E.Z. Algebra™

by

E.Z. Software™

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SMI

MANUAL

E.Z. Algebra™

by

Raymond La Barbera

Software for the HP 48SX Calculator

Program and Manual Written and Conceived

by

Raymond La Barbera and E.Z. Software™

E.Z. Algebra™ Package Marketed and Distributed

by

SMI Corporation

The author wishes to dedicate E.Z. Algebra™ to his wife *Stevie Lai La Barbera* who so patiently and lovingly tolerated his many late night programming and writing sessions and to his friend *Tom O'Brien* who has been such a steadfast and loyal friend during the last three decades.

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We welcome comments, suggestions for improvement, criticisms, bug reports and correspondence about the E.Z. Algebra™ program software and manual. We will consider all such correspondence in preparing possible future versions of E.Z. Algebra™. Please address all letters to:

Raymond La Barbera
E.Z. Software™
P.O. Box 500, Midwood Station
Brooklyn, New York 11230

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Kingsport, TN 37660
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Chapter One

Basics

WHAT'S IN THIS CHAPTER

This chapter is designed to familiarize you with the features of the HP 48SX calculator you'll need to make full use of all the features of E.Z. Algebra.

The Hewlett Packard 48SX calculator is without doubt the most powerful calculator ever produced. With 256K of built-in ROM, expansability to nearly 300K of RAM, the capability of accepting plug-in ROM cards [such as E.Z. Algebra] and the ability to do symbolic algebra and calculus as well as to solve a bewildering array of mathematical, scientific, statistical and financial problems, the HP 48SX is more powerful than such early computers as the ATARI 800, Commodore 64 and Apple IIe, and is almost as powerful as an IBM XT computer. The HP 48SX is actually a fully programmable scientific calculator with the power of a computer.

But all this power comes with a price. Just as learning how to operate an IBM computer can be a long, drawn out process, learning to make full use of the HP 48SX requires quit a bit of time and study. Most people find the thought of wading through 850 pages of User Manual and learning how to program to be a most daunting prospect. This is especially true of people who have a fear of computers and electronic gadgets, bad experiences with math or simply a very short supply of time, patience and energy. Such people would rather simply type in a few numbers and immediately get the correct answer.

These are the people for whom E.Z. Algebra was created. With E.Z. Algebra, you can use your HP 48SX to learn Elementary Algebra without ever having to open the HP Owner's Manual. We've designed a simple, very easy-to-use, logically organized system of menus that enable you to quickly zip from one feature of E.Z. Algebra to another.

Within the next few pages, we'll tell you everything you need to know about the HP 48SX to make full use of E.Z. Algebra. We'll show you how to locate any key you need to press. We'll explain everything you need to know about menus and display screens and how to get from one to another.

Before we proceed with these basics, we'd like to encourage you to look through the HP Owner's Manual from time to time. As we said above, you don't need to do so to use E.Z. Algebra. However, you may later on find learning about the stack, custom menus and various other goodies a fascinating adventure, especially if you browse through the manual a bit at a time. It's just possible that you may find that creating a program, even a little, tiny one, is a lot of fun as well as a source of great satisfaction.

Now, let's begin our adventure!!!

LOCATING KEYS

The HP 48SX has a keyboard consisting of 49 keys arranged in nine rows. There are six keys in each of the four upper rows and five keys in each of the five lower rows.

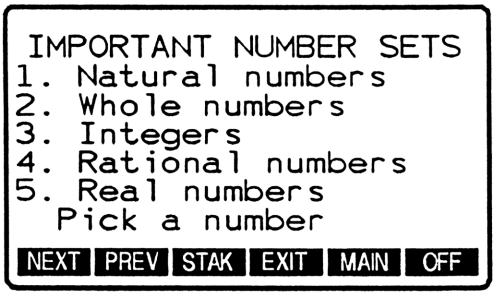
Row 1 consists of six white-topped keys closest to the display screen. The next row, beginning on the left with the key labelled MTH and ending on the right with the key labelled NXT, is row 2. The last row, all the way down at the bottom, beginning with the key labelled ON and ending on the right with the key labelled + is row 9. A good way to remember this is that the numbering of the rows is exactly the same as the order in which the lines of a book are read – from top to bottom.

In each row, key 1 is the key at the left side of the keyboard and key 5 or 6 is the key at the right side. So, the key labelled ON is key 1 in row 9. The key labelled + is also in row 9 but it is key 5. The key labelled NXT is key 6 in row 2. A good way to remember this is that the order of the keys in a row is exactly the same as the order in which the words of a line in a book are read – from left to right.

So, when you are asked to press the ENTER key [*row 5, key 1*], you'll need to go down to the fifth row and look for the first key. There, you'll find the key labelled ENTER. This is the one you need to press. If you are asked to press the 6 key [*row 7, key 4*], you'll need to go down to the seventh row and look for the fourth key from the left. There you'll find the one labelled 6. This is the one you need to press.

We will consistently use this system throughout the E.Z. Algebra Manual to help you find any key that needs to be pressed when using E.Z. Algebra to do a problem.

E.Z. ALGEBRA MENU SCREENS



E.Z. Algebra makes extensive use of menu screens such as the one shown above to help you get quickly and easily from one type of problem to another. Each menu screen makes use of two types of menus: the menu bar and the menu options.

The Menu Bar or Menu Line

The *menu bar* or *menu line* is the row of small blue rectangles at the bottom of the display screen. Let's refer to each of these rectangles as *menu buttons*. Most menu screens have six menu buttons in the menu bar, but quite a few have fewer than six and some even have none. Each menu button has a label printed in white giving some indication of the button's function.

The Sets of Numbers Menu Screen shown above has six menu buttons in the menu bar. They are labelled: NEXT, PREV, STAK, EXIT, MAIN and OFF. We'll find out in Chapter 2 what these keys actually do.

The menu buttons are controlled by the top row of white-topped keys nearest to the screen display. Each menu button is controlled by the white-topped key directly below it. To press or activate the menu button labelled NEXT, press the first, leftmost key in the first row. Later, we'll simply ask you to press the NEXT key [*row 1, key 1*]. To press or activate the menu button labelled STAK, press the third key in the first row. Later, we'll simply ask you to press the STAK key [*row 1, key 3*].

We'll use this system consistently throughout the E.Z. Algebra Manual any time you need to press or activate a menu button on the menu bar.

The Menu Options

The *menu options* are the choices listed on the menu screen under the

title and above the menu bar. Each option is preceded by a digit, the first option being numbered 1 and each succeeding option being numbered 2, 3, 4, 5, 6, 7, 8, 9 and 0 as needed. Choosing an option leads to another menu screen. No matter which option you pick, E.Z. Algebra will always take you to the correct successor screen.

The Important Number Sets Menu Screen shown on the previous page has five options beginning with "1. Natural numbers" and ending with "5. Real numbers". To select option 1, the "Natural numbers" option, you need to locate the key labelled 1. Go down to the eighth row and then look for the second key. There, you'll find the key labelled 1. Press this key and whatever option 1 is supposed to do will happen. Later, we'll simply ask you to press the 1 key [*row 8, key 2*]. To select option 5, the "Real numbers" option, go down to the seventh row and look for the third key. This is where you'll find the key labelled 5. Press this key to have option 5 do whatever it is supposed to do. Later, we'll simply ask you to press the 5 key [*row 7, key 3*].

We'll use this system consistently throughout the E.Z. Algebra Manual anytime you need to select an option on a menu screen.

Printing an E.Z. Algebra Screen

Any E.Z. Algebra menu screen can be printed on an HP 82240 infrared printer as follows:

1. Turn on the printer and set it down on a flat surface.
2. Press the orange LEFT-SHIFT key [*row 7, key 1*].
3. Press the MTH key [*row 2, key 1*].
4. Set the HP48SX down so that its upper screen end is facing the bottom end of the printer.
5. Press the ENTER key [*row 5, key 1*] to begin printing.
6. Press the ON [*row 9, key 1*] key to cancel printing before commencement or to stop printing before completion.

Some Final Comments

All this information about screens is presented for your information. Please bear in mind that, while this information may be helpful and interesting, it's not essential for using E.Z. Algebra. The most important thing to remember about any screen is to read what it says and act accordingly. If the screen presents choices, read what choices are available and then press the key corresponding to your selection. Should you press a key in error, you'll never end up more than a few keypresses away from

where you wanted to be. No matter what appears on the screen, the main thing is to read what is displayed and act accordingly.

Some Notes on Sleep and Death

Due to various technical aspects of the HP 48SX, there are occasions during which E.Z. Algebra will seem to be taking a nap. For instance, It takes a few seconds from the time you see the E.Z. Algebra Title Screen to get to the Main Menu Screen. This is the amount of time needed to set things up so that E.Z. Algebra can do its work efficiently. It takes a few seconds from the time you press the KILL key [*row 1, key 3*] on any screen whose menu bar contains this button to leave E.Z. Algebra and restore the HP 48SX to its original state before you started the program. However, if you've had E.Z. Algebra running for a long time, it might well take longer to leave the program. If so, please be patient.

By the way, the HP 48SX displays a little hourglass figure at the top of the screen near the right corner to let you know that it's busy carrying out your last instructions. When the hourglass figure disappears, you'll then be able to make another selection.

Many people do not realize that all computers, calculators and programs have defects or *bugs*, usually very subtle ones that the user will never encounter. It's practically impossible to build a computer or calculator or to write a program which is 100% perfect. The more power and complexity which are involved, the greater the likelihood that there will be bugs.

While the HP 48SX and E.Z. Algebra work perfectly 99.99% of the time, it's possible that some strange sequence of key presses could trigger one of these subtle bugs and cause the calculator to go into a coma. If your HP 48SX remains asleep for more than, say, a half hour, you can assume it's in a coma. Here's how to bring it out of its coma. Press the ON key [*row 9, key 1*] and keep it depressed. While the ON key continues to be depressed, press the key [*row 1, key 3*] just to the left of the letter "C". Release both keys and the HP 48SX will wake up ready for business. You don't even need to give it coffee! To return to the E.Z. Algebra program, follow the start-up procedure described on Page 2-2 of Chapter 2.

Now that we've learned the HP 48SX basics necessary to make full of E.Z. Algebra, let's turn to Chapter Two to learn how to plug in your E.Z. Algebra ROM card and to begin using E.Z. Algebra.

Have fun!!

Chapter Two

Menu Screens

HOW TO START E.Z. ALGEBRA

This chapter describes how to get your E.Z. Algebra ROM card up and running on your HP 48SX and the screens used in E.Z. Algebra.

You'll first need to get your E.Z. Algebra ROM card inside your HP 48SX. The procedure for installing and removing cards is fully described on pages 635 to 638 in your HP Owner's Manual. Here's a quick summary:

Make sure that your HP 48SX is turned off before you begin. Holding it screen side up as if you were about to do a few calculations, turn it over so that you are now looking at its back side.

Down at the bottom, just below the tiny panel containing the words "Made in USA" and "© Hewlett Packard", there is a small cover under which is the battery compartment. Since we are not about to change the batteries, let's leave this cover alone.

Up at the top, just above the numbers 1 and 2, is another smaller cover under which are the two HP 48SX ports. This is where you'll put the E.Z. Algebra ROM card once you've removed the port cover.

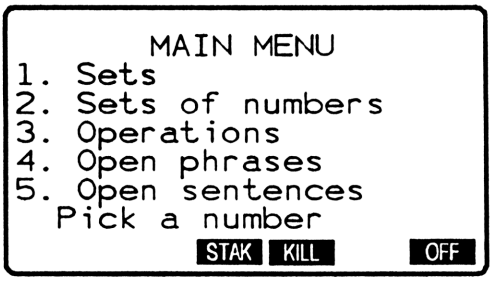
To remove the cover, put your thumb on the five-ridge grooved rectangular area near the bottom of the port cover. While gently applying pressure with your thumb, simultaneously push forward until the port cover slides off.

Inside you'll see two slots or ports. Holding the E.Z. Algebra ROM card label side up, carefully insert it into one of the two ports, making sure that the card doesn't end up half in one port and half in the other. When you first feel resistance as you are sliding the card in, you'll know that you've got just one quarter of an inch left to go before your card is properly in place.

Carefully slide the port cover back on so that it is attached as snugly to the HP 48SX as it was originally.

Now turn on your HP 48SX by pressing the ON key [*row 9, key 1*]. When a display appears on the screen, press the ALPHA key [*row 6, key 1*] twice, then press the A key [*row 1, key 1*] and finally press the L key [*row 2, key 6*]. You should now see AL displayed near the lower left corner of the screen. Press the ENTER key [*row 5, key 1*] to see the E.Z. Algebra Title Screen. If you look at the top of the Title Screen, just above the "b" in "E.Z. Algebra", you'll notice a little figure in the shape of an hourglass. You'll always see this little hourglass figure when the HP 48SX is busy carrying out your last instructions which, in this case, are setting up E.Z. Algebra to run smoothly and without problems on your calculator. Finally, in a few seconds, the Title Screen will be replaced by the Main Menu Screen from where you can access all the features of E.Z. Algebra. You'll find a full discussion of the Main Menu Screen on the next two pages.

THE MAIN MENU SCREEN



Getting to the Main Menu Screen

There are two ways to get to the Main Menu Screen:

- Wait a few seconds while viewing the E.Z. Algebra Title Screen.
- Press MAIN [*row 1, key 5*] on any screen whose menu bar has this button.

The Main Menu Screen Menu Bar

There are three keys active on the Main Menu Screen Menu Bar:

STAK Press this key [*row 1, key 3*] to temporarily leave E.Z. Algebra to use your HP 48SX for other tasks. To return to the E.Z. Algebra Main Menu Screen, press the CST key [*row 2, key 3*] and then press the CONT key [*row 1, key 1*] on the menu bar.

KILL Press this key [*row 1, key 4*] to terminate E.Z. Algebra. When you again want to use E.Z. Algebra, repeat the start-up sequence described in Chapter 2 which is as follows: Press the ALPHA key [*row 6, key 1*] twice, press A [*row 1, key 1*] and L [*row 2, key 6*], press the ENTER key [*row 5, key 1*] to get to the E.Z. Algebra Title Screen which, after a few seconds, will be replaced by the E.Z. Algebra Main Menu Screen.

OFF Press this key [*row 1, key 6*] to turn off your HP 48SX. To turn it back on, press the ON key [*row 9, key 1*] and you will find yourself back in the E.Z. Algebra Main Menu Screen.

The Main Menu Screen Options

There are five options available on the Main Menu Screen:

[1] **Sets.** Press this key [*row 8, key 2*] to go to the Sets Menu Screen from which you can understand the meaning and types of sets, learn the operations and relations used in working with sets and comprehend the meaning of variables, operations and relations on sets of objects.

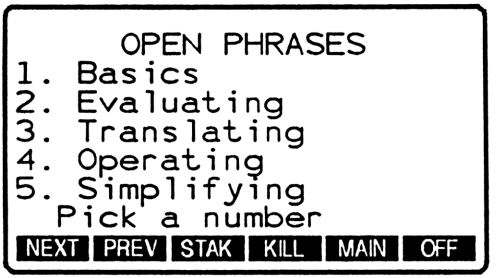
[2] **Sets of numbers.** Press this key [*row 8, key 3*] to go to the Sets of Numbers Menu Screen from which you can understand the meaning, purpose and properties of the sets of natural numbers, whole numbers, integers, rational numbers and real numbers.

[3] **Operations.** Press this key [*row 8, key 4*] to go to the Operations Menu Screen from which you can understand the meaning of an operation on a set of numbers and learn the meaning, terminology and properties of the operations of addition, subtraction, multiplication, division, power and root on a set of numbers.

[4] **Open phrases.** Press this key [*row 7, key 2*] to go to the Open Phrases Menu Screen from which you can understand the meaning, terminology and types of open phrases (algebraic expressions) and of numerical phrases (numerical expressions) and learn how to evaluate open and numerical phrases, how to translate English phrases into open phrases, how to add, subtract, multiply and divide open phrases, how to simplify open phrases by factoring and how to simplify open phrases which contain grouping symbols, fractions or radicals.

[5] **Open sentences.** Press this key [*row 7, key 3*] to go to the Open Sentences Menu Screen from which you can understand the meaning of open and numerical sentences, the meaning of solution and solution set of an open sentence, and the meaning of solving and graphing an open sentence, learn the types of open sentences, and master the methods for solving various types of open sentences.

THE OPTION MENU SCREENS



Getting to an Option Menu Screen

There are three ways to get to an Option Menu Screen:

- Press any of the Option choices on the Main Menu Screen.
- Press NEXT [*row 1, key 1*] on the previous Option Menu Screen.
- Press PREV [*row 1, key 2*] on the next Option Menu Screen.

The Option Menu Screen Menu Bar

There are six keys active on the Option Menu Screen Menu Bar:

NEXT Press this key [*row 1, key 1*] to go to the next Option Menu Screen.

PREV Press this key [*row 1, key 2*] to go to the previous Option Menu Screen.

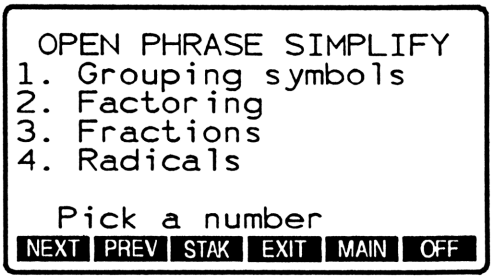
STAK Press this key [*row 1, key 3*] to temporarily leave E.Z. Algebra to use your HP 48SX for other tasks. To return to the same E.Z. Algebra Option Menu Screen you left, press the CST key [*row 2, key 3*] and then press the CONT key [*row 1, key 1*] on the menu bar.

KILL Press this key [*row 1, key 4*] to terminate E.Z. Algebra. When you again want to use E.Z. Algebra, repeat the start-up sequence described in Chapter 2 which is as follows: Press the ALPHA key [*row 6, key 1*] twice, press A [*row 1, key 1*] and L [*row 2, key 6*], press the ENTER key [*row 5, key 1*] to get to the E.Z. Algebra Title Screen which, after a few seconds, will be replaced by the E.Z. Algebra Main Menu Screen.

MAIN Press this key [*row 1, key 5*] to go to the Main Menu Screen.

OFF Press this key [*row 1, key 6*] to turn off your HP 48SX. To turn it back on, press the ON key [*row 9, key 1*] and you will find yourself back in the same E.Z. Algebra Option Menu Screen.

THE SUB-OPTION MENU SCREENS



Getting to an Sub-Option Menu Screen

There are three ways to get to an Sub-Option Menu Screen:

- Press any of the Option choices on an Option Menu Screen.
- Press NEXT [*row 1, key 1*] on the previous Sub-Option Menu Screen.
- Press PREV [*row 1, key 2*] on the next Sub-Option Menu Screen.

The Sub-Option Menu Screen Menu Bar

There are six keys active on the Sub-Option Menu Screen Menu Bar:

NEXT Press this key [*row 1, key 1*] to go to the next Option Menu Screen.

PREV Press this key [*row 1, key 2*] to go to the previous Option Menu Screen.

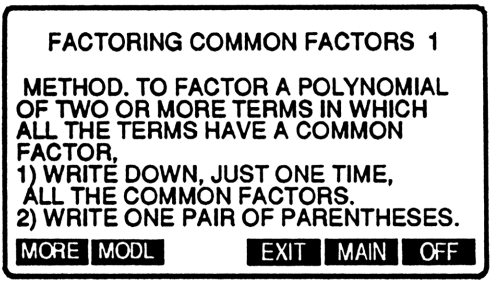
STAK Press this key [*row 1, key 3*] to temporarily leave E.Z. Algebra to use your HP 48SX for other tasks. To return to the same E.Z. Algebra Sub-Option Menu Screen you left, press the CST key [*row 2, key 3*] and then press the CONT key [*row 1, key 1*] on the menu bar.

EXIT Press this key [*row 1, key 4*] to leave this screen and return to the Option or Sub-Option Screen from which you came.

MAIN Press this key [*row 1, key 5*] to go to the Main Menu Screen.

OFF Press this key [*row 1, key 6*] to turn off your HP 48SX. To turn it back on, press the ON key [*row 9, key 1*] and you will find yourself back in the same E.Z. Algebra Sub-Option Menu Screen.

THE METHOD MENU SCREENS



Getting to a Method Menu Screen

There are three ways to get to a Method Menu Screen:

- Press any of the Option choices on a Sub-Option Menu Screen.
- Press MORE [*row 1, key 1*] on the previous Method Menu Screen.
- Press the ALPHA key [*row 6, key 1*], then MORE [*row 1, key 2*] on the next Method Menu Screen.

The Method Menu Screen Menu Bar

There are up to five keys active on the Method Menu Screen Menu Bar:

MORE Press this key [*row 1, key 1*], if present, to go to the next Method Menu Screen. From the last Method Menu Screen, another press will take you to the first Method Menu Screen. If you press the ALPHA key before pressing this key, you'll go to the previous Method Menu Screen. From the first Method Menu Screen, another press of the ALPHA key and this key will take you to last Method Menu Screen.

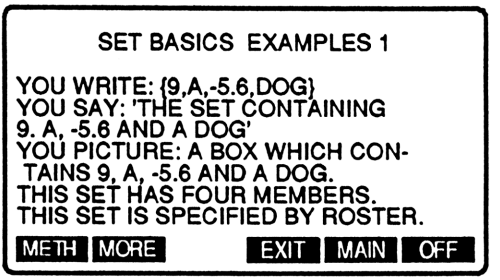
MODL Press this key [*row 1, key 2*] to go to the Model Problem Menu Screen corresponding to this Method Menu Screen. If you have already seen Model Problem Screens corresponding to this Method Menu Screen, pressing this key will take you back to the last Model Problem Screen you saw; otherwise, you'll be taken to the first Model Problem Screen.

EXIT Press this key [*row 1, key 4*] to leave this screen and return to the Option or Sub-Option Screen from which you came.

MAIN Press this key [*row 1, key 5*] to go to the Main Menu Screen.

OFF Press this key [*row 1, key 6*] to turn off your HP 48SX. To turn it back on, press the ON key [*row 9, key 1*] and you will find yourself back in the same E.Z. Algebra Method Menu Screen.

THE MODEL PROBLEM MENU SCREENS



Getting to a Model Problem Menu Screen

There are three ways to get to a Model Problem Menu Screen:

- Press MODL [*row 1, key 2*] on a Method Menu Screen
- Press MORE [*row 1, key 1*] on the previous Model Problem Menu Screen.
- Press the ALPHA key [*row 6, key 1*], then MORE [*row 1, key 2*] on the next Model Problem Menu Screen.

The Model Problem Menu Screen Menu Bar

There are up to five keys active on the Model Problem Menu Screen Menu Bar:

METH Press this key [*row 1, key 1*] to go to the Method Menu Screen from which you came.

MORE Press this key [*row 1, key 2*], if present, to go to the next Model Problem Menu Screen. From the last Model Problem Menu Screen, another press will take you to the first Model Problem Menu Screen. If you press the ALPHA key before pressing this key, you'll go to the previous Model Problem Menu Screen. From the first Model Problem Menu Screen, another press of the ALPHA key and this key will take you to last Model Problem Menu Screen.

EXIT Press this key [*row 1, key 4*] to leave this screen and return to the Sub-Option Screen from which you came to the Method Menu Screen corresponding to this Model Problem Menu Screen.

MAIN Press this key [*row 1, key 5*] to go to the Main Menu Screen.

OFF Press this key [*row 1, key 6*] to turn off your HP 48SX. To turn it back on, press the ON key [*row 9, key 1*] and you will find yourself back in the same E.Z. Algebra Model Problem Menu Screen.

Chapter Three

Course Outline

I. Sets

A. All About Sets

1. Set basics

a. The meaning of a set
b. Picturing a set
c. Reading and writing a set
d. Specifying a set

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   (2) The empty set
   (3) Finite sets
   (4) Infinite sets
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   (1) Definition of an ordered set
   (2) Ordered pairs
   (3) Ordered triples
   (4) Ordered ntuples
   (5) Dense sets

3. Set relations

a. Equality of sets
b. Subset of a set
c. Disjoint sets
d. Overlapping sets

4. Set operations

a. Intersection of sets
b. Union of sets
c. Cartesian product of sets

B. Using Sets

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b. Replacement set of variable
c. Values of variables
d. Picturing variables

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b. Operation properties

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(2) Commutative property
(3) Associative property
(4) Identity element property
(5) Inverse element property

3. **Relations on sets**
   a. Relation basics
      (1) The meaning of a relation on a set of numbers
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      (2) Symmetric property
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A. Important Sets of Numbers

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   b. Purpose of the natural numbers
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   c. Properties of the whole numbers
3. **Integers**
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   b. Purpose of the integers
   c. Properties of the integers
   d. Additive inverses of integers
   e. Absolute values of integers
4. **Rational numbers**
   a. Content of the rational numbers
   b. Purpose of the rational numbers
   c. Properties of the rational numbers
5. **Real numbers**
   a. Content of the real numbers
   b. Purpose of the real numbers
   c. Properties of the real numbers

B. Graphing Sets of Numbers
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2. Graphing sets of ordered pairs of real numbers

III. Operations on Sets of Numbers

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IV. Open Phrases

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   b. Definition of open phrase
   c. Comparison of numerical phrase and open phrase
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   b. Combing terms
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2. Evaluating open phrases

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Phrases

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b. Adding polynomials

2. Subtraction of open phrases

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b. Subtracting polynomials

3. Multiplication of open phrases

a. Multiplying terms
b. Multiplying two binomials
c. Multiplying two polynomials

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b. Dividing a polynomial by a term
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1. Simplifying open phrases containing grouping symbols

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b. Symplifying open phrases with a minus sign in front of the grouping symbols
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2. Simplifying open phrase by factoring

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b. Factoring polynomials
c. Foctoring polynomials in which all terms have a common factor
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3. Simplifying open phrases containing fractions

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b. Adding and subtracting fractions

4. Simplifying open phrases containing radicals

a. Simplifying radicals
b. Adding and subtracting radicals
c. Multiplying radicals
d. Dividing radicals

V. Open Sentences

A. Basics of Open Sentences

1. Definition of open and numerical sentence

a. Verbs used in open and numerical sentences
b. Definition of numerical sentence
c. Definition of open sentence
d. Comparison of open and numerical sentences

2. Terminology involving open sentences

a. Solution of an open sentence
b. Solution set of an open sentence
c. Solving an open sentence
d. Graphing an open sentence

3. Classification of open sentences

a. Classifying an open sentence according to the number of variables
b. Classifying an open sentence according to the verb used
c. Classifying an open sentence according to the degree of the term of highest degree
d. Complete classification of an open sentence

B. Solving Open Sentences

1. Solving equations in one variable

a. Solving equations basics
b. Solving linear equations in one variable
c. Solving quadratic equations in one variable

2. Solving inequalities in one variable

a. Solving inequality basics
b. Solving linear inequalities in one variable

3. Solving systems of two equations in two variables

a. Solving systems of two equations in two variables by addition

E.Z. Arithmetic™

What Does E.Z. Arithmetic Do?

E.Z. Arithmetic for the HP 48SX is a comprehensive basic arithmetic course designed to reinforce basic computational skills and make solving all kinds of arithmetic problems a snap! E.Z. Arithmetic helps you master:

Whole Numbers. E.Z. Arithmetic makes it easy to learn how to add, subtract, multiply and divide whole numbers and to understand the meaning and use of factors, multiples, prime numbers, and composite numbers.

Fractions. E.Z. Arithmetic makes it easy to understand the meaning and types of fractions, to learn how to add, subtract, multiply, divide and compare the sizes of fractions and to master the methods for converting fractions from one form to another.

Decimals. E.Z. Arithmetic makes it easy to understand the meaning of decimals, to learn how to add, subtract, multiply, divide and round off decimals and to master the methods for conversions involving fractions and decimals.

Percents. E.Z. Arithmetic makes it easy to understand the meaning of percents, to master the methods for conversions involving percents, fractions and decimals and to learn how to solve percent problems.

Integers. E.Z. Arithmetic makes it easy to understand the meaning of integers, to grasp basic concepts about integers such as absolute value and opposite and to learn how to add, subtract, multiply, divide and order integers.

Computational Skills. E.Z. Arithmetic makes it easy to practice and master computational skills by providing endlessly varied, randomly selected sets of problems involving whole number, fraction, decimal and integer operations. At all times, the user may pick the operation and number type to drill and choose the number of problems in and difficulty level for each problem set. As the user works through each set of problems, E.Z. Arithmetic provides reinforcement by keeping score, by redisplaying each problem when showing the correct answer and by displaying the final statistics for the problem set after the last problem is done.

What's Special About E.Z. Arithmetic?

E.Z. Arithmetic has many special and unique features which contribute to their practicality, ease of use and enhancement of mathematical education. Here are some of them:

- A very easy-to-use, logically organized, user-friendly interface enables those who consider themselves to be calculator or computer illiterates, as well as those who don't like to read manuals, to have access to all program features quickly and easily.
- Since the HP 48SX weighs a mere 8 ounces, people find it easy to take E.Z. Arithmetic along with them to study, practice, drill and master arithmetic in a study hall, travelling on a train or bus, riding in a car, waiting on line, away on vacation, during a work break—in short, E.Z. Arithmetic makes self study in arithmetic at any almost time and in almost any place easy and pleasant. This means that owning E.Z. Arithmetic is almost like having a private tutor on call 24 hours a day—at a fraction of the cost.
- Our easy-off feature allows turning off the HP 48SX at any point and later turning it back on to continue on right from where you left off.
- All information, method, definition, concept, menu, graphics and example screens are easily printable on the HP82240 infrared printer.
- Careful error trapping takes care of invalid user input without crashing the program.
- Absolutely no user contact with the stack is required to make use of all E.Z. Arithmetic features. Yet, going to the stack without quitting E.Z. Arithmetic is just a keystroke away.
- Our easy-quit feature restores all user system flags and custom menus, leaves no "garbage" on the stack and gets rid of variables which are no longer needed when quitting E.Z. Arithmetic.

E.Z. Math™

What Does E.Z. Math Do?

E.Z. Math has six modules dealing with graphs, loans, savings, numbers, games and music:

Graphs. E.Z. Math covers the entire high school and college graphing curriculum, from elementary algebra to advanced calculus. The student can choose from 188 families of equations, inequalities, functions, systems of equations and systems of inequalities, in rectangular, polar and parametric form, all laid out and arranged in an easy-to-use, logically organized system of menus. E.Z. Math makes the graphic analysis of polynomial, rational, trigonometric, hyperbolic, logarithmic and exponential functions quick and easy.

Loans. E.Z. Math makes it easy to solve problems involving fixed rate mortgages on houses, condos, co-ops, and other real estate investments. Anyone wanting to purchase a home can quickly compute the monthly mortgage payment, the amount that can be borrowed, the number of years needed to pay off the loan and the annual interest rate and see a detailed breakdown of each payment in a complete amortization table.

Savings. E.Z. Math makes it easy to solve problems involving a single deposit or repeated deposits to a savings account, certificate of deposit [C.D.], term deposit [T.D.], money market account or other such investment. Anyone interested in saving money can quickly and easily compute the amount accumulated, the amount that must be deposited, the number of years necessary to keep the money on deposit and the annual interest rate.

Numbers. E.Z. Math makes it easy to handle numbers of various types. Elementary and high school students will find it easy to compute all the factors and the prime factorization of a natural number. In addition, finding the greatest common factor, least common multiple and average of any set of natural numbers is a snap. Any set of rational numbers, whether in whole number, fraction or mixed number form, may be added, subtracted, multiplied or divided yielding an answer expressed as a fraction or mixed number in lowest terms or as an integer. Any set of complex numbers may be added, subtracted, multiplied, divided or raised to a power. Any number of terms of the sequences of perfect nth powers, triangular numbers, binomial coefficients, Fibonacci numbers and multiples of a number can be easily computed.

Recreation. E.Z. Math provides a couple of strategy number games and an introduction to the musical capabilities of the HP 48SX. These are provided both for fun and as an encouragement to explore further some of the many features of the calculator, including a bit of the built-in rich programming language.

Education. Although using most features of E.Z. Math involves no more than plugging in the ROM card and following the various on-screen menus, the E.Z. Math User's Manual explains very clearly and precisely in complete detail all features and display screens of the program. Just as important, 46 pages of the manual are devoted to simple, intuitive explanations of the basic concepts involved in graphs, numbers, sets, variables, equations, savings and loans.

What's Special About E.Z. Math?

E.Z. Math has many special and unique features which contribute to its practicality and ease of use. Here are some of them:

- A very easy-to-use, logically organized user interface makes possible the full use of all E.Z. Math features without having to open the 850 page HP Owner's Manual.
- To reduce the possibility or user error, all answer screens repeat all entered data when displaying the answer.
- All menu screens, answer screens and graphics screens are easily printable on the HP82240 infrared printer.
- Careful error trapping takes care of invalid user input without crashing the program.
- Absolutely no user contact with the stack is required to use all E.Z. Math features. Yet, going to the stack without quitting E.Z. Math is just a keystroke away.
- Our easy quit feature restores all user system flags and custom menus, leaves no "garbage" on the stack and gets rid of variables which are no longer needed.
- Our easy off feature allows turning off the calculator without quitting the program.

E.Z. Algebra™

What Does E.Z. Algebra Do?

E.Z. Algebra for the HP 48SX is a comprehensive basic algebra course designed to make it easy for high school and college students, as well as those who need a remedial or refresher course, to build a solid algebra foundation. E.Z. Algebra is organized around these five topics:

Sets. E.Z. Algebra makes it easy to understand the meaning and types of sets, to learn the operations and relations used in working with sets and to comprehend the meaning of variables, operations and relations on sets of objects.

Sets of Numbers. E.Z. Algebra makes it easy to understand the meaning, purpose and properties of the sets of natural numbers, whole numbers, integers, rational numbers and real numbers.

Operations on Sets of Numbers. E.Z. Algebra makes it easy to understand the meaning of an operation on a set of numbers and to learn the meaning, terminology and properties of the operations of addition, subtraction, multiplication, division, power and root on a set of numbers.

Open Phrases. E.Z. Algebra makes it easy to understand the meaning, terminology and types of open phrases (algebraic expressions) and of numerical phrases (numerical expressions) and to learn how to evaluate open and numerical phrases, how to translate English phrases into open phrases, how to add, subtract, multiply and divide open phrases, how to simplify open phrases by factoring and how to simplify open phrases which contain grouping symbols, fractions or radicals.

Open Sentences. E.Z. Algebra makes it easy to understand the meaning of open and numerical sentences, the meaning of solution and solution set of an open sentence, and the meaning of solving and graphing an open sentence, to learn the types of open sentences, and to master the methods for solving and graphing open sentences.

What's Special About E.Z. Algebra?

E.Z. Algebra has many special and unique features which contribute to its practicality, ease of use and enhancement of mathematical education. Here are some of them:

- A very easy-to-use, logically organized, user-friendly interface enables those who consider themselves to be calculator or computer illiterates, as well as those who don't like to read manuals, to have access to all program features quickly and easily.
- Since the HP 48SX weighs a mere 8 ounces, people find it very easy to take E.Z. Algebra along with them to study, practice, drill and master math in a study hall, travelling on a train or bus, riding in a car, waiting on line, away on vacation, during a work break—in short, E.Z. Algebra makes self study in algebra at any almost time and in almost any place easy and pleasant. This makes owning E.Z. Algebra almost like having a personal private tutor on call 24 hours a day—at a fraction of the cost.
- Our easy-off feature allows turning off the HP 48SX at any point and later turning it back on to continue on right from where you left off.
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