TERRAPIN
A DIVISION OF HARVARD ASSOCIATES, INC.

A LANGUAGE FOR LEARNING THAT SAYS EXPLORE!

LOGO

EXPLORATIONAL SOFTWARE FOR ▲ MACINTOSH ▲ WINDOWS ▲ DOS

PC Logo 2
FOR WINDOWS™

New PC Logo Version 2

Enhanced turtle power

Easy graphical interfaces

New advanced features

Dozens of useful tools and example programs

WHAT'S NEW. . .

PC Logo 2 for Windows—the new powerful version of Logo for Windows 3.1 and Windows 95—see page 3

RoamerWorld—a Logo-like programming language with a graphical focus based on the Roamer floor turtle—see page 6

Introduction to Robotics—extend turtle power from the computer screen into the classroom with this economical introduction to the exciting world of robotics—see page 6

Additions to the Logo library —see page 10

CONTENTS

DEAR LOGO ENTHUSIAST

Welcome to the latest Terrapin Software catalogue. As always, Terrapin is committed to bringing you the highest quality in Logo products and upgrades for your classroom or home.

On page 3 you will find our new product, PC Logo for Windows version 2. Be sure to check out Brian Harvey's *Computer Science Logo Style*, and Seymour Papert's latest book, *The Connected Family*, on page 10.
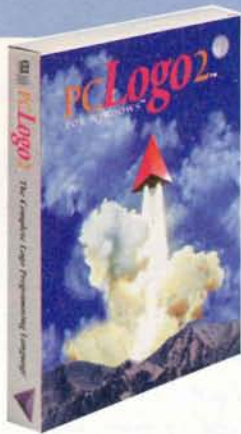
We invite you to visit our new website:

www.terrapinlogo.com

where you will find all our Logo products as well as special offers and announcements.

Happy Logo Adventures!

PCLogo

PC Logo is a powerful version of Logo for IBM PC and compatible computers. Suitable for beginners as well as experienced programmers, PC Logo is easy to use, versatile, and flexible.

Create fun projects!

PC Logo offers standard turtle graphics and word and list commands. In addition, special features help you create exciting projects. Move as many turtles as you like around the screen at different speeds. Design new costumes for your turtles to wear. Write programs that play music or use the mouse. Just think of the programs you can create!

Advanced features, too!

Experienced programmers enjoy advanced features of the language, such as property lists, arrays, recursion, stream I/O, and access to Windows. With the ability to customize your environment, PC Logo offers a complete programming experience.

Powerful and easy to use

PC Logo offers complete integration into a Windows environment. Separate windows for commands, graphics, editing, and debugging along with toolbar buttons, menus, and keyboard shortcuts make Logo fast and easy to use. And you can incorporate your PC Logo designs and programs into other applications because PC Logo saves your work in standard file formats. Load any .BMP or .PCX graphics file into Logo to add pizzazz to your programs.

Introducing PC Logo 2

PC Logo for Windows version 2 has all the features of the original PC Logo for Windows and adds many exciting enhancements.

- Use the new dialogs to set up one or more turtles with all the characteristics you want in one easy step.
- Design your own rotating turtle shape in the built-in shape editor or use one of the 124 ready-made turtle shapes.
- Use any .BMP file as a background or give it to a turtle to wear as a shell.
- Undo and redo graphics commands.
- Use up to 15 decimal places with new double-precision numbers.
- Add your favorite video clips and sound files using the multimedia commands.
- Try the new demos, games, and sample files.
- Control a robot turtle using the new built-in robotics commands.
- Learn about all the new features using the Upgrade Handbook, Quick Reference Guide, and updated on-line Help.

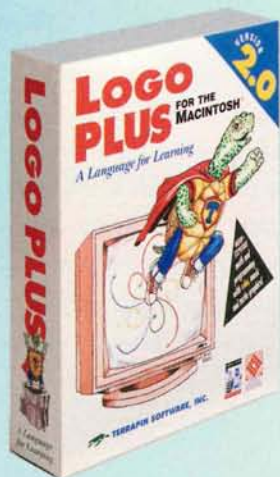**PC Logo has been endorsed by the National Education Association as "NEA Teacher-Certified."**

Logo PLUS

Logo PLUS for the Macintosh offers 256 glorious colors, music, text, 124 rotating shapes, and games. Simple to use, *Logo PLUS* is a powerful and versatile Logo. It includes all the classic Logo for the Macintosh commands—turtle graphics, words and lists, and recursion. *Logo PLUS* offers more worlds to explore than you may ever use!

New features

Colors! And you can:
• play music
• control the text cursor
• use 99 tools for graphics, math, shapes, programming, and text
• explore the *Logo PLUS* games—words, cards, math, and adventure!

Help!

Logo PLUS comes with help for every command. Just highlight the command and select Help.
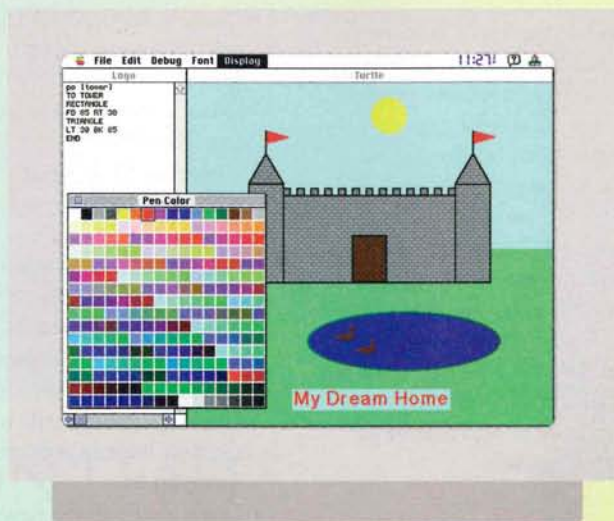
Familiar Mac interface

Both Logo and Macintosh users will feel at home with *Logo PLUS*. Pull-down menus help you print, file, and edit.

Switch from your command window to a graphics or edit window with the click of a mouse. Of course you can also create, move and resize windows from within your program.

Copy a design from one window to another. Or paste text into your graphics window. Edit procedures in different windows and selectively combine them.

Import and export text and graphics using the Clipboard and Scrapbook. You can even resize and crop Logo graphics.

Graphics features

Logo PLUS offers all the traditional Logo features, plus:
• choose from 16 or 256 colors
• edit your own colors for an unlimited selection
• preview your colors, patterns, pensize, and penmode
• select from 38 patterns to draw in or use for backgrounds or fills
• create new patterns of your own
• multiple turtles—start with 32, but add as many as you wish
• create animations
• use 124 ready-made shapes or create your own in the Shape Editor
• lock and unlock shape headings
• type text in the turtle window in any font, size, or style

Advanced features

Logo PLUS is easy to use, fast and powerful. Its multi-file editor and debugging tools let you see precisely what your procedures and variables are doing.

Logo PLUS offers arrays, strings, property lists, stream I/O, and full error-handling. Even if you don't know what these mean *now*, you should feel comfortable knowing that *Logo PLUS* will meet your needs as you learn.

Terrapin offers a network license version that supports AppleShare and other popular networks.

Get started fast!

Logo PLUS comes complete with language disk, tool programs, Guide, Reference Manual, Reference Card, and Quick Reference Guide.

"The documentation is superb! It took me along, step-by-step, and seemed to anticipate my questions."

Kinderlogo

The perfect Logo environment for kids 4-8
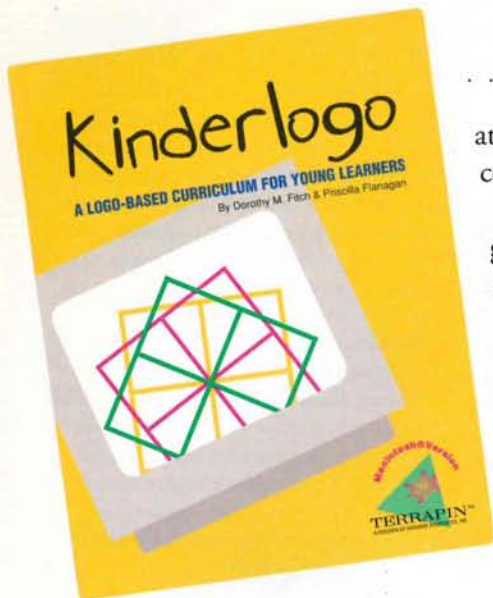
Kinderlogo provides an easy introduction to the computer and to the Logo turtle. Even the youngest student can explore letters, numbers, colors, and shapes in a Logo environment. Using simple commands, *Kinderlogo* teaches spatial awareness, cause-and-effect relationships, attributes, patterns, and problem solving in fun and varied activities, both at and away from the computer.

Kinderlogo programs are developmentally designed so that learning is easy and children can progress at their own pace. The early activities require no reading, while later ones use beginning reading skills.

New Macintosh version

Kinderlogo on the Macintosh does not require Logo for use—Logo is already built into *Kinderlogo*. Graphical menus make it easy to switch from one activity to another, and an optional button interface allows children to enter commands using either the keyboard or mouse.

Five levels of Logo exploration

Each of *Kinderlogo's* five levels introduces a set of single-keystroke commands in an exploratory drawing program. Kids press F to move the turtle forward, R to turn it to the right, and so on. Each level also offers two learning games that reinforce the new commands. Children pop on-screen balloons, maneuver the turtle through mazes, connect colored strings to kites, play tic-tac-toe, solve logic guessing games, and much more.

From Kinderlogo to Logo

Finally, children learn to teach the turtle new commands of their own. They learn the power of creating small parts to use as building blocks for more complex designs. The final projects guide them from *Kinderlogo* to the complete Logo language.

Excellent teaching resource

The *Kinderlogo* guide explains commands, suggests ways to introduce them to children, provides off-computer activities, offers pattern and design ideas, and helps you know when kids are ready to move to the next level. Parents and teachers are encouraged to let children explore, set their own pace, "play turtle," ask questions, and figure out answers on their own whenever possible.
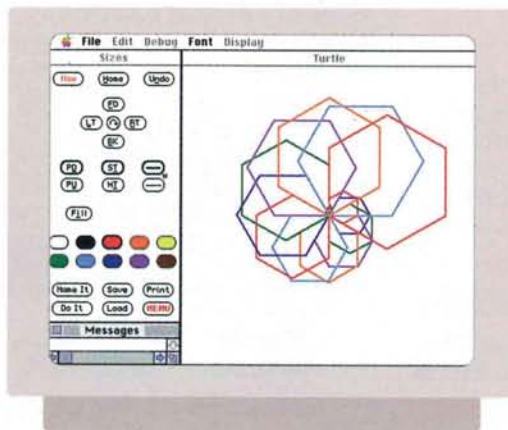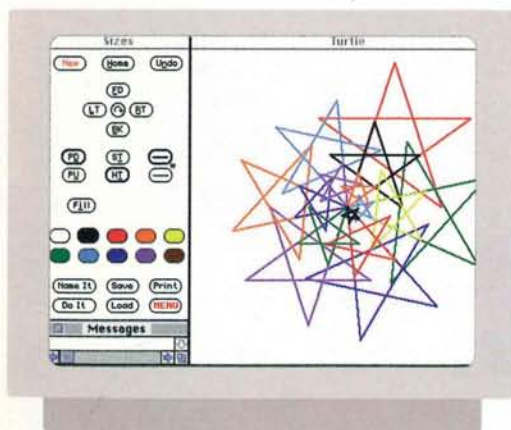
ROBOTICS

Bring your Logo experiences off the computer screen and out into the real world with Logo Robotics. Use Logo to control the motors, switches, and lights in your robot constructions. Program automatic responses to changes in light, temperature, or motion as detected by sensors. The procedural nature of Logo makes it an ideal language for managing robots and animated constructions.

Extending control of the turtle on the screen to actual robots enhances the Logo learning environment of problem solving, science, math, and logic. Construction and animation of robots provide concrete, hands-on experience with goal-setting and achievement, cause and effect, estimation and measurement, and logical reasoning.

Robots are exciting for students of all ages and stimulate interest in the sciences and engineering. Students learn to analyze feedback, explore friction and motion, and experiment with design. Young students can experiment with construction, measure distances, and solve problems concretely and visually. Advanced students can design and program their own robots!

Introduction to Robotics

Terrapin's introductory robotics kit includes everything you need to add to Logo to embark into the exciting world of robotics. It includes Logo robot commands, an interface to attach to your computer's parallel or serial port, and a Fischertechnik mobile "turtle" kit .

Start by building the turtle, following the simple illustrated instructions. Attach it to the interface and connect that to the computer. Load the special Logo files and you are ready to control the turtle from the computer by typing commands, just as you would to move the on-screen turtle!

INTRODUCTION TO ROBOTICS

PC parallel	$249.95
Macintosh	$349.95

(Please specify the version of Logo you are using.)

Advanced Robot Lab

The Advanced Robot Lab allows you to combine Logo with the Fischertechnik Experimenta kit to provide a complete laboratory for experimenting with robot and control technology. The Experimenta kit contains hundreds of construction pieces along with motors, switches, lights, and photo transistors.

Fifteen different computer-controlled models based on real world robot applications can be built with the kit, including a traffic light, motor winch, turtle, freight lift, fan, washing machine, sorting machine, automatic door, robot arm, and aerial rotor.

The models are presented in sequence so construction and programming concepts developed while working with one can be applied and expanded in the next model in the series. The kit is especially designed to meet the needs of computer-supported technical education and combines the excitement of robotics with experience in how such machines work in the real world.

The Advanced Robot Lab includes everything you need to add this exciting and practical dimension to your Logo explorations, including a disk with special files to add robot commands to your Logo and an interface to attach to your computer.

ADVANCED ROBOT LAB

|	
PC parallel	$449.95
Macintosh	$549.95

(Please specify the version of Logo you are using.)

Roamer World for Windows

Roamer World is a Logo-like programming language with a graphical focus, based on the Roamer floor turtle.

Roamer World software extends the use of Roamer by linking it to the computer. The interface cable allows you to copy programs created on Roamer to the computer. And you can write programs on the computer and download them to Roamer.

In addition to the computer link to Roamer, *Roamer World's* sixteen story-based activities help students learn problem solving, mapping, programming, and spatial concepts. The activities integrate the floor
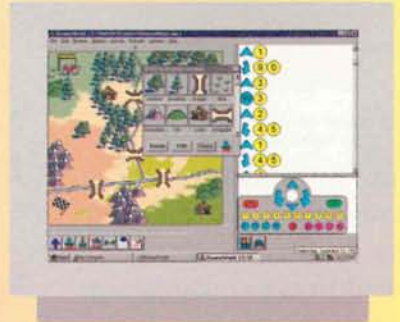
Roamer with the onscreen Roamer, allowing students to make important connections through hands-on experiences. Because *Roamer World* software works just like the floor Roamer, it is easy to move back and forth between them.

Students can explore the ready-made programs for each activity, or create their own. Built-in shapes and stamps, along with full editing capabilities, allow them to express their creativity.

Each activity includes instructions for the student and extensive Teacher's Notes, all of which can be printed as needed.

The floor Roamer is not required to use *Roamer World*—it can stand on its own as a powerful and fun way to explore programming, mapping and creative expression, and as an economical introduction to robotics.

SINGLE COMPUTER COPY	**$69.95**
COMPUTER INTERFACE	**$49.95**

(for PC parallel port)

Call for information on licensing multiple machines.

Begin Logo explorations with a true hands-on experience.

Introducing the very latest in Logo technology—Roamer! Combine the magic of the world of robotics with the fun of Logo for even the youngest child with Roamer, an easy-to-use and friendly robot.

Roamer is the ideal way to introduce Logo commands in your classroom. It brings Logo to life in a friendly and tangible way. Since Roamer has Logo already on-board, it's like having a computer dedicated to your Logo lessons. Children can touch, feel and follow the Logo turtle as it moves about.

Roamer is designed to be sturdy, with few moving parts and a simple and friendly shape. It's easy to use— with a brightly colored touchpad featuring single keystroke commands. Roamer is lightweight and robust. The battery-powered Roamer offers you hours of Logo ad-

ventures—exploring, discovering and building.

Available kits make it possible to customize Roamer—eyes, nose, ears, a tail—let kids design their own! There are even different shells to change Roamer's color to red, yellow, or green. Insert a colored marker pen into the Pen Pack attachment and watch Roamer draw fascinating designs.

Roamer can also play music. Pitch, duration, and tempo add an extra dimension to any Logo lesson. A simple and clear User Guide and Activity Book accompany Roamer and will start your students on their way to hours of Logo fun and learning.

$299.95
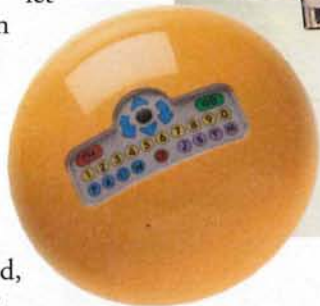
Roamer Accessories

PEN PACK $39.95
Put paper on the floor, insert a pen, and watch Roamer leave trails, draw shapes, and practice routes. Create lines in up to four different colors! CONTENTS: 3 pen brackets, 6 screws, 4 pen holders, 12 colored pens, Activity Book.

ROAMER SHELLS .... 4 FOR $39.95
ROAMER SHELLS .... 12 FOR $79.95
These colorful "turtle shells" expand opportunities for creative exploration with Roamer and make it easy for students to create costumes for Roamer while others practice programming it.
CONTENTS: 4: red, yellow, grey, and green
                      12: 3 each of the above colors

PLAYING CARDS $24.95
These durable playing cards make it easy for students to remember and debug the commands they give to Roamer. The activities help teachers use the cards to introduce Roamer commands.
CONTENTS: 2 packs of 84 playing cards, Activity Book.

2 RECHARGEABLE BATTERIES $59.95
RECHARGER UNIT $59.95
Rechargeable batteries cut the cost of using Roamer over the long term. Use one Recharger Unit for several pairs of batteries.

ROAMER COMPUTER INTERFACE $79.95
Connect Roamer to your IBM or compatible computer. Upload a program from Roamer, save it, display it, print it, or merge it with another program.
CONTENTS: serial connector cable, Manual, disk

CONTROL BOX $99.95
Attaches easily to Roamer. Use the Sensor, Light, and Motor Packs to give your students more control and new challenges.
CONTENTS: Control Box, connecting cable, screwdriver, Guide.

LIGHT PACK $59.95
Explore lighting, special effects, and communication with Roamer. Flash different colors, give Roamer headlights, explore ways to attach lights, and organize games. Control Box required.
CONTENTS: One flasher unit, 8 pre-wired LEDs (2 each red, green, yellow, and amber), 2 white lamps, 5 suction pads, Activity Book.

SENSOR PACK $59.95
Teach Roamer to hear, see, and touch. Roamer can search out a light, react to sound, and signal when it bumps into another object. Control Box required.
CONTENTS: 1 light sensor, 1 sound sensor, 2 touch sensors, 1 push-button, Activity Book.

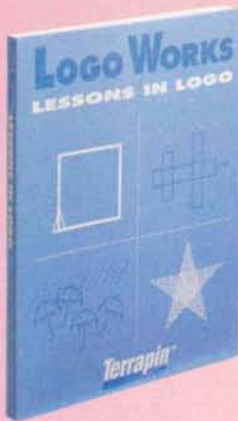**MOTOR PACK** $59.95
Add your own construction kit materials to these motors and control them with Roamer. Rotate the two DC motors in units of time. Now Roamer can lift weights, turn a paddle wheel or control a crane. Control Box required.
CONTENTS: 2 DC motors, 1 stepper motor, 2 mounting brackets, Activity Book.

LOGO CURRICULUM

Logo Works: Lessons in Logo
by S. Cory and M. Walker

"The ideal introduction to Logo," says Donna Rosenberg, Logo Action Research Collaborative. This comprehensive curriculum introduces and integrates Logo into 4th to 8th grade geometry and computer literacy classes. Teachers report that Logo Works is clear, detailed, and easy-to-use. Students say that it is fun and challenging.

Logo Works assumes no knowledge of computers, programming, or Logo. Logo Works is designed for middle-grade students, younger gifted students, and older students needing remedial help. Developed by teachers as a complete curriculum, Logo Works is carefully sequenced and broken into easy-to-understand sections.

Logo Works can be used successfully by all teachers, especially those with little Logo experience.

The Student Book's seven chapters are organized into 47 lessons with over 250 activities. In each lesson, a Narrative presents new concepts, on and off computer Activities reinforce ideas, and Explorations encourage students to extend their thinking. The 262-page Student Book includes an Activities Disk with 12 Logo files that offer additional challenges.

Logo Works is an exemplary guide on how to teach Logo and a wonderful way to explore math and geometry—the best introduction to Logo available.

The Site License version includes reproducible Student Book pages, and a Teacher's Manual with objectives for each lesson, points to emphasize, new vocabulary, solutions to projects, and help with potential problems. The binder format offers you flexibility to adapt it as you learn, while providing a straightforward Logo framework for you to use immediately.
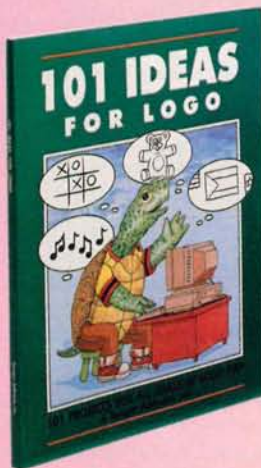
| GRADES 4–8 | SITE LICENSE $200.00 | SINGLE USER $24.95 | TEACHER MANUAL $19.95 |

101 Ideas for Logo
by Dorothy M. Fitch

101 Ideas for Logo is packed with classic Logo projects from simple ideas for beginners to complex ideas that challenge even the most experienced Logo programmer. Projects use turtle graphics, words and lists, music, shapes, animation, and multiple turtles. There are enough ideas here for months of Logo adventures!

Each project is categorized by Logo skill level and focus (turtle graphics, words, numbers, using variables, or recursion) and gives you lots of areas to explore. You are limited only by your imagination!

With the site license, you can distribute project sheets in the computer lab when you teach Logo or in the classroom as you teach other subjects. Many of the ideas tie directly into math, science, language arts, social studies, or music curriculum.

| GRADES 3-10 | SITE LICENSE $100.00 | SINGLE USER $19.95 |

### Logo Math: Tools and Games   by Henri Picciotto

Logo Math: Tools and Games is a collection of powerful programs designed to help students in grades 6–12 investigate a variety of mathematical concepts. Through 14 flexible tools and challenging learning games written in the Logo language, students become actively involved in mathematical explorations, inquiries and problem solving. Logo graphics provide a visual model, bringing new insights to difficult concepts.

The guide offers the teacher a quick view of Logo and an explanation of each program, as well as reproducible reference sheets for the tools and student score sheets for the games. The scope and variety of these programs provide the mathematics teacher with a wealth of activities and instructional materials. The programs demonstrate the incredible power of the computer as a teaching tool.

GRADES 6–12	SITE LICENSE $150.00	SINGLE USER $59.95
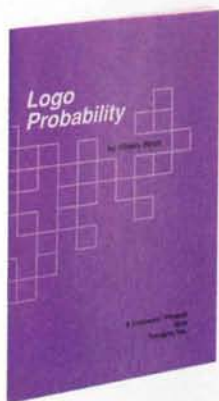
Logo Probability   by Alison Birch

Logo Probability adds a new dimension to the study of probability. The 12 activities offer the reader a unique opportunity to make predictions, try ideas, test hypotheses and examine results. The power of the computer makes it easy to run long experiments, repeat random sequences and record data. Designed to accompany several popular middle school mathematics texts, the package contains a Teacher's Guide and a Probability Disk. The Site License includes reproducible student activities for distribution in the computer lab or classroom.

GRADES 5–9	SITE LICENSE $50.00	SINGLE USER $23.95

The Logo Project Book   by Alison Birch

The Logo Project Book presents a clear and simple introduction to list processing in Logo. It appeals to both students and adults who are familiar with turtle graphics and want to have fun learning about Logo's non-graphics capabilities. Students are motivated to explore language through 14 exciting projects, such as palindromes, horoscopes, anagrams and secret codes. The Activities Disk contains 25 sample programs and tools for designing original programs. Challenges at three skill levels accompany each new idea, and sample answers are given in an appendix.

GRADES 5 & UP	SITE LICENSE $150.00	SINGLE USER $24.95

NEW ARRIVALS AT THE LOGO BOOKSTORE

Computer Science Logo Style, Second Edition
by Brian Harvey

Volume 1: Symbolic Programming

This is a Logo programming text, featuring natural language processing (words and lists) including three example project chapters. Functional programming style is emphasized, including detailed explanations of recursion and of higher-order procedures.

Volume 2: Advanced Techniques

Volume 2 alternates tutorial chapters on advanced features of Logo with case studies. The language features include nonlocal exit, program as data, property lists, and macros. Projects include a utility to find differences between two versions of a file, a general pattern matcher, and a compiler that translates BASIC programs into Logo.

Volume 3: Beyond Programming

Undergraduate level computer science topics such as automata theory, discrete mathematics, algorithms, programming language design and compilation and artificial intelligence are the focus of Volume 3. The ideas are illustrated with concrete Logo programs, such as a Pascal compiler, written in Logo, that compiles into a simple assembly language.

PER VOLUME	$35.00
COMPLETE 3-VOLUME SET	$85.00
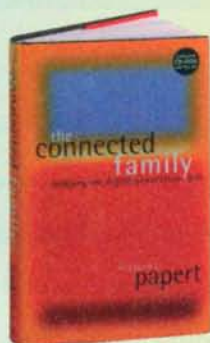
The Connected Family— Bridging the Digital Generation Gap
by Seymour Papert

The digital age has come home, and parents everywhere wonder about its revolutionary effects on their children and families. As the personal computer becomes standard homework equipment, the Internet replaces the library and computers offer new forms of play.

Seymour Papert, the country's foremost expert on children and computing, speaks out in this groundbreaking new book. *The Connected Family* is essential reading for everyone who wants to understand the new world in which we and our children live.

$22.95
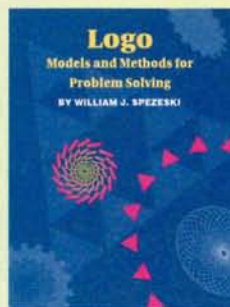
## Logo: Models and Methods for Problem Solving
by William J. Spezeski

Explore the world of fractals, design colorful string art, program stunning spirals and butterfly curves, develop a challenging dartboard game, create animation effects. These are only a few of the challenging activities that are offered in this new book.

This fun approach to Logo uses a myriad of graphical activities to teach Logo and problem solving skills. Each chapter poses a variety of challenges, offers helpful tools, suggests enhancements, and exposes students to powerful problem solving strategies.

The focus of the book is "What can you do with Logo?" Here you'll find out, through interactive computer games, elegant geometric designs, eye-catching animations, detailed examples, and over 200 illustrations.

GRADES 9 & UP	$49.95
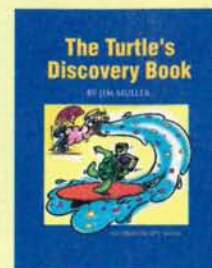
The Turtle's Discovery Book
by Jim Muller

The Turtle's Discovery Book is for people of all ages—anyone who wants to share the fun and excitement of exploring Logo on and off the computer. It is particularly designed to be used in a home learning environment where children and their parents can share computer activities.

Join our intrepid explorers, Logy, the Logo Turtle, and Morf, the irrepressible rabbit as they take on the challenges of Logo. *The Turtle's Discovery Book* provides an easy-to-read tutorial for learning Logo. It's about exploring new ideas, about what you can do with Logo.

The book has lots of activities for young children, and more advanced exercises for the more experienced explorer. The final chapters deal with game design, list processing, and 2- and 3-dimensional design.
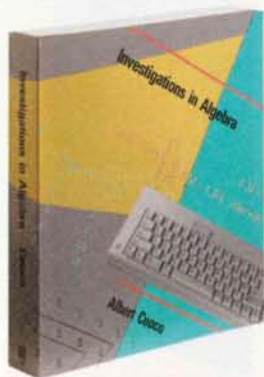
There's string and wire art for young explorers and behavior studies and simulations for the more adventuresome student.

| ALL AGES	$29.95

Investigations in Algebra by Albert Cuoco

Investigations in Algebra uses Logo to explore combinatorics, number theory, the study of discrete functions, and other topics, departing from a preoccupation with calculus as the ultimate goal of and the universal introduction to advanced mathematics.

This approach encourages students to participate actively in exciting mathematics, developing in them a facility for abstraction and an appreciation for the power of mathematical methods. The projects in the book have been extensively tested by students at Woburn High School in Woburn, Massachusetts.

GRADES 9 & UP   **$29.95**
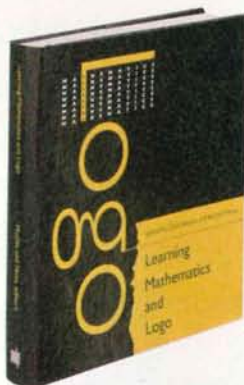
Learning Mathematics and Logo Edited by Celia Hoyles and Richard Noss

The original essays in *Learning Mathematics and Logo* summarize a decade of research and curriculum development using Logo. They discuss curriculum, learning and mathematics, and illustrate the ways in which Logo continues to provide a rich learning environment.

Essays include a discussion of the link between Logo and the school mathematics curriculum, and focus on the ways in which pupils' Logo activities relate to and are influenced by the ideas they encounter in the context of school algebra and geometry.

The second section discusses teaching styles and strategies, with questions such as: What range of learning styles can the Logo setting accommodate?

GRADES 11 & UP   **$49.95**

Interactive Problem Solving Using Logo by Heinz-Dieter Boecker

This book is unique in that its stress is not on the mastery of a programming language, but on the importance and value of interactive problem solving. *Interactive Problem Solving* focuses on several specific interest worlds: mathematics, computer science, artificial intelligence, linguistics, and games; however, the approach can serve as a model that may be applied easily to other fields. Those interested in symbolic computing will find that this book provides a gentle introduction from which one may move on to other, more advanced computational frameworks or more formal analysis. What is of primary importance, however, is the book's ability—through its presentation of rich, open-ended problems—to cultivate crucial cognitive skills effectively.

GRADES 9 & UP   **$55.95**
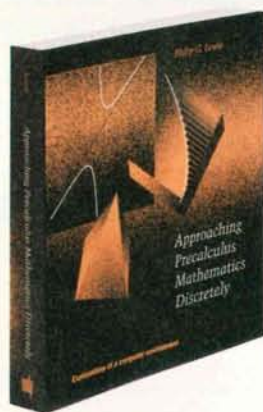
### *Approaching Precalculus Mathematics Discretely* by Philip G. Lewis

Approaching Precalculus Mathematics Discretely introduces concepts of discrete mathematics through the computer, making them easier to teach and more fun to learn. It shows how the Logo language can be used to apply and explore much of the material in standard high school advanced algebra and precalculus courses. The book develops sophisticated programming techniques in conjunction with mathematical concepts that make it a model for teachers looking for ways to integrate computers into the mathematics curriculum. This book shows how to use Logo to explore basic mathematic functions and then sequentially introduces mathematic concepts with Logo examples, concluding with suggestions for further explorations.

GRADES 9 & UP   **$24.95**

LOGO LIBRARY
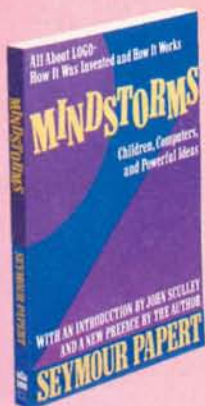
Mindstorms: Children, Computers and Powerful Ideas

by Seymour Papert

Mindstorms: Children, Computers, and Powerful Ideas presents an exciting vision of education for the future—the collaboration between computers and children. Computer-aided instruction no longer needs to mean "using computers to 'program' children." Papert's work with children and the Logo language enables children to program the computer, master a powerful technology and come into contact with some of the deepest ideas from science, mathematics, and model making. *Mindstorms* states the intellectual background for Logo and explores its profound implications.

$13.95
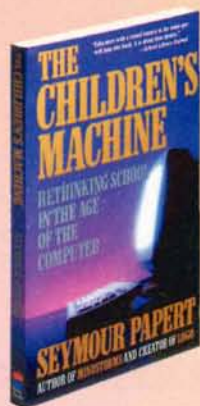
The Children's Machine

by Seymour Papert

The Children's Machine: Rethinking School in the Age of Computers is the long-awaited sequel to *Mindstorms* by Seymour Papert, the noted educational philosopher and Logo educator. *The Children's Machine* is both a "how-to" book for parents and teachers and a "self-help" book for learners of all ages who are frustrated when they see others mastering a skill more easily than they do themselves. It includes a provocative analysis of the nature of knowledge and learning and a critique of the organization and structure of the current educational establishment. Papert's vision provides a beacon pointing the way to the future of education.

$12.95
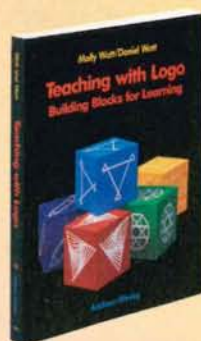
Teaching with Logo

by Molly & Dan Watt

Teaching with Logo is a unique source book offering educators a wealth of information about teaching with the Logo programming language. Designed to bring together the educational philosophy and the practical, hands-on use of this powerful language, *Teaching with Logo* demonstrates a building block approach to Logo teaching and learning and contains many samples of students' programs and techniques for managing Logo in the classroom.

Molly and Dan Watt are two of the foremost names in Logo and educational computing. *Teaching with Logo* reflects Molly's expertise in the classroom at the elementary and graduate level, and Dan's work with the MIT Logo group.

$24.95
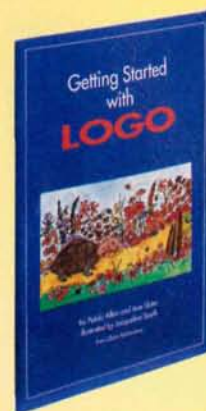
Getting Started with Logo

by Petula Allen & Ann Slater

These beginning Logo activities help your class get started with Logo. Easy to use, the lessons give students a clear insight into Logo and help them develop math concepts and skills.

Starting with ideas for off-computer games, children practice "playing turtle" by giving and following instruction. At the computer, they learn to move the turtle, repeat patterns, perform calculations, write procedures, and use variables.

Teachers using robotic or floor turtles will find many useful activities and ideas for exploring such topics as turtle movement, estimation, number lines, and mapping.

The reproducible pages are packed with lesson ideas, teaching tips, and activities.

$19.95

LOGO LIBRARY
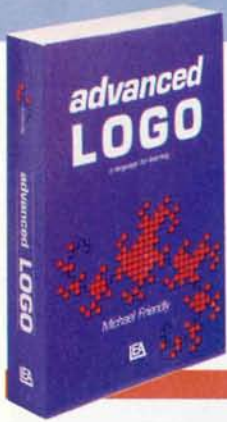
### *Advanced Logo* by Michael Friendly

Advanced Logo deliberately seeks to invite the reader into this broader conception of Logo as a "real" programming language. It also seeks to extend this fuller view of Logo by illustrating how programming in Logo is an educational methodology for bringing children into contact with many educationally important ideas—a bridge to take the reader from a basic fluency in Logo to an understanding of more advanced issues—not just a verbal description; it is filled with exciting exercises and projects to try at home or in school.

GRADES 11 & UP $45.95

Exploring Language with Logo by E. Paul Goldenberg and Wallace Feurzeig

Exploring Language with Logo is about language and the study of language through Logo. The book begins with a study of basic grammar used to make a sentence and a simple poem. It continues by exploring prefixes, suffixes, word structure, and phonology. Each linguistic concept coincides with a list processing concept of Logo. *Exploring Language with Logo* provides a new and refreshing framework for teaching Logo list processing and linguistics.

GRADES 11 & UP $24.95
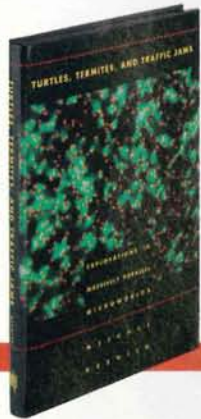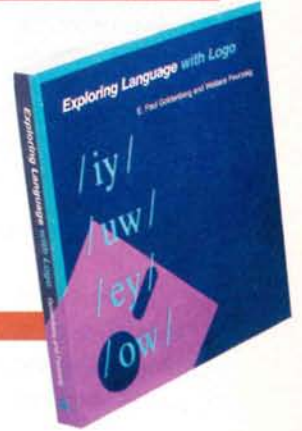
Turtles, Termites, and Traffic Jams by Mitchel Resnick

Turtles, Termites, and Traffic Jams describes innovative Logo-based computational tools and activities that can help people (even young children) develop new ways of thinking about decentralization, with examples in many different domains.

This wide-ranging exploration into the non-intuitive world of decentralized systems and self-organizing phenomena brings together ideas from computer science, education, system theory and artificial life to make the notion of self-organization more accessible.

**GRADES 11 & UP $24.95**

The Well-Tempered Turtle by Susan Anderson-Freed & Lisa J. Brown

This new curriculum uses Logo as a means of testing and exploring programming concepts. It emphasizes learning Logo applications and highlights Logo's unique programming power. Each chapter is independent and may be used in any order.

The Well-Tempered Turtle has been extensively field-tested in introductory college level computer science courses and is appropriate for students of high school and college age. By utilizing Logo to implement examples, *The Well-Tempered Turtle* has students quickly writing their own programs to explore computer science concepts. Students build on simple introductory programs to explore increasingly complex subjects, progressing, for example, from line drawings to fractals and bit-mapped graphics.

The Well-Tempered Turtle also provides a complete introduction to computer science, covering such topics as data types, control structures, graphics, natural language processing, and music. Appendices provide supplementary information on the history of computers, mathematics and grammar.

GRADES 9 & UP $49.95
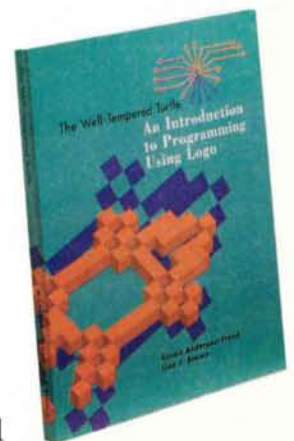
CRYSTAL RAIN FOREST

Selected as the best primary school software in England, *Crystal Rain Forest* is a great way to learn Logo. This adventure game is exciting, the colors bright, the activities fun, with just the right amount of clever animation and humor.

Crystal Rain Forest teaches Logo through a progression of activities, each a natural part of the plot. Students learn to move and turn (like a turtle), estimate distances and angles, repeat patterns, experiment with variables, and build procedures.

"Combination adventure game, problem-solving software, and simple Logo language"

As kids explore Bridgetown, they hunt for clues and help local residents. They control robots, mend Esme's bridges, and help Herbert pack medicinal leaves into boxes to earn money to buy equipment. Then it's off to the river to find the crystals in the rain forest. After a few more puzzles, the students have learned enough to make crystal shapes using *Crystal Logo*, an easy-to-use version of Logo. Although *Crystal Logo* is part of the adventure, it can be used separately and its command names can be modified to match any Logo.

Flexible features!

Start at any of 26 locations or save your position and begin from there later. (Students can save their positions separately.) Select from two levels of difficulty for the challenges and print or save any screen.

Since they can't explore everything the first time through, your students will want to use the software again and again. It's great for home or school.

ORDERING INFORMATION

Crystal Rain Forest

Grades: 3-8

Contents: disk, 32-page Guide, 2 maps, and 4 rain forest animal cards.

Home	**$49.95**
School	**$59.95**

(includes 24-page Teacher's Guide)

Site License	**$250.00**

(includes large maps, task cards, network version)

PC version requires: MS-DOS 3.1 or later, 286, 640K, VGA, Microsoft compatible mouse. Compatible with Windows and SoundBlaster Macintosh version requires: System 7, color, 2MB

Rain Forest Activity Pack

Using over 100 pages of reproducible rain forest activities, your students can explore all aspects of rain forests. Students will label maps, write poetry, study plant and animal biology, draw tessellations, even turn your classroom into a rain forest. The lessons include all the information you need, with templates for all projects ready to copy, color, cut, and fold. Easy for you to present, fun and educational for kids to do, these activities help you plan a complete rain forest unit.

GRADES 3-8	$29.95

The Crystal Kit

Explore the sparkling world of crystals with this kit. Start by growing your own simulated citrine crystals with the mix provided. Then try the six simple experiments in the enclosed book to discover the natural wonder in these fantastic formations!

GRADES 3-8	$18.95

"LOGO LEARNING IS LIFE-LONG."

The classic computer language

Do you want to see your classroom invigorated by students really enjoying the process of learning? That process is illuminated—electrified—by Logo, a teaching tool like no other.

The classic computer language

Developed in the 1960s at MIT and now used all over the world, the Logo language demystifies math and programming by immersing students in concepts and principles easier to grasp in a hands-on experience. Yet Logo inspires explorations far beyond math, carrying students from one learning adventure to another. Logo challenges children to advance—step by step.

Experience is the best teacher

Logo enables students at every level to discover for themselves the results of logical thinking and the rewards of concentration, creative problem solving, and successful communication. With Logo, students learn how to learn—by jumping right into a question, exploring its dimensions, experimenting, and working out one or more solutions.

Soon enthralled, students learn to conceive ideas and develop projects, to organize them into manageable components, to modify and "debug" their own work. They add vocabulary and procedures that customize Logo to their needs, empowering them to construct increasingly complex projects.

More than friendly, fun, and fast

Logo has the power to translate successful computer and classroom interaction into self-confidence and sustained interest in learning. Working together or independently, guided by their teacher, students discover that Logo's performance improves their own, and the rewards are far-reaching. In today's classrooms, from kindergarten to college, the word for dynamic learning is Logo.

ECONOMICAL LICENSING FITS ANY SCHOOL BUDGET!

To meet the needs of educators who wish to use Terrapin products on more than one computer, we offer low-cost licensing options.

Multiple Workstation Licenses for Logo

The Multiple Workstation License offers significant savings over single copy purchases and is designed to be flexible and economical. Each license includes a complete set of Logo materials, including:

- Logo software, including Logo, editor, on-line Help, utilities, and example programs
- Logo documentation, including Tutorial, Reference, and Glossary
- Multiple Workstation License Agreement covering licensed workstations
- *Turtle Talk* newsletter subscription

The Multiple Workstation License fee for Terrapin's Macintosh, DOS, or Windows version of the Logo language is $100 plus the appropriate per-workstation fee, based on the number of workstations licensed:

Base fee	$100.00	plus
1-20 workstations	$15.00	each
21-40 workstations	$12.50	each
41-100 workstations	$10.00	each
100+ workstations	call	

Logo can be loaded on licensed workstations from floppy disk, CD, hard disk, or network file server. Upgrades to newer versions, cross-platform conversions, and multiple platform licenses can be easily arranged. Increase the number of licensed workstations in an existing Multiple Workstation License at a future date by paying only the per-workstation fee based on the cumulative number of workstations licensed to date.

Curriculum Site Licenses

Terrapin offers site licenses for Logo-based curriculum products. The advantages are many:

- Teachers in many disciplines can share the materials freely.
- The additional teaching materials are a great resource.
- You may copy the student activities, reference material, and file disk as needed.
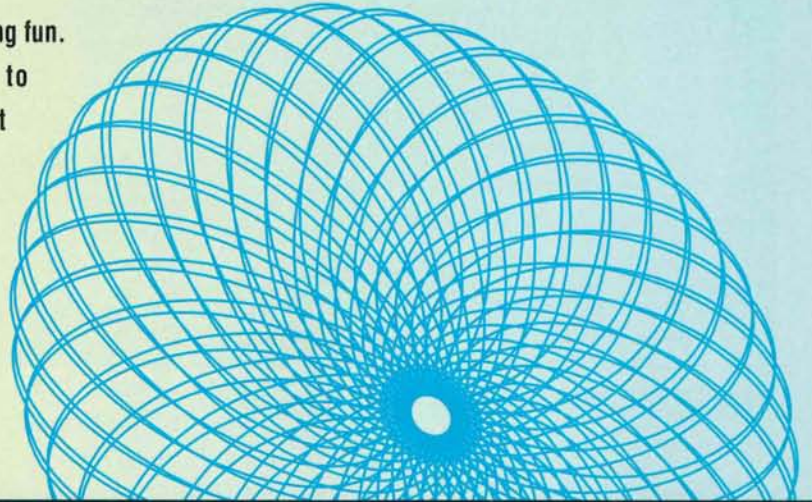- Your license covers your entire building and an unlimited number of computers.

See product listings for licensing fees.

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