typing N.

G GET

To retrieve a picture (procedure) previously saved, move the cursor to the place where you want the picture to appear and then

Press: G	(To get a picture back on the screen from the computer's memory). When the message "Get procedure:" appears,
Type:	(The name of the picture) and
Press: Return	(The picture will appear on the screen)

If you change your mind about getting a picture, simply press Return instead of entering a picture name.

Z ZAP

The "Z" (ZAP) command is used to clear all the procedures from the computer's WORKSPACE. The memory, called WORKSPACE, is where EZ LOGO keeps track of the procedures you define. To clear the workspace:

Press: Z	(To erase the memory) and
Press: Return	When the question "Zap what name?" appears, type the name of the procedure you want to erase.
or	
Press: Return	If you want to erase all the procedures in the WORKSPACE. The question "Zap all names?" will appear. Type "Yes" to confirm that you want to delete all procedures.

If you decide not to ZAP, answer "No" to the question "Zap all names?

II. SAVING ON DISKETTE

Pictures which have been saved in the computer's memory using the SAVE routine can also be saved on the EZ LOGO diskette. It is suggested that a teacher or an older student assist a younger child in saving a file (a picture or collection of pictures) on a diskette. To SAVE a file on a diskette, follow the steps below:

Press: Control D	(To access the File Options menu).
Select Option: 1	(To save a file) When the question "What is this file's name?" appears,
Type:	(The name of the file you want to save on the diskette).
Press: Return	The messages "File saved" and "There are (number) procedures in this file." will appear).
Press: Space Bar	(The messages "Do you want to clear the workspace?" will be displayed)
Type: Yes	If you want to zap **all** the procedures saved in memory and simultaneously clear the screen.

OTHER DISKETTE COMMANDS

From the same Diskette Access menu, you can CATALOG the diskette as well as LOAD and ERASE a file. To use any of these options, select the number representing the option wanted.

TO CATALOG

Press: Control D	(To access the diskette options menu).
Select Option: 4	A list of the files saved on the diskette will appear.

TO LOAD

Press: Control D	(To access the diskette options menu).
Select Option: 2	"What file do you want to load?"
Type:	(The name of the file you want to load). Once the file has been loaded, a list of the procedures that were loaded will appear.

TO ERASE

Press: Control D	(To access the diskette options menu).
Select Option: 3	"What file do you want to erase?"
Type:	(The name of the file you want to erase from the diskette and
Press: Return	The message "File erased" will appear when the process is completed.

TO RETURN TO EZ LOGO 2

Press: R (To return to the EZ LOGO 2 screen when you finish using the File Options.)

III. BUILDING BLOCKS

One powerful aspect of the Logo language is the ability to use procedures as building blocks (or subprocedures) within other procedures. Children can begin to explore this powerful aspect of Logo when using the SAVE routine in EZ LOGO 2. Each time the G (GET) command is used to recall and display a previously made picture (procedure), this picture will be included as a part of the current procedure when it is saved.

For example: If two procedures called HOUSE and TREE have been drawn and saved in memory, then a new procedure called YARD can be saved that will include both HOUSE and TREE as subprocedures.

To save YARD in memory, follow the steps given below.

a. Draw a picture of your own design and save it as HOUSE.
b. Draw a picture of your own design and save it as TREE.
c. Press: G (to get a procedure).
d. Type: HOUSE, and Press Return. (The house will appear.)
e. Move Turtle to a new location for the tree.
f. Press: G
g. Type: TREE, and Press Return. (The tree will appear.)
h. Press: S (To save the new procedure, called YARD).
i. Type: YARD, and Press Return. Then
j. Press: G
k. Type: YARD, and Press Return.

The new procedure YARD, with the subprocedures TREE and HOUSE, will appear on the screen.

The procedure YARD can be modified by ZAPping the TREE and/or HOUSE procedure(s). A new picture of a tree and/or house can then be made and saved using the same name: TREE and/or HOUSE. When YARD is recalled again, the new tree picture will appear as a part of YARD.

It is possible to ZAP a subprocedure such as TREE and not replace it. However, if you later call the procedure YARD, the computer will stop drawing the picture at the point were TREE is called. The message "I don't know how to TREE" will appear.

To see an example of a YARD on the computer, follow the steps given below:

a) Press: Control D (to get the File Options menu)
b) Choose: Option 2 (to load a file)
c) Type: the file name EXAMPLE
d) Choose: Option 5 (to return to EZ LOGO 2)
e) Press: G (to get a procedure)
f) Type: the procedure name YARD
g) Press: Return. (A scene with a TREE and a HOUSE will appear).
h) Press: C (to clear the screen)

APPENDICES

CREDITS

EZ LOGO was a prize-winning entry in MECC's 1982 Teacher Programming Contest. EZ LOGO was authored, designed, and programmed by Judy Anderson. The earlier version of EZ LOGO was produced by a MECC development team consisting of Gene Breault, Courseware Designer and Project Coordinator, and Philip Bouchard, Programmer/Analyst.

Developmental Testing took place at the following sites:

1. East Consolidated Elementary School, St. Paul, Minnesota, Sue Polfliet, Mary Jo Synnott, and Judy Anderson.
2. Hale Primary School, Minneapolis, Minnesota, Mary Faricy.
3. Science Museum of Minnesota, St. Paul, Minnesota, Judy Anderson.
4. Ann Arbor, Michigan, Marylen S. Oberman.

This revision of EZ Logo was produced by a MECC development team which included Miryam Acevedo-Bouchard, Steve Splinter, and Philip Bouchard.

TO THE READER:

MECC has made every effort to ensure the instructional and technical quality of this courseware package. Your comments—as user or reviewer—are valued and will be considered for inclusion in any future version of the product. Please address comments to:

MECC Cousreware Development
3490 Lexington Avenue North
St. Paul, Minnesota 55112

Teacher Preparation

TERMS AND DEFINITIONS OF TERMS

EZ Logo is a very simple experience for children who are just beginning their experiences with computers. The students can, however, do some pretty sophisticated things with EZ Logo and not be aware of all that they are doing.

For you to understand what the students are really doing, however, it is necessary to look a little deeper at what is going on. Also, since EZ Logo is a pre-Logo experience, it would be desirable to help students, when they have progressed far enough, to understand more about programming.

A student presses the letter "F" and Turtle moves forward. The COMMAND "F" (for forward) is all the student needs to tell Turtle what to do. The COMMAND "F," however, also represents an entire STATEMENT. The STATEMENT which the student is unknowingly entering is: "Move the cursor (Turtle) forward 10 units."

By entering a series of such STATEMENTS, the student can direct Turtle to create a picture. The following commands, for example, will produce a square.

F	Forward				
R	Right,	R	Right,	R	Right
F	Forward				
R	Right,	R	Right,	R	Right
F	Forward				
R	Right,	R	Right,	R	Right
F	Forward				

The students are not, however, drawing the picture directly. They are entering a series of statements which are the directions they want the computer to follow when drawing a picture. All the statements needed to draw a particular picture (a square, for example) are called a PROCEDURE.

When the student SAVES a picture in the temporary memory (WORKSPACE) of the computer, what is really being saved is the procedure (the directions) for drawing a picture. By giving the procedure a name, the directions can be recalled and the picture displayed once again.

When someone decides to save a procedure on a diskette, that procedure is saved in a FILE. By naming the FILE, that file and the procedure in it can be recalled, and the picture displayed.

However, if there is more than one procedure in the workspace (memory) at the time the decision is made to save a particular file, all the procedures in the workspace will be saved together as one file. That is, the workspace will be saved.

A procedure, therefore, can be saved in more than one file on the diskette. However, if these files are later LOADED from the diskette, the procedure will be present just once in the computer's memory.

WHAT TO DO WHEN YOU GET ERROR MESSAGES

EZ LOGO 2 enables users to save a number of pictures as procedures in the workspace (memory) or within files on diskette. The actual number of procedures or files that can be saved depends on the length of each of the procedures. When the workspace or the diskette are full, you will receive an error message. The following paragraphs outline some of the actions that can be taken to correct the problem.

Situation A: Students have been at the computer for a while creating pictures. They may have saved each individual picture (a procedure) as they created it or they may have been working on a single, long, complex procedure (the various components of an elaborate picture).

Message: Workspace is full

Possible Actions:

1. Students can ignore the message and continue drawing their picture. However, any directions entered from that point on will **not** be saved.

2. Students can CLEAR the picture they are currently working on and start over again, trying to create a shorter procedure and a simpler picture. If they are working on an elaborate picture, this action may be inefficient, since there will not be enough memory space to store the finished picture.

3. Students may SAVE the procedures in the workspace as a file to diskette. Only the procedures that are saved in memory will be saved to diskette. After saving them, students will need to ZAP all or some of the procedures in memory.

4. Students may just ZAP all or some of the procedures in workspace to make room for their new picture.

Situation B: Students are creating a picture. There are several procedures saved in memory. They attempt to load a file from diskette. The computer starts loading the file, and a list of the procedures which were loaded appears. Upon pressing the Space Bar, a message is displayed.

Message: Workspace is full
A list of the procedures not loaded is presented.

Possible Actions:

1. Students can CLEAR the picture they are currently working on, and try loading the file again. If the file is long, this action may be inefficient, since there will not be enough memory space to store all of the procedures.

2. Students may SAVE the procedures in the workspace as a file to diskette. Only the procedures that are saved in memory will be saved to diskette. After saving a file, they will need to ZAP all or some of the procedures in memory and try loading the file again.

3. Students may just ZAP all or some of the procedures in the WORKSPACE to make room for the file and then try loading the file again.

Situation C: Students attempt to save a file to diskette.

Message: There is not enough space in the diskette to save the procedures in memory.

Possible Actions:

1. Students may ERASE one or more files.

2. Students may decide not to save their picture to diskette

HOW TO PRINT EZ LOGO PICTURES

Children enjoy making copies of their pictures on paper. Any picture created while using EZ LOGO 1 or EZ LOGO 2 can be printed by simply typing Control P.

EZ LOGO will print graphics using any of the following printer and interface card combinations:

1. An Apple Dot Matrix printer (DMP) connected with a parallel card
2. An Apple Imagewriter printer connected with a serial interface card
3. An Apple Scribe printer connected with a serial interface card
4. Any printer connected to the Grappler+ Interface card. Consult the Grappler+ Interface card for a complete list of printers that work with this card.

If you have any other combination of printer and interface card, it will not be possible to print pictures.

For pictures to be printed, teachers need to set up the printer to work with EZ LOGO **before** students start using the programs.

To set up the printer, follow the steps outlined below:

1. Start up the computer with EZ LOGO in the disk drive.
2. Select Option 4, "Printer Support" from the main menu.
3. Information regarding the current set up will be displayed. Determine whether the current printer settings are correct.
4. If necessary, change the printer settings by specifying the type of printer you have, the slot the interface card is connected to, and the size of the picture.
5. Test the printer settings.
6. If the test is unsuccessful, check that the settings you have specified are correct and repeat the procedure if changes are necessary.

HOW TO MOVE BETWEEN EZ LOGO 1 AND EZ LOGO 2

To move from EZ LOGO 1 to EZ LOGO 2. or vice-versa, press Escape twice. When the message "Do you want to try again?" appears, type "N" or "No." The main menu will next appear.

Command Cards

EZ LOGO 1 COMMAND CARD
FOR MODULE 1

CUT APART

EZ LOGO		EZ LOGO	
F	FORWARD	F	FORWARD
B	BACK	B	BACK
R	RIGHT	R	RIGHT
L	LEFT	L	LEFT
C	CLEARSCREEN	C	CLEARSCREEN
;	WHITE	;	WHITE
M	ORANGE	M	ORANGE
,	PURPLE	,	PURPLE
.	GREEN	.	GREEN
/	BLUE	/	BLUE
A	ACTIVITY MODE	A	ACTIVITY MODE
CTRL P	PRINT	CTRL P	PRINT
EZ LOGO		**EZ LOGO**	
F	FORWARD	F	FORWARD
B	BACK	B	BACK
R	RIGHT	R	RIGHT
L	LEFT	L	LEFT
C	CLEARSCREEN	C	CLEARSCREEN
;	WHITE	;	WHITE
M	ORANGE	M	ORANGE
,	PURPLE	,	PURPLE
.	GREEN	.	GREEN
/	BLUE	/	BLUE
A	ACTIVITY MODE	A	ACTIVITY MODE
CTRL P	PRINT	CTRL P	PRINT

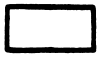
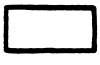
CUT APART

EZ LOGO		EZ LOGO	
F	FORWARD	F	FORWARD
B	BACK	B	BACK
R	RIGHT	R	RIGHT
L	LEFT	L	LEFT
C	CLEARSCREEN	C	CLEARSCREEN
;	WHITE	;	WHITE
M	ORANGE	M	ORANGE
,	PURPLE	,	PURPLE
.	GREEN	.	GREEN
/	BLUE	/	BLUE
H	HIDETURTLE	H	HIDETURTLE
T	(shows) TURTLE	T	(shows) TURTLE
U	UP (PENUP)	U	UP (PENUP)
D	DOWN (PENDOWN)	D	DOWN (PENDOWN)
X	ERASE (PENERASE)	X	ERASE (PENERASE)
A	ACTIVITY MODE	A	ACTIVITY MODE
CTRL P	PRINT	CTRL P	PRINT

EZ LOGO		EZ LOGO	
F	FORWARD	F	FORWARD
B	BACK	B	BACK
R	RIGHT	R	RIGHT
L	LEFT	L	LEFT
C	CLEARSCREEN	C	CLEARSCREEN
;	WHITE	;	WHITE
M	ORANGE	M	ORANGE
,	PURPLE	,	PURPLE
.	GREEN	.	GREEN
/	BLUE	/	BLUE
H	HIDETURTLE	H	HIDETURTLE
T	(shows) TURTLE	T	(shows) TURTLE
U	UP (PENUP)	U	UP (PENUP)
D	DOWN (PENDOWN)	D	DOWN (PENDOWN)
X	ERASE (PENERASE)	X	ERASE (PENERASE)
A	ACTIVITY MODE	A	ACTIVITY MODE
CTRL P	PRINT	CTRL P	PRINT

EZ LOGO 1 COMMAND CARD
FOR MODULE 3

CUT APART

EZ LOGO		EZ LOGO	
F	FORWARD	F	FORWARD
B	BACK	B	BACK
R	RIGHT	R	RIGHT
L	LEFT	L	LEFT
C	CLEARSCREEN	C	CLEARSCREEN
;	WHITE	;	WHITE
M	ORANGE	M	ORANGE
,	PURPLE	,	PURPLE
.	GREEN	.	GREEN
/	BLUE	/	BLUE
H	HIDETURTLE	H	HIDETURTLE
T	(shows) TURTLE	T	(shows) TURTLE
U	UP (PENUP)	U	UP (PENUP)
D	DOWN (PENDOWN)	D	DOWN (PENDOWN)
X	ERASE (PENERASE)	X	ERASE (PENERASE)
A	ACTIVITY MODE	A	ACTIVITY MODE
CTRL P	PRINT	CTRL P	PRINT
SHAPES		SHAPES	
SQUARES	CIRCLES	SQUARES	CIRCLES
1	7	1	7
2	8	2	8
3	9	3	9
4	0	4	0
TRIANGLES	RECTANGLES	TRIANGLES	RECTANGLES
Q	I	Q	I
W	O	W	O
E	P 	E	P 

CUT APART

EZ LOGO	EZ LOGO
F FORWARD B BACK R RIGHT L LEFT C CLEARSCREEN ; WHITE M ORANGE , PURPLE . GREEN / BLUE H HIDETURTLE T (shows) TURTLE U UP (PENUP) D DOWN (PENDOWN) X ERASE (PENERASE) S SAVE G GET N NAMES Z ZAP CTRL P PRINT	F FORWARD B BACK R RIGHT L LEFT C CLEARSCREEN ; WHITE M ORANGE , PURPLE . GREEN / BLUE H HIDETURTLE T (shows) TURTLE U UP (PENUP) D DOWN (PENDOWN) X ERASE (PENERASE) S SAVE G GET N NAMES Z ZAP CTRL P PRINT
SHAPES	SHAPES
SQUARES CIRCLES 1 7 2 8 3 9 4 0	SQUARES CIRCLES 1 7 2 8 3 9 4 0
TRIANGLES RECTANGLES Q I W O E P	TRIANGLES RECTANGLES Q I W O E P

NOTES

Activity Guides

ACTIVITY GUIDES

Children can refer to the Activity Guides on the following pages to quickly locate the correct number of a particular activity. Although children can also locate the number of each activity by looking at the completed Activity Sheets in their journal, these Activity Guides serve as a quick reference. Copies of the Activity Guides can be run off and given to each child as an index page in their journal or posted by each computer.

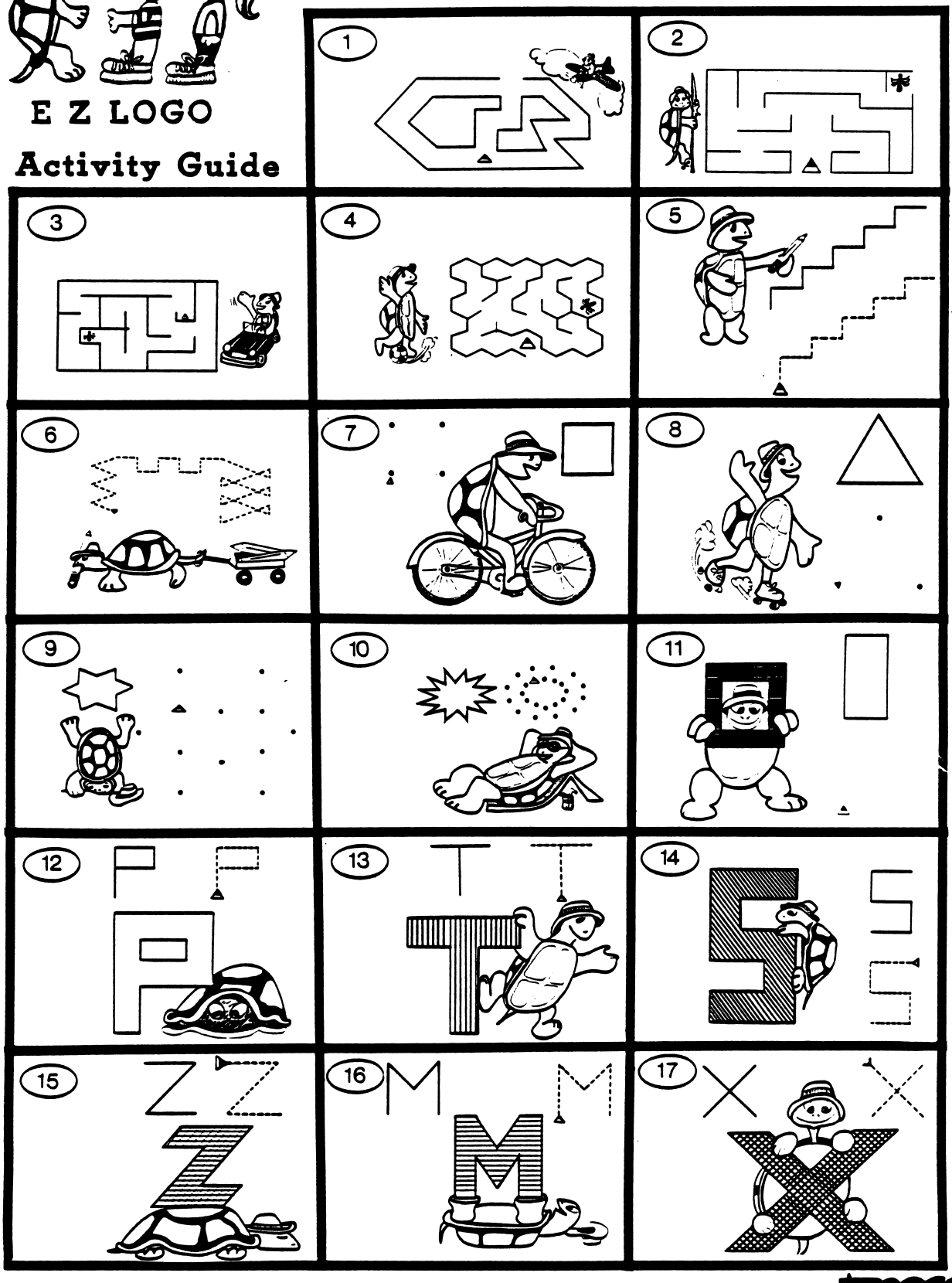
E Z LOGO

Activity Guide

Module 1:

Meet Turtle

26



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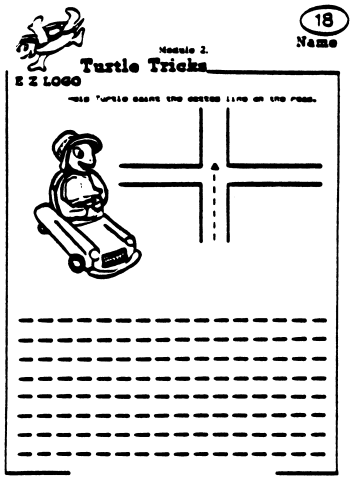
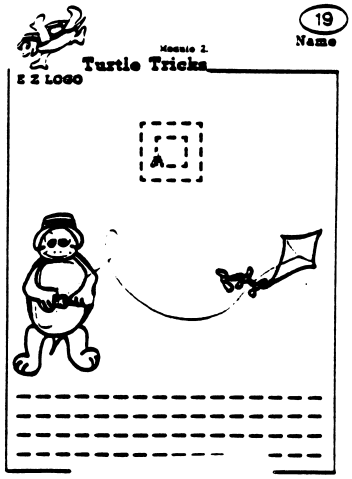
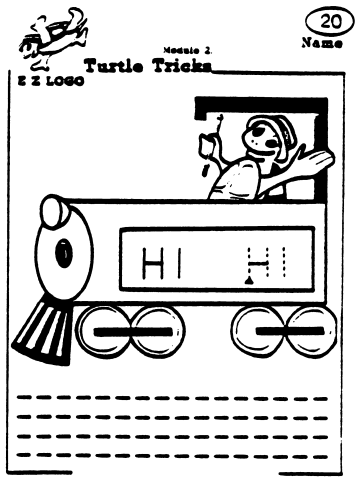
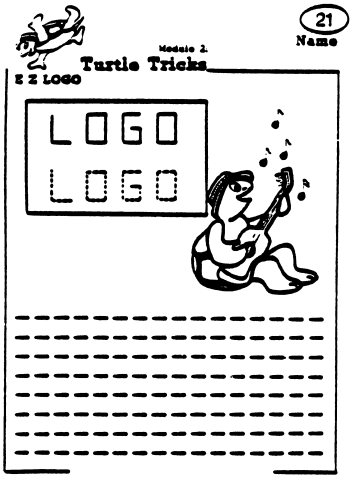
Module 2:

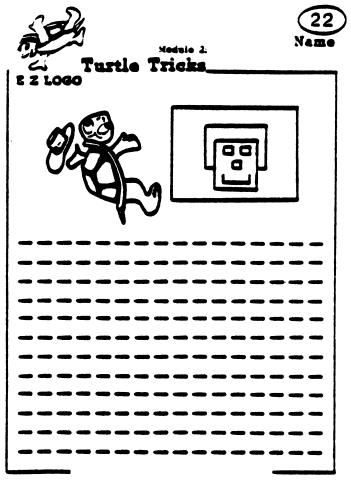
Turtle Tricks

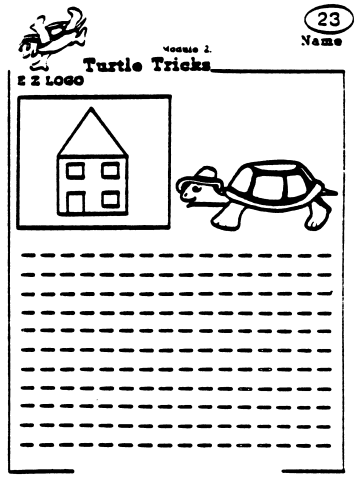


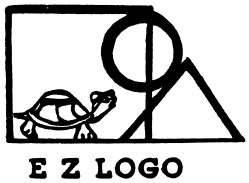






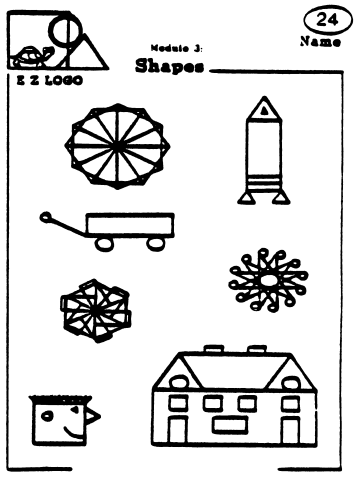






Module 3:

Shapes



Keyboard Aids

KEYBOARD AIDS

Three ways of simplifying the keyboard for young children are presented here:

- Keyboard stickers
- Keyboard Guide
- Shape Key Card

KEYBOARD STICKERS

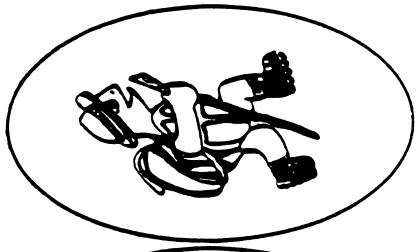
Keyboard stickers are not essential, but are highly recommended as aids to help students locate the command keys. Labels help decrease the searching time for the children. On the following page you will find self-sticking labels which identify the function of each of the EZ Logo keys on the computer keyboard. Simply peel off the smaller portion (below the letter or number) and place it on the face of the matching key on the computer. On some computers it may be possible to place the label on the top of the key. Stickers or labels should be applied so that the number or letter still shows. The stickers in the middle of the sheet can be used to label and/or decorate the computer and its parts.

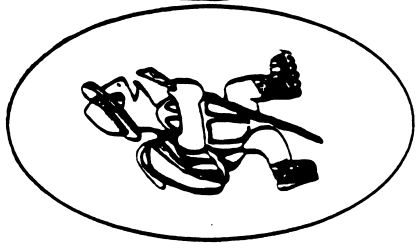
Label should be placed on the keys as they are introduced, rather than putting all the labels on at once.

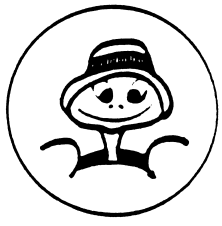
	1	2	3	4	5	6	7	8	9	0	
E	Q	W	E	R	T	Y	U	I	O	P	
			END	RIGHT	TURTLE		UP			PRINT	
P	A	S	D	F	G	H	J	K	L	;	
	ACTIVITY	SAVE	DOWN	FORWARD	GET	HIDE			LEFT		
D	Z	X	C	V	B	N	M	,	.	/	
DISK	ZAP	ERASE	CLEAR		BACK	NAME					

E Z Logo

monitor	monitor
computer	computer
disk drive	disk drive







E Z Logo

	1	2	3	4	5	6	7	8	9	0	
E	Q	W	E	R	T	Y	U	I	O	P	
			END	RIGHT	TURTLE		UP			PRINT	
P	A	S	D	F	G	H	J	K	L	;	
	ACTIVITY	SAVE	DOWN	FORWARD	GET	HIDE			LEFT		
D	Z	X	C	V	B	N	M	,	.	/	
DISK	ZAP	ERASE	CLEAR		BACK	NAME					

E Z Logo

KEYBOARD GUIDE

Another alternative to a set of keyboard stickers is a picture of the keyboard showing the location of the shape keys. This is sufficient if children have had previous experience locating the shape keys on the keyboard.

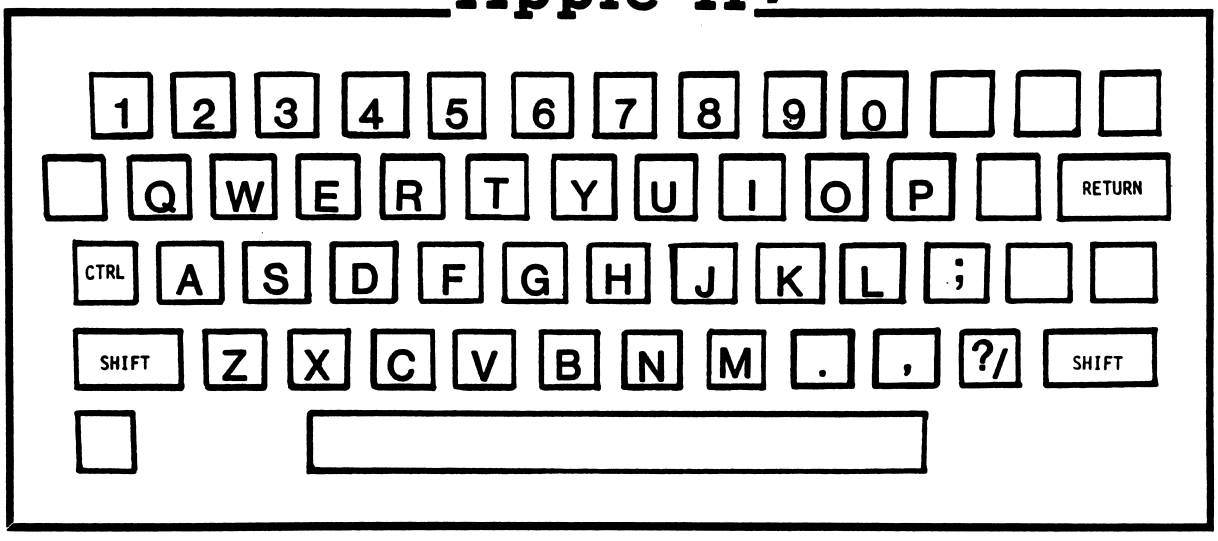
To make keyboard picture guides follow the steps below:

1. Duplicate enough copies of the keyboard on pages 75 and/or 76 so that each student or each computer will have one. There are two keyboards pictured—an Apple II+ keyboard (p. 75) and an Apple //e and //c keyboards (p. 76).

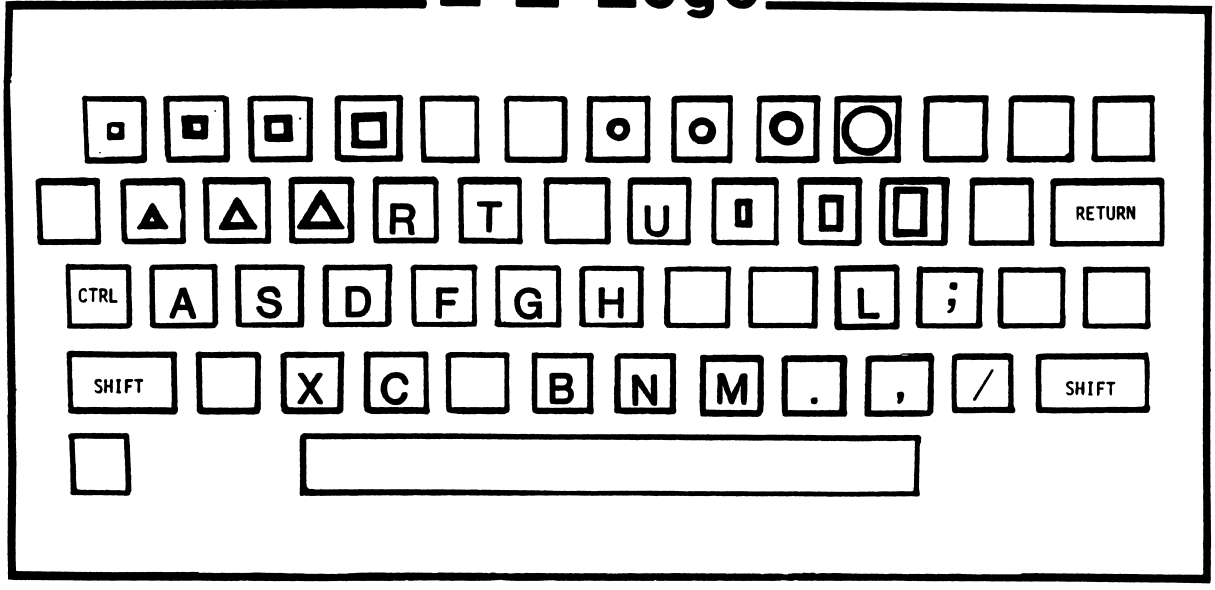
2. Trim around the edge, mount on tagboard, and laminate.

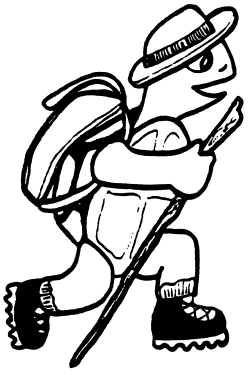
KEYBOARD GUIDE

Apple II+



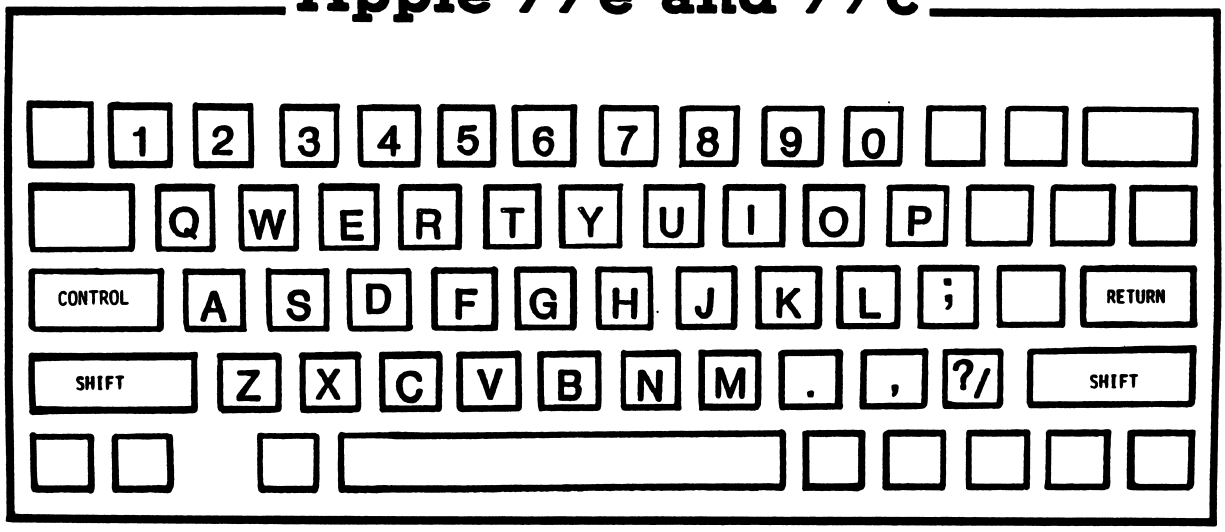
E Z Logo



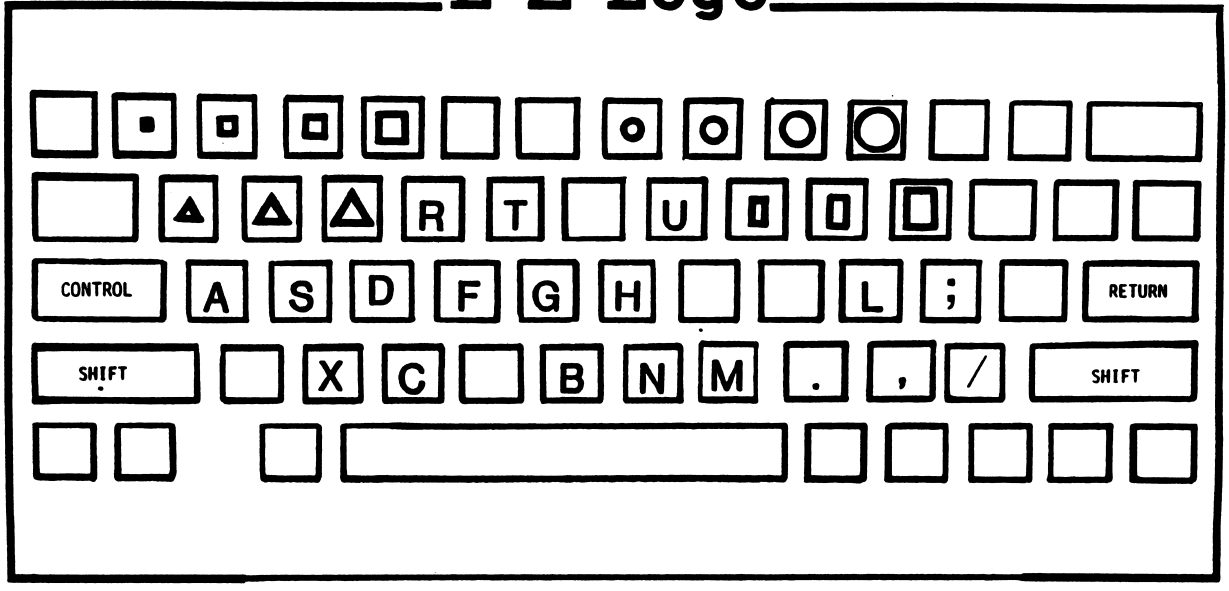


KEYBOARD GUIDE

Apple //e and //c



E Z Logo



SHAPE KEY CARD (For Activity 24)

A keyboard card can be used instead of stickers for the top row of keys. This card will identify the shapes produced by the keys on the top row. Stickers applied to the tops of these keys would obscure either the numbers or symbols. Use of a keyboard card will avoid this problem and eliminate the need for eight shape stickers—four for squares (1,2,3,4) and four for circles (7,8,9,0). Shape stickers will still be needed for triangles (Q,W,E) and rectangles (I,O,P).

To make a keyboard card, follow the steps below:

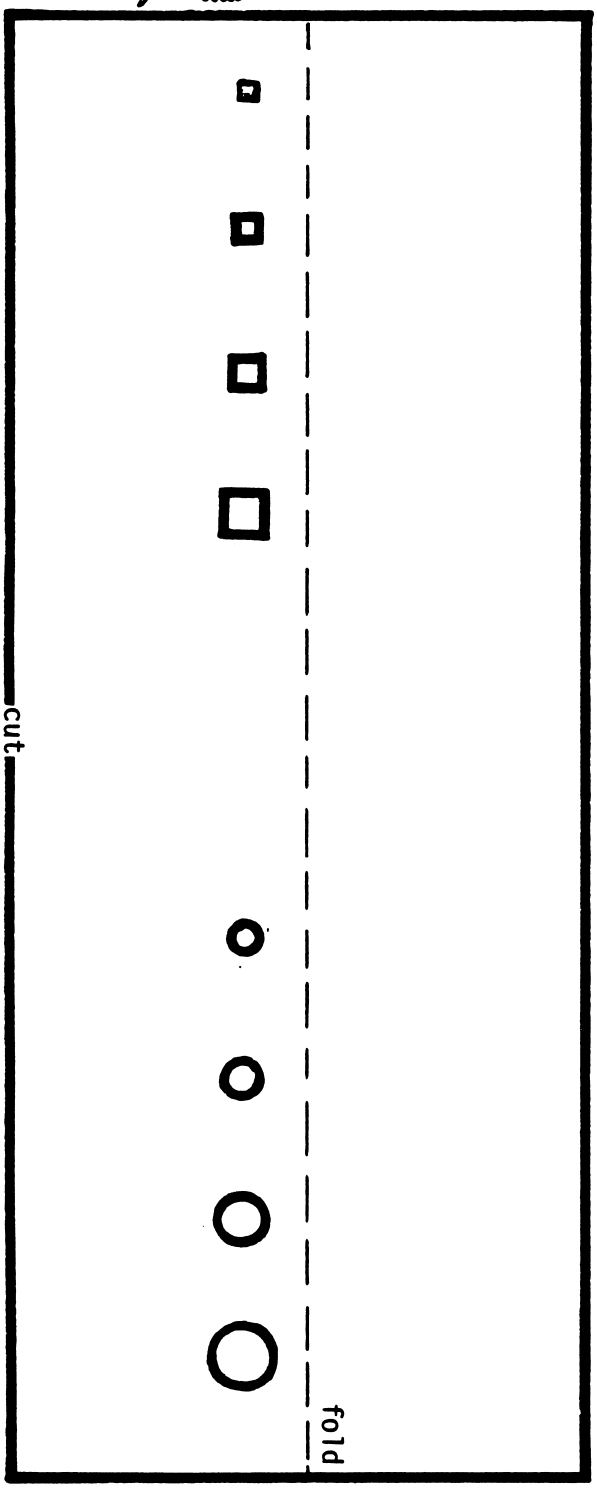
1. For each computer, duplicate a copy of the keyboard card on page 78.

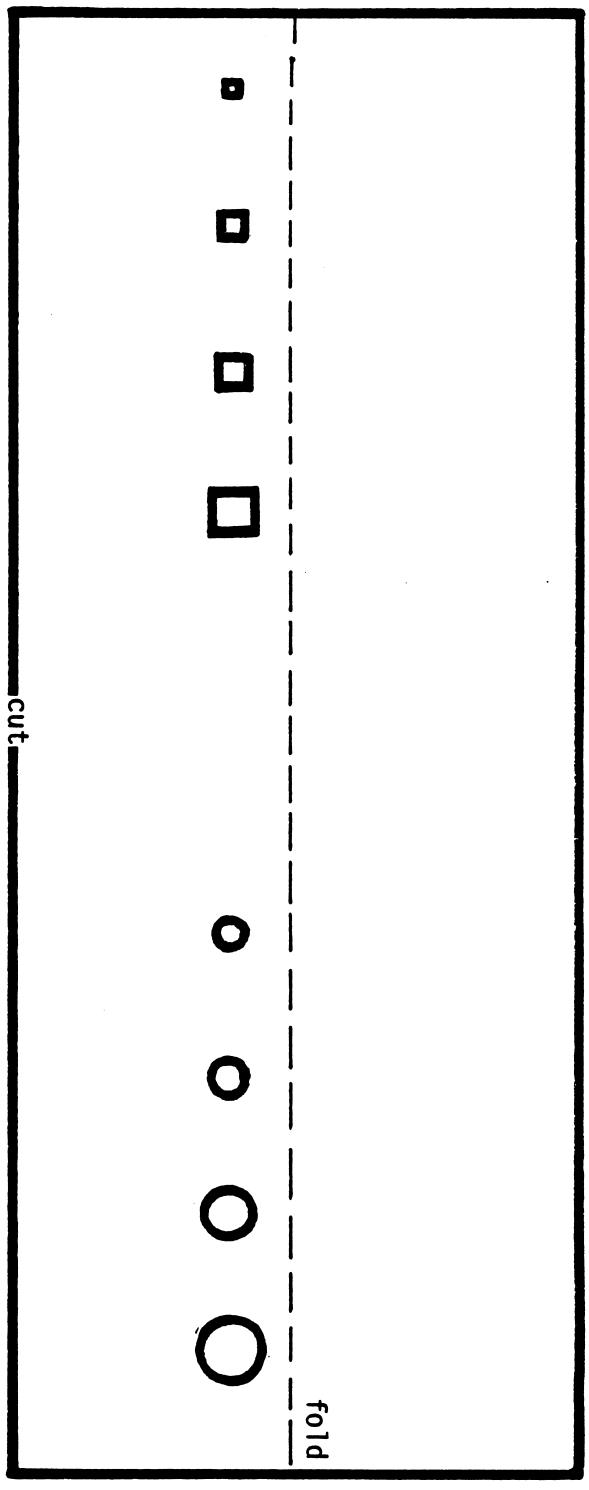
2. Trim around the edge of the card and fold along the dotted line.

3. Mount the card on tagboard and laminate (optional).

4. Insert the keyboard card in the space behind the top row of number keys and line it up with the proper number keys.

Shape Key Card





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  2) note the *brand* and *model* of the equipment involved, as well as the type of *printer card* used if the problem concerns a printer;
  3) write or call the Help Line to describe the problem **(612/481-3660)**.

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