



Review

Reviewed Work(s): Learning about Computers. Teacher's Resource Book by Gloria M. Cathcart and W. George Cathcart

Review by: Jeff Bloom

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tion" explains scientific notation. "Estimating Answers" explores ways of finding areas of figures with decimals. It also explains analogs and the history of digits. A progress report is offered at the end of this diskette to check students' mastery of topics presented in the series.

In conclusion, this series is an excellent review-and-practice series on decimals for advanced students. It requires prior knowledge of the material and should not be used as a tutorial without guidance from the teacher.—*Joy Lewallen, Fort Bend ISD, Sugar Land, TX 77478.*

Decimals: Practice (adapted from **Decimal Darts** by Sharon Dugdale, David Kibbey, and Helen Leung). *Apple II*, Iie, Atari 800, disk, backup disk, and support manual. 1982, \$59.95. Control Data Publishing Co., P.O. Box 261127, San Diego, CA 92126.*

This "dart game," complete with colored balloons that pop, would be appealing to most students of any age or academic ability. In the program, balloons are arranged at random on a number line for the player to "pop" by inputting the correct decimal number that corresponds to the location of a balloon.

Students study the number line and enter an estimate of the decimal location of the balloon. A correct answer launches a dart that "pops" the balloon; an incorrect answer sticks in the number line and is recorded. The computer asks if help is needed but gives only two help answers and then encourages the student to "shoot one yourself."

This package, recommended for intermediate students, contains four parts. An introduction explains how the game is played and includes examples and practice. The two lesson parts contain eight levels in the first and ten levels in the second. An extra game is offered as a fourth part. The program is in color, and sound is available.

Included in the package are a manual that provides a description of the levels, strategies for use in the classroom, and student materials, including sample worksheets and recordkeeping sheets.

The objective of the *Decimal Practice* lessons is to improve students' skills with decimals by emphasizing accurate perception of decimal intervals on a number line. While involved in an animated dart game, the students are motivated to identify decimal fractions on a number line. Integers serve as endpoints in the first lesson and decimals in the second lesson. Negative numbers are included as an option. The difficulty increases with each level, and the balloon placement is randomly generated.

This package presents a creative approach to practice with decimals that not only is appealing in its format but also allows students to see how decimals relate to integers.—*Joy Lewallen.*

Place-Value Place. *Apple II, Iie, 64K RAM. 1983, \$29.95 (backup copy \$15). Inter-Learn, P.O. Box 342, Cardiff, CA 92007.*

Place-Value Place contains two related activi-

ties designed to help children in grades 1–6 learn the concept of place value. The first activity is called "A. Calculator" but is actually more like an electronic abacus with an apple representing 1; a bushel of apples representing 10; a crate of apples, 100; and a truck of apple crates, 1000. As a student selects a place-value column and enters a digit, the appropriate symbols fall into that column. When the student adds or subtracts a second number, the electronic abacus shows the sum or difference. If regrouping is required, the computer shows ten symbols being exchanged for another. The graphics illustrates the place-value concepts simply and powerfully.

The second activity is a two-player game called "Applejack," which involves the same electronic abacus. In turn, each player receives a number from the roll of a die and must decide whether to add that digit to the tens or to the ones column on the electronic abacus. The player who has the largest value after five turns, without going over 99, is the winner.

A utilities option allows the teacher to turn off the sound, vary the number of columns in the first activity from one to four, or vary the number of turns in the game from one to ten.

Two ten-year-olds rated both activities as "fun." Since the first activity is open-ended, they used their imagination to pose and answer their own questions. When asked, they were able to explain the regrouping process as it was happening on the screen.

The two programs are well done technically, easy to use, and strong in educational value. One limitation, however, is that a number such as 137 cannot be represented as 13 tens and 7 ones because only single digits can be entered in each place-value column. Perhaps a future version will include columns for tenths and hundredths as well, or even expand the idea to simulate other number bases.—*Sandra V. Turner, National College of Education, Evanston, IL 60201.*

The Playful Professor Math Tutor.

Programmed by Tim Colton, Randall Don Masteller, and Edward N. Hill, Jr. Based on a game by William F. Denman, Jr. Commodore 64, diskette. 1980, 1984. Screenplay, P.O. Box 3558, Chapel Hill, NC 27514.

This drill-and-practice program aids students in the learning of addition, subtraction, multiplication, and division of whole numbers and fractions. The game involves one or two players, and the topic and level of difficulty can be specified for each player.

On the positive side, the game's format is entertaining and holds the interest level of children effectively. Children of different ages and mathematical abilities can easily play and learn together. The graphics and music add a pleasant effect to the program.

On the negative side, I question whether the game should be called a tutoring program. If a problem is answered incorrectly, the correct answer is always provided, but thorough explanations are provided in only a few sections. Also, although the graphics are entertaining, they are not instructional.

In short, I think this package is valuable as a

creative source of drill and practice.—*Elisa McClain, Dean Junior High School, Houston, TX 77040.*

New Books for Pupils

*Edited by Judith E. Jacobs
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Learning about Computers. *Gloria M. Cathcart and W. George Cathcart. 1984, \$10.95 (Canadian). Teacher's Resource Book, \$15.95 (Canadian). Gage Publishing, 164 Commander Blvd., Agincourt, ON M1S 3C7.*

Learning about Computers is a textbook aimed at providing a course in computer literacy. According to the publishers, the text is appropriate for grades 4–9 or for anyone interested in learning about computers. Although no mention is made of what version of BASIC is dealt with, it appears to be Applesoft. Occasional references are made to differences in the Commodore version.

The first three chapters focus on what a computer is and how it works, the historical development of computers from the abacus to present-day microcomputers, and contemporary uses of computers. Chapter 4 introduces algorithms and flowcharts. Chapters 5–11 focus on how to program in BASIC. The last chapter introduces some of the essentials of programming in Logo. A reserved word list in BASIC and a glossary are included.

The first part of the text presents a thorough yet concise treatment of the contextual foundations of computers and computing. The only aspects neglected are those dealing with ethics and computer crime. Otherwise, the content is quite good. However, when I read these chapters for the first time, I seriously questioned whether the readability of this section was appropriate for elementary school children. After applying the Fry readability test, the results confirmed my suspicions—the coordinates could not be plotted on the graph, which stops at grade 12. Chapters 5–12 had a ninth-grade readability level. Advanced middle school students may find the text workable, but it seems somewhat beyond the scope of general use in the elementary school. The other problem with these chapters is the photographs (black and white), which are included to increase student "motivation"; they are, for the most part, small, difficult to distinguish, and unlabeled.

The chapters on BASIC and Logo are fairly well organized. Such potentially troublesome commands as INIT are omitted from the student text (it is dealt with in the *Teacher's Resource Book*). The more advanced topics of text files and high-resolution graphics are not mentioned. Each chapter includes (1) a clear and interesting explanation of the commands and statements being treated, (2) "playing computer" exercises, (3) "Bug of the Week," (4) programs to

be unscrambled, (5) output to be matched with several possible programs, and (6) references to writing your own programs. Some chapters also include additional activities. Item 6 refers to a separate book for programming suggestions, which is somewhat disappointing. Providing students with opportunities to develop their own programs to solve specific problems would easily replace the need to have "Bug of the Week," scrambled programs, and the matching exercises that are included.

The *Teacher's Resource Book* contains a few interesting exercises and a number of master sheets, most of which are useful. Some of the more in-depth explanations of concepts and commands are helpful. A fairly extensive reference list is included.

Although this text does not appear to be appropriate for elementary school children, it is certainly worth a look for use with high school students and possibly gifted middle school students. Teachers should be prepared either to develop their own problems for students to develop programs around or to find other resources with appropriate problems—*Jeff Bloom, University of Houston, Houston, TX 77004.*

Problem Solving Using Computers, Mathematics/Science Books A-1, B-1, and C-1. Donald Buckeye and Karen Buckeye. 1984, 30 pp. ea., \$4.95 ea. Midwest Publications, P.O. Box 448, Pacific Grove, CA 93950.

Each book in this series contains thirty activities to introduce BASIC programming. They increase in degree of difficulty; thus they are, in a sense, sequential.

The layout of the books makes them convenient to use. Limited classroom reproduction is granted, and pages are divided in half and can be laminated, cut apart, and used as cards. The format of each half is brief and simple to understand.

With the answers provided on the back of each exercise, the authors recommend using the exercises in two different ways—having the student either write the program or analyze what the program asked the computer to do.

Book A-1 includes PRINT and RETURN; the use of quotation marks; computation and order of operations (with only +, -, and *); the use of the comma, colon, and semicolon; FOR-NEXT; and ROM. No line numbers are used in this book. The use of the colon (to group several commands on one line) might be confusing for some at this beginning level of programming.

This book could be used independently by most students; however, some explanation may be necessary for the properties of numbers (commutative, associative, and distributive) The text contains a slight inaccuracy—on pp. 28-30, the NEXT should be followed by the appropriate variable.

Book B-1 introduces line numbers, INT, IF . . . THEN, GOTO, RETURN, decimals, LET, less than (<), greater than (>), parentheses, INPUT, and order of operations (with +, -, *, and /).

Inclusion of the REM and explanatory PRINT statements prior to the INPUT statement could

make some of the programs more understandable. A few of the activities appear to be somewhat difficult for most students (e.g., generation of prime numbers from 1 to 50); however, they would provide a challenge.

Book C-1 deals with exponents (^), square roots (SQR), the integer function (INT), scientific notation (using E), RND, DIM, and READ DATA.

The accuracy of some of the answers (specifically, in activities 13, 19, and 21) is questionable. Activity 30 is difficult—students are asked to find errors but are not told anything about the problem. The actual program (simulating the folding of a piece of paper to find out how thick it will be after thirty folds) is very unusual; it would be most perplexing for most students.

In activity 26, the assumption is made that commas will produce four columns; there is no explanation of how to compensate for this difference if the machine does not format with four columns. No indication was given that a specific machine be used with this set of books.

All constructive criticism aside, these books can be very helpful in the classroom. Students can learn to use programming within the curriculum (and not just for the sake of programming). This series offers many suggestions for integrating programming into the mathematics curriculum.—*Adele Neuberger, Potomac School, McLean, VA 22101.*

New Books for Teachers

*Edited by Randall I. Charles
Illinois State University
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Developmental Teaching of Mathematics for the Learning Disabled. John F. Cawley, ed. 1984, 329 pp., \$31.50. Aspen Systems Corp., 1600 Research Blvd., Rockville, MD 20850.

The publisher describes this material as "written by specialists in each area, . . . a presentation of selected facets of mathematics and mathematics applications from preschool through the adult years."

Chapters 1-4 contain a discussion of learning disabilities in mathematics—their characteristics and diagnoses, issues relating to curriculum and pedagogical practices, and issues of assessment. Chapters 5-8 contain many specific suggestions for instruction and curriculum. The remaining chapters focus on ultimate learning goals for learning-disabled students, selection of materials, classroom-management and administrative options, and models for delivering services to learning-disabled students. Most chapters have an extensive bibliography, an aspect of the book that I found particularly useful.

The book is written primarily for administrators and teachers of mathematics-deficient stu-

dents in grades K-12. "Its aim is to aid in the selection among curriculum, instructional, and management options that are available for the local education agency."

The authors are quite specific in their suggestions. Both content topics and instructional procedures are carefully explained to give teachers concrete models for use in the classroom. Many excellent ideas are presented. Most of the information is research based, and appropriate bibliographies are included. This book offers an excellent overview of the issues and alternatives in the teaching of mathematics to learning-disabled students.—*Sandra Pryor Clarkson, Hunter College of the City University of New York, New York, NY 10021.*

Micros in the Primary Classroom. Ron Jones, ed. 1984, 104 pp., \$9.95. Edward Arnold, 300 N. Charles St., Baltimore, MD 21201.

The use of microcomputers in the elementary school classroom is a topic of international interest as indicated in this book, written and edited by teachers in Great Britain. *Micros in the Primary Classroom* (remember that primary includes up through grade 5 in Great Britain) is a very informative, fast-reading book intended for a wide audience, including current and prospective elementary school teachers, administrators, media personnel, teacher educators, and educational decision makers. It offers the reader a variety of insights into the ways microcomputers can be incorporated into classrooms, not only for mathematics instruction but for social studies, writing, and science instruction as well.

The book is organized into seven chapters. Chapter 1 identifies new skills needed by elementary school students if they are to cope with accelerated change and use new informational technology effectively and confidently. Some of these new skills include framing an intelligent question, recognizing a sensible answer, understanding the concept of simulation, and structuring and solving problems. This introductory chapter also identifies an emerging structure of the use of microcomputers in elementary school instruction: structured reinforcement, information handling, and problem structuring and solving.

Case studies are used in chapters 2-6 to detail five categories of this emerging structure. Chapter 2 discusses and illustrates the first of these categories—structured reinforcement. Software programs that can be used for structured reinforcement are described in subcategories: drill and practice, interactive drill and practice, practice in a meaningful context (e.g., interaction with maps or artifacts), operations and techniques (e.g., electronic work cards for computing addition problems), and conceptual programs. The chapter points out that although micros are typically used more for structured reinforcement than anything else in elementary school classrooms, reinforcement is and will continue to be an important instructional approach.

Chapter 3 covers information-handling skills by illustrating ways in which software packages

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