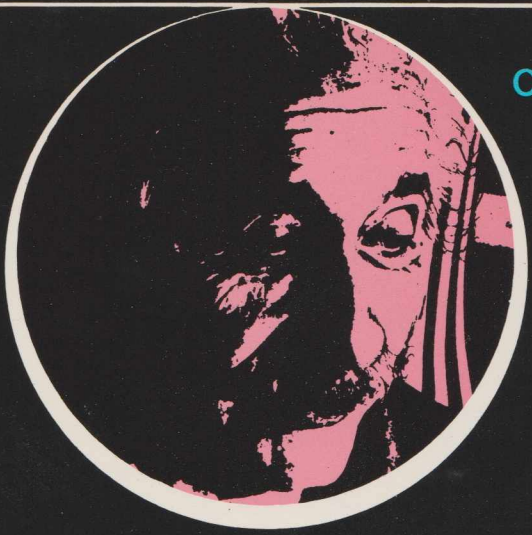
Cymbal
SOFTWARE INC.

For use with the
COMMODORE 64



CYMBAL COMPUTER EDUCATOR SERIES

Mathematics

• TUTORIALS • DRILLS • GAMES

Addition • Subtraction • Multiplication • Percent • Decimals • Fractions • Signed numbers • Algebra • Equations • Bases • Geometry • Formulas • Factoring • Monomials • Binomials • Trinomials, plus many other mathematical subjects.

6 books in this series.

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Music Theory

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Cymbal
Computer
Educator
Series

Mathematics

Introduction

The **MATHEMATICS** Educator Book for Commodore 64 was produced to teach and drill students of mathematics in those operations basic for them to become fully proficient in all mathematical operations.

The programs are designed so that students can increase the level of difficulty as they become more proficient. Therefore, the level of exercises which they try first are relatively easy to handle. When they thoroughly understand the basic operations, it is not a great feat later in the program to apply the same rule to "man-sized" figures.

There are four fundamental operations in mathematics: Addition, Subtraction, Multiplication and Division. Since all problems in mathematics usually involve any or all of these operations, it is important that students have a solid foundation in each area.

In this book, students will also be introduced to Algebra and Geometry. While these programs are only designed as an introduction to the subjects, they nevertheless represent a considerable step forward in the students' general knowledge of mathematics.

Algebra, perhaps the one area in mathematics regarded to be difficult, is actually only an extension of basic arithmetic. It uses the same operations, the same laws of order in grouping, and the same symbols as arithmetic. In fact, Algebra is also known as generalized arithmetic. Algebra differs from arithmetic in its use of letters which represent numbers. Wide use of equations and inequalities in problem solving and the inclusion of negative and imaginary numbers in its operation also differentiate Algebra from simple arithmetic.

Even though Algebra is often perceived by the student as a difficult subject, the programs in this book are designed to give a basic knowledge of the subject, so necessary for any student to proceed through the more difficult applications.

Other books in this series:

English & Spanish, History & Geography, Music Theory, Pre-Schooler and Science.

Before utilizing the enclosed program read **USER INSTRUCTIONS** carefully.

It is not the purpose of this program to present a full mathematical curriculum. This is quite impossible since curricula vary from school board to school board. The enclosed programs deal with specific subject matter that is considered essential before any student can become proficient in Mathematics.

While Level I is generally considered to be the easiest level (rising in difficulty through Level II and Level III), a student in the upper grades of school can increase his Mathematical skill by reviewing all levels. Conversely, the student in the lower grades can considerably broaden his Mathematical knowledge through the tutorials and drills at higher levels.

The final exam is a means of finding the student's level of competence. Students in Grade 7 or 8 should score in the high 70's in the final exam's lowest level, while students in Grade 1 and 2 should score 50%-60%.

Since the subject matter covered in these programs represents over 200K, the program is intensive. Despite a final edit by three separate boards it is possible that typographical errors may appear in the program. For this we apologize.

User Instructions

The programs are contained on two disks as follows:

Disk 1

LEVEL I

1. Add, Subtract, Multiply, Divide
2. Fractions
3. Percent
4. Decimals
5. One Player Game
6. Two Player Game

LEVEL II

1. Signed Numbers
2. Base Conversion
3. Equations
4. Intro to Geometry
5. Game

Disk 2

LEVEL III

1. Factors
2. Slopes
3. Substitution
4. Monomials
5. Binomials
6. Trinomials
7. Basic Algebra Tutorial

FINAL EXAM

To load a program select the appropriate disk and type in –

LOAD "*",8 <PRESS RETURN>

or

LOAD "START",8 <PRESS RETURN>

The disk will begin the loading process and the computer will display, on the screen, the process it is going through. At first it will display: SEARCHING FOR START (or *, depending on which load you requested). Once it has found the specified program, it will begin to load the program, at which time it will display: LOADING. During the loading process, you may hear a chattering from the disk drive, this is normal. Once the program has been completely loaded the computer will finally display: READY, at which time you must type in RUN and press RETURN. The program will begin to run and the main menu will appear, you may now proceed. If the main menu does not appear, attempt to load the program again.

When the main menu begins the following choices will appear:

1. **LEVEL I**
2. **LEVEL II**
3. **LEVEL III**
4. **FINAL EXAM**

Pressing 1, 2, or 3 will bring forward another menu which will allow you to choose the specific program you wish to use. The program will then load the selected program and run it. If the program is located on the other disk the computer will tell you to switch disks before proceeding. Pressing 4 will load the final exam immediately.

Function Keys

While using the programs the function keys are utilized to make use of the computer easier for the non-typist. A template is provided to show the use of these keys:

[F1] (HELP)	**MENU**	no effect
	QUIZ	takes you to tutorial
	TUTORIAL	no effect
[F3] (EXIT)	**MENU**	no effect
	QUIZ	to menu
	TUTORIAL	return to question (to menu or quiz)
[F5] (BACK)	**MENU**	no effect
	QUIZ	no effect
	TUTORIAL	to previously displayed page
[F7] (FORWARD)	**MENU**	no effect
	QUIZ	to next question (upon completion of the present question)
	TUTORIAL	next page to be displayed
[F8] (MAIN MENU)	**MENU**	to main menu program
	QUIZ	to main menu program
	TUTORIAL	to main menu program

The Function keys except FORWARD have no effect in the final exams. It is intended as an exam and is to be treated as such. The exam, once started, will complete one level at a time. Upon completion of a level, the student will be given the option of continuing to the next exam level or stopping the program. It is important to remember that once the student has entered the Final Exam section of these programs, there is no option for returning to the main menu, each exam level must be completed at which time the student may forge ahead to the next level or terminate the entire program by turning off the computer.

In the study programs, if the student needs help during a Quiz the F1 key (Help) will provide a chance to review the material in the tutorial and then return to the question the student was having difficulty with.

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