



ArithMAGIC

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Subtraction

\$29.95

IBM PC, IBM XT with at least 128K

Apple II, Apple II+, Apple IIe with at least 48K

ARITHMAGIC: —Subtraction—

Apple II / Apple II + / Apple IIe with 48K



ARITHMAGIC: SUBTRACTION

A Number Concept Program

For Children Aged 5-8 Years Old

©Compu-Teach Inc., 1983
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ARITHMAGIC will run on any Apple II, Apple II + , or Apple IIe, with 48K and a disk drive with DOS 3.3 (16 sector)

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INSTRUCTIONS FOR STARTING UP ARITHMAGIC.

For the Apple II, Apple II + :

1. Turn off your computer.
2. Lift the door on the disk drive. If you have two disk drives, use drive ONE.
3. Gently slide the disk in, oval-cutout end first, label side up.
4. When the disk is completely inside, close the door on the disk drive until it clicks shut.
5. Turn the computer ON.

For the Apple IIe:

1. If your computer is OFF, then follow the instructions given above.
2. If your computer is already ON, then insert the disk as described in instructions 2 through 4 above.
3. Then hold down the "OPEN APPLE" key while pressing "CONTROL—RESET".

*****IMPORTANT NOTE: IF YOU HAVE AN APPLE IIe, BE SURE THAT THE "CAPS LOCK" KEY IS ALWAYS DOWN WHEN YOU RUN THE PROGRAM.**

ARITHMAGIC will then be loaded from the disk into the computer. Please be patient until this proces is completed.

After introducing ARITHMAGIC, an *Options Screen* will appear, listing three options. They are "RUN SUBTRACTION," "MODIFYING PARAMETERS," and "STOP" for when you want to exit.

OPTION DESCRIPTIONS:

Option one: RUN SUBTRACTION

This is the basic subtraction game in which the computer will display a subtraction problem for you to solve. Each number will be shown as a numeral and be represented by a group of objects. Solve the problem, type in the correct answer, then press "RETURN".

Option two: MODIFYING PARAMETERS

Arithmagic Subtraction is a flexible game which allows you to modify the parameters to a particular type of problem or to match the needs of each user. This option will show you several ways in which you can change the basic SUBTRACTION game to meet your requirements.

Option three: STOP

This option should be used only when you wish to EXIT playing the Arithmagic Subtraction Game.

CHOOSING ONE OF THE OPTIONS.

1. On the *Options Screen* you will see the two game options and "STOP" listed.
2. To choose one of these options, move the flashing highlight by pressing ANY KEY or the SPACE BAR (the long bar below the letter keys) until the option you choose is flashing.
3. Then, press "RETURN".
4. If the flashing highlight goes past your choice, don't worry. Continue to press ANY KEY or the SPACE BAR until it moves around the list again to your choice.
5. REMEMBER: If you choose "STOP", the program will EXIT. To restart the program, follow the START-UP INSTRUCTIONS.

INSTRUCTIONS FOR PLAYING ARITHMAGIC: SUBTRACTION.

(Remember to move the flashing highlight to this title on the *Options Screen*, and then press "RETURN".)

1. In this game, the computer goes first. The screen will display a subtraction problem for you to solve.
2. Below each numeral will be a group of objects representing each number shown.
3. Solve the problem, type in the correct answer, and then press "RETURN".
4. If you are correct, the answer will be shown and the groups of objects will move to show the subtraction.
5. If your answer is wrong, the computer will let you try again.

You can have up to three tries. Count carefully.

6. If your answer is incorrect after three tries, the computer will show you the correct answer and help you count the objects.
7. If you press a key which is not a number, then the computer will BEEP and ask you to type in a NUMBER ONLY.

Once you have typed in the correct answer or if the computer has shown you the correct answer, you are then ready to play again.

YOU ARE NOW READY TO PLAY AGAIN.

1. At the bottom of the screen you will see three objects and a flashing highlight. You can move the flashing highlight by pressing ANY KEY or the SPACE BAR. Try it a few times to see how it works.
2. These three objects are to help you choose your next subtracting game.
3. If you would like to repeat the SAME PROBLEM with the SAME OBJECTS, move the flashing highlight to the center object and press "RETURN".
4. To see a NEW problem with NEW objects, move the flashing highlight to the new object (on the left), and then press "RETURN".
5. If you are ready to EXIT, move the flashing highlight to the STOP SIGN. Then press "RETURN". This will bring back the *Options Screen* and you can choose another of the options listed or play this game again.

INSTRUCTIONS FOR MODIFYING THE PARAMETERS OF ARITHMAGIC: SUBTRACTION.

(Remember to move the flashing highlight to this option, and then press "RETURN".)

When you choose this option, you will see the list of Parameters to select from with a flashing highlight. These are the Parameters:

- Progression
- Fact Family

Alongside each option is the word OFF, since they are not active

until you decide to change them to ON.

Before the instructions for changing the Parameters, here are descriptions of what each will do.

WHAT THE PARAMETERS WILL DO:

1. PROGRESSION.

When you set PROGRESSION to ON, the subtraction problems shown by the computer will increase each time by ONE. For example: $2 - 1$, $3 - 1$, $4 - 1$, $5 - 1$. In each problem, the first number is increased by ONE. If you answer a series of problems correctly, the computer will speed up the progression and increase by greater numbers each time.

2. FACT FAMILY.

When you set FACT FAMILY to ON, the subtraction problems shown by the computer will choose combinations of numbers that will result in the same difference when subtracted.

The computer will choose a FACT FAMILY number at random. For example, if the computer chooses the FACT FAMILY of three, then all the subtraction problems will result in the difference of three: $4 - 1$, $6 - 3$, $5 - 2$.

USING BOTH PARAMETERS.

You may, if you wish, set both parameters to ON. If both PROGRESSION and FACT FAMILY are ON, the subtraction problems generated by the computer will increase the first number of each problem by ONE and then generate a series of other problems which produce the same result.

For example: $1 - 1$, $2 - 2$, $3 - 3$ $2 - 1$, $3 - 2$, and so on.

HOW TO CHOOSE AND CHANGE A PARAMETER.

1. Move the flashing highlight to the parameter of your choice by pressing the SPACE BAR.
2. If the flashing highlight goes past your choice, don't worry. Keep pressing the SPACE BAR until it returns to your choice.
3. Then press the LETTER "C".

4. The word alongside your choice will change from OFF to ON.
5. If you change your mind and want to reverse your decision or want to turn any parameter from ON to OFF, line up the flashing highlight with your choice and again press the LETTER "C". This will cause the ON to change to OFF.
6. When your choice of parameters is made, move the flashing highlight by pressing the SPACE BAR and then press "RETURN".

The game will then begin, modified according to the parameters you have selected.

WHEN YOU HAVE FINISHED PLAYING THIS GAME:

Move the flashing highlight to the "STOP" option and press "RETURN". After checking to make sure that the red light on the disk drive is out, lift the door to your disk drive, carefully remove the ARITHMAGIC disk and replace it in its envelope. Then turn your computer OFF.

TO PARENTS — OUR EDUCATIONAL PHILOSOPHY.

Compu-Teach designs computer software which educates while it entertains. Professor Roger Schank, Chairman of the Yale University Computer Science Department, is the President and Founder of the company. Professor Shank is world-renowned for his work in the new field of Artificial Intelligence. Compu-Teach applies his work to the field of education. Our basic philosophy is that the computer can make learning fun, and when learning is fun, it is most effective. Children should be as actively engaged in learning as they are in playing. Compu-Teach's educational games help children participate in learning, while having fun playing.

In order to attain the highest educational and programming standards, Compu-Teach has brought together educational experts and computer scientists from major academic institutions across the country. These experts work hand-in-hand to develop our programs. In addition, our programs are tested by children to ensure that they are truly fun, engaging, and simple to use.

Compu-Teach's educational experts help us develop the

instructional materials we use. We design games which blend with the instructional material. The games engage the child's interest, imagination, and curiosity. Our computer scientists then design the computer program to make extensive use of humor, animation, and sound to trigger the child's natural instincts and arouse a sense of curiosity and excitement. In addition, our programs give children a strong sense of control over the computer. They enjoy the feeling that the computer is responding to them, and this provides additional motivation. Finally, our computer games make extensive use of the *interactive* nature of the computer. The programs monitor the child's progress so as to provide information and support when appropriate. This makes the instruction very responsive to the child's needs.

Compu-Teach is developing an integrated curriculum of educational software, and further games in this curriculum are available.

WHAT CAN A CHILD LEARN FROM *ARITHMAGIC: SUBTRACTION?*

The objective to this game is to reinforce the skill of subtraction. Key in this effort is the computer's unique ability to demonstrate to the child the concept that subtraction is based on counting.

ARITHMAGIC: SUBTRACTION uses interesting animated objects and sounds to capture the child's attention and hold his interest while illustrating how the process of counting is the basis for the process of subtraction. The child constantly interacts with the program by actively providing the answers to the problems posed by the computer. If the child answers incorrectly, the computer presents a pedagogically sound, sequential animation to illustrate how the correct answer can be obtained.

Finally the number of parameter settings in *ARITHMAGIC: SUBTRACTION* allows great flexibility in providing specific types of problems according to each child's ability and learning needs, while at the same time the program illustrates specific subtraction concepts: progression and fact families.

The design of *ARITHMAGIC: SUBTRACTION* was directed by sound educational principles, by extensive research into the

underlying cognitive skills involved in learning to count, and by the practical experience of developing software that has been thoroughly child-tested, thus assuring you of the power of its educational effectiveness.

CREDITS:

Produced by Roger Schank, Ph.D.

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were written by Mark Pelczarski, David Lubar and Chris
Jochumson.

ARITHMAGIC:

Subtraction

Combining the two principles that learning can be play, and play should be fun, this ARITHMAGIC: SUBTRACTION program is both highly educational and enjoyable. Inventive, colorful animations with sound are used to engage the child's interest and to focus his attention.

ARITHMAGIC:SUBTRACTION teaches the concept that subtracting is an extension of counting. By using lively graphics it shows the child that being able to count means being able to subtract.

The program has also been designed to be flexible enough to meet the needs of individual children. First, a basic subtraction game uses amusing animation for solving simple problems. Then a series of changeable parameters allows you to vary and tailor the game in specific ways, making it a highly individualized learning experience.

A strong feature of all CompuTeach programs is the interactive involvement of the child. While the program is controlled by the child, the computer monitors his responses, rewarding success with animated graphics and correcting errors with a simple sequence to demonstrate the correct procedure.

Creative animation, educationally sound teaching principles and active participation by the child make this CompuTeach program a significant early learning experience for the young child.

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Graphics developed using Penguin Softwares Graphics Utilities



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