

C= commodore VIC-20

Computer Educator: Math Book I[®]

ELEMENTARY MATHEMATICS:
Grades 1 through 6

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The Computer Educator Math Series

In this series 4 books will be offered:

Computer Educator: Math Book I

Elementary Mathematics/grades 1 through 6.
Introduction to Basic Arithmetic.

Computer Educator: Math Book II

Advanced Elementary Mathematics/grades 6 through 10.
Advanced elementary math for students who have progressed beyond introductory level.

Computer Educator: Math Book III

High School Mathematics/grades 9 through 11.
Introduction to Algebra.

Computer Educator: Math Book IV

Advanced High School grades 11 onwards.
Introduction to Trigonometry, Geometry.

This book, the first in a series of four Mathematic Educator Books, was produced to introduce the student to basic mathematics.

Six programs are offered consisting of four math drills and two math games. All designed to increase the student's knowledge in basic mathematics.

Generally, the programs are designed so the students can increase the level of difficulty as they become more proficient. Therefore, the exercises with which they first try out their knowledge are easy to handle. When they thoroughly understand these simple cases, it is no great trick later in the program to apply the same rules to "man-sized" figures.

The four fundamental operations in mathematics are Addition, Subtraction, Multiplication and Division. Since most problems usually involve any or all of these operations, it is important that the student have a solid foundation in these operations.

THE COMPUTER EDUCATOR MATH BOOK I is designed for this purpose.

TO LOAD AND USE YOUR VIC CASSETTE TAPE

1. Be sure your computer, tape cassette recorder and TV display are connected properly and the power is on. Do not place cassettes on or near T.V. set. Placing Datasette on or near some sets may cause interference. The last message displayed by the VIC should be the word READY.
2. Place the tape cassette in the recorder with the label side up. (Programs are always recorded twice on each side of the tape).
3. To move to the beginning of the tape, press the REWIND switch on the tape recorder. When rewinding stops, press the recorder's STOP switch.
4. On the VIC's keyboard, type in LOAD and press the RETURN key.
5. Your TV will display PRESS PLAY ON TAPE. After you press the recorder's PLAY switch, the words OK and SEARCHING are displayed.
6. When VIC finds the program, it displays the word FOUND, followed by the name of the program, then tells you it's LOADING.
7. When you see READY, first press the STOP switch on the tape recorder, then on the VIC, type in RUN and press the RETURN key.
8. See the specific instructions for your program on how to proceed further.
IF YOUR TAPE DOES NOT LOAD, FIRST REPEAT STEPS 3 THRU 7 ABOVE. IF THE PROGRAM STILL FAILS TO LOAD, TURN POWER OFF, THEN POWER ON AND REPEAT STEPS 2 THRU 7. IF PROBLEM STILL PERSISTS, REFER TO YOUR MANUAL AND/OR YOUR DEALER.

Introduction to Basic Arithmetic

WHOLE NUMBERS

A WHOLE NUMBER is distinguished from part of a number, such as a fraction like

$$\frac{5}{7} \text{ or } \frac{10}{9}$$

ADDITION OF WHOLE NUMBERS

You should be able to add whole numbers rapidly. In order to do this you must add mentally. Use MATH QUIZ to develop your skills in Addition. There are 9 levels. Practice at each level until you correctly answer 10 questions.

- STEP 1 Start at the LOWEST level of difficulty and speed. Practice until proficient.
 - STEP 2 INCREASE the speed to the next level. Practice until proficient.
 - STEP 3 INCREASE the speed to the next level. Practice until proficient.
 - STEP 4 DECREASE speed to lowest level, INCREASE difficulty to next level. Practice until proficient.
 - STEP 5 INCREASE speed to next level. Practice until proficient.
 - STEP 6 INCREASE speed to next level. Practice until proficient.
 - STEP 7 DECREASE speed to LOWEST level and INCREASE difficulty to HIGHEST level. Practice until proficient.
 - STEP 8 INCREASE speed. Practice until proficient.
 - STEP 9 INCREASE speed. Practice until proficient.
- Using MATH QUIZ repeat the above process for Subtraction, Multiplication and Division.

DIVISION OF WHOLE NUMBERS

DIVISION is a process of separating or dividing a number into a required number of equal parts.

Use MATH QUIZ as previously described to increase your skill in division.

Now that you have become an expert in the basic mathematic operations of Addition, Subtraction, Multiplication and Division, try your skill against an opponent with the game FAST MATH.

If you find your opponent beats you go back to MATH QUIZ and practice some more.

SUBTRACTION OF WHOLE NUMBERS

SUBTRACTION is the process of finding the difference between two numbers. By subtraction we find out how much must be added to one number to equal another.

Use MATH QUIZ as described above to increase your skill in Subtraction.

MULTIPLICATION OF WHOLE NUMBERS

MULTIPLICATION is a short method of adding a number to itself a given number of times. 4×15 means $15 + 15 + 15 + 15$ or 60.

Use MATH QUIZ as previously described to increase your skill in Multiplication.

Math Quiz

Adds, Subtracts, Multiplies, and Divides at 3 levels of difficulty and 3 levels of speed.

OBJECT: Increases mathematics skills in Addition, Subtraction, Multiplication and Division.

LOADING: Please see tape loading instructions.

OPERATION: Instructions available on cassette.

* = Multiplication

You have two chances to correctly answer each question. If you answer correctly the first time you score 1 point. If you miss the computer gets one point. If you answer correctly the second time you get a point.

If you enter a mistake and wish to change use the DEL key.

At the end of ten problems the score will show.

SKILL LEVEL: Three levels of difficulty. Three levels of speed.

TO START: Hit y or n key.

Fast Math

A mathematics drill where two players test their skills against each other. Allows for increasing degrees of difficulty.

OBJECT: To test your basic mathematical skills against an opponent.

LOADING: Please see tape loading instructions.

OPERATION: Instructions available on cassette.

Please add sums from right to left entering numbers in that order. If answer is incorrect the computer will reject the last number you have entered.

You may correct answer by using DEL key on incorrect entry. You are working against time and when one player reaches 1000 on scoreboard the game is over.

SKILL LEVEL: Six types of problems, three levels of difficulty and two levels of speed.

TO START: Follow directions.

Astro-Shooter

Math game requiring you to Add, Subtract or Multiply two numbers and shoot down correct numbered meteors while dodging incorrect numbered meteors that attack!

OBJECT: Test your mathematical skills and your dexterity.

LOADING: Please see tape loading instructions.

OPERATION: You must use joystick. Follow directions on cassette.

* = multiplication.

You are asked to solve a problem and given a time limit to do so. When the time limit expires, a number of meteors descend on your laser gun which you control, horizontally, with your joystick. If a meteor with the incorrect answer hits your laser gun or if you shoot down a meteor with incorrect answer you are the loser.

If you miss the meteor with the correct number the first time don't worry. It will appear again.

There are ten missions to complete each series.

SKILL LEVEL: Three types of problems, three levels of difficulty.

TO START: Choose difficulty level.

Introduction to Percent

PERCENT is a term used in arithmetic to denote that a whole quantity divided into 100 equal parts is taken as a standard of measure. PERCENT is indicated by the PERCENT SIGN (%).

Thus percent or % means a fractional or decimal part of 100. For example, 4% may be written as

$$\frac{4}{100} \text{ or } .04. \text{ N.B. } \frac{4}{100} \text{ reduces to } \frac{1}{25}$$

Percents may be added, subtracted, divided or multiplied just as other specific denominations are treated.

$$\text{Thus } 6\% + 8\% = 14\%$$

$$18\% - 12\% = 6\%$$

$$18\% \div 9\% = 2$$

$$7\% \times 5 = 35\%$$

When actually working a problem the % sign is not used and percent must be changed to a common fraction or a decimal.

TO CHANGE A PERCENT TO FRACTION, divide the percent quantity by 100 and reduce to lowest terms.

$$\text{Thus } 8\% = \frac{8}{100} = \frac{2}{25}$$

$$75\% = \frac{75}{100} = \frac{3}{4}$$

TO CHANGE A PERCENT TO A DECIMAL, remove the percent sign and move the decimal point two places to the left.

$$\text{Example: Change } 25\% \text{ to a decimal} = .25$$

$$\text{Example: Change } 1.5\% \text{ to a decimal} = .015$$

TO CHANGE A DECIMAL TO PERCENT, move the decimal point two places to the right and add a % sign.

$$\text{Example: } .24 = 24\%$$

$$\text{Example: } .0043 = .43\%$$

VIC Percent

Drills conversion of percent to fractions and finding percent value of given numbers. Time limitation.

OBJECT: Increase mathematical skills in basic mathematics with percents.

LOADING: Please see tape loading instructions.

OPERATION: Follow directions on cassette. Maximum 60 seconds to answer questions. Fractions are expressed with the slash (/) key. E.G. 1/5.

If you answer correctly you get 1 point. If you answer incorrectly or after your time limit expires, the computer gets 1 point. Ten questions are in part one and ten questions are in part two.

The score is shown after parts one and two.

SKILL LEVEL: Based on time limits - you select up to 60 seconds.

TO START: See directions on cassette.

Introduction to Decimals

DECIMALS are a very special way of writing fractions that have denominators ending with zero (0) or with so-called cipher. Thus when written as decimal fractions:

$\frac{1}{10}$	$\frac{2}{100}$	$\frac{3}{1000}$	$\frac{4}{10,000}$	$\frac{5}{100,000}$	becomes
.1	.02	.003	.0004	.00005	

The word decimal means relating to the number 10, and to calculate by decimals is simply to extend into the field of fractions the same method of counting that we employ when dealing with whole numbers.

TO CHANGE ANY COMMON FRACTION INTO A DECIMAL, divide the numerator by the denominator and write the quotient in decimal form.

Example: Change $\frac{3}{5}$ to a decimal

Thus: $5 \overline{)3.0} = .6$

or Change $\frac{3}{8}$ to a decimal

Thus $\frac{3}{8} = 8 \overline{)3.000} = .375$

VIC Decimals

Multiplication of decimals against time limit set by user.
A great drill for basic decimal mathematics.

OBJECT: To increase skill in basic mathematics with decimals.

LOADING: Please see tape loading instructions.

OPERATION: Follow directions on cassette.

Maximum 60 seconds to answer questions.

\approx means rounded to three places.

If you answer correctly you get 1 point. If you answer incorrectly or after your time limit the computer gets 1 point. Ten questions are in part one and ten questions are in part two.

The score is shown after part two.

SKILL LEVEL: Based on time limits – you select up to 60 seconds.

TO START: See directions on cassette.

Introduction to Fractions

A FRACTION is part of any number or digit. In arithmetic a fraction is a means of indicating that one number is to be divided by another and is written thus:

- 1 numerator
- \div division sign
- 3 denominator

This is the same as the expression $1 \div 3$, in which 1 is the dividend and 3 the divisor.

There are many rules and arithmetical manipulations that govern the use of fractions. If you master these, you will gain the ability to solve many types of problems.

VIC Fractions

Practice multiplying fractions against various time limits set by user. This one can be tough!

OBJECT: Test your basic mathematical skills using fractions.

LOADING: Please see tape loading instructions.

OPERATION: Follow directions on cassette.

Maximum 60 seconds to answer questions.

You answer correctly you get 1 point. You answer incorrectly or after your time limit the computer gets 1 point. You have ten questions. Score shows after ten questions.

SKILL LEVEL: Based on time limits – you select up to 60 seconds.

TO START: See directions on cassette.