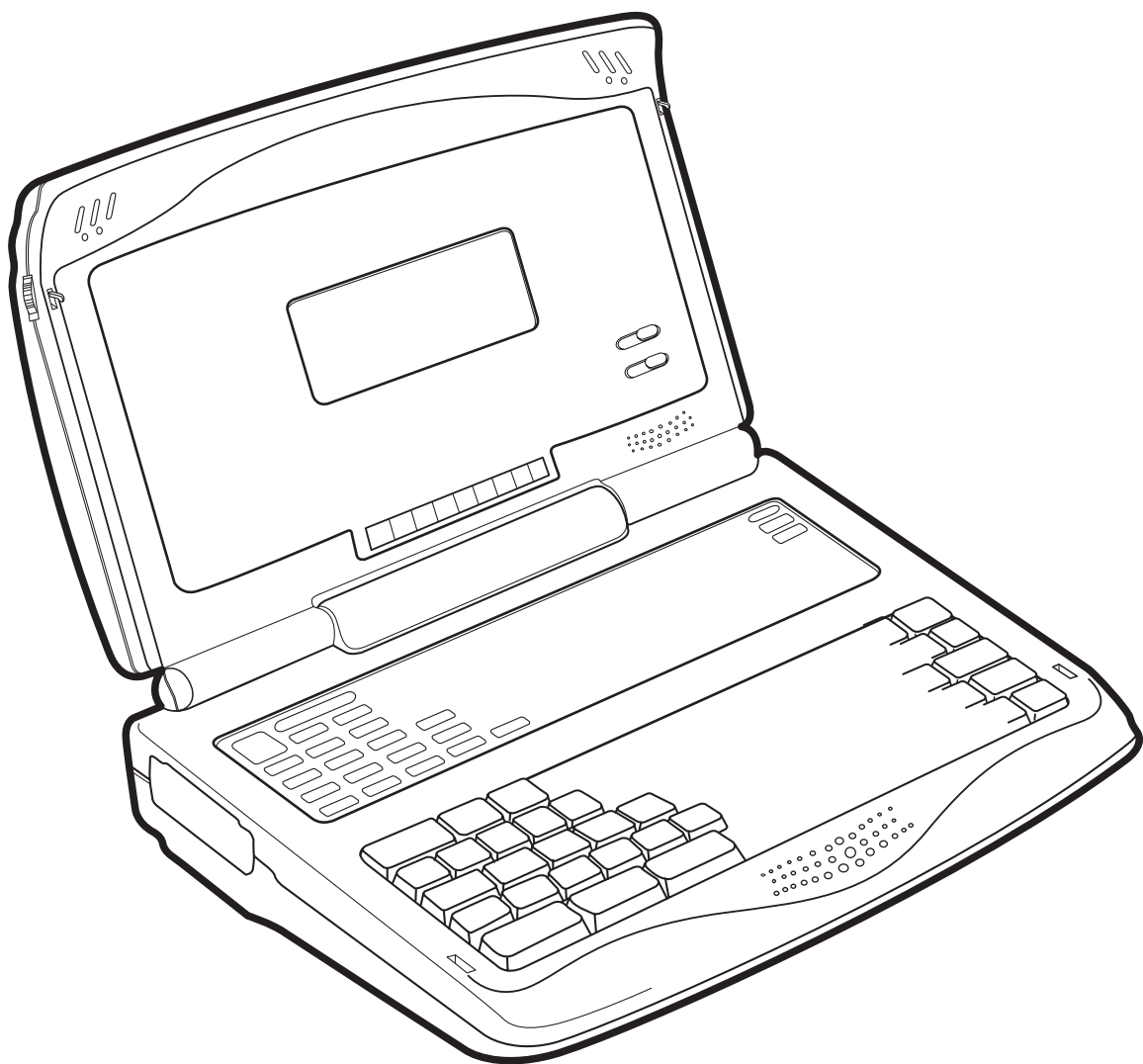# Precomputer Power Pad™ Plus

User's manual

Dear Parent:

*At **VTech**® we know that children have the ability to do great things. That's why all of our electronic learning products are uniquely designed to develop a child's mind and allow them to learn to the best of their ability. Whether it's learning about letters, numbers, geography or algebra, all **VTech**® learning products incorporate advanced technologies and extensive curriculum to encourage children of all ages to reach their potential.*

*When it comes to providing interactive products that enlighten, entertain and develop minds, at **VTech**® we see the potential in every child.*

CONTENTS

CHAPTER 1:   INTRODUCTION

Thank you for buying the **PRECOMPUTER POWER PAD™ PLUS** learning toy by **VTECH®**. We at **VTECH®** are committed to providing the best possible products to develop a child's mind.   Should you have any questions or concerns, please call our Consumer Services Department at 1-800-521-2010 in the U.S. or 1-800-267-7377 in Canada.

PRECOMPUTER POWER PAD™ PLUS is a powerful learning computer tool featuring 120x32 full dot matrix LCD screen and a standard sized computer style keyboard that gives the user the look and the feel of a real laptop computer. **PRECOMPUTER POWER PAD™ PLUS** offers 38 activities that include tenses, antonyms, synonyms, grammar, spelling, vocabulary, basic and advanced mathematics, 1000 trivia questions, logic games, a word processor, BASIC programming with tutorial, a built-in calculator, a 75,000 word spell checker and more.   Get ready for hours of learning fun with the **PRECOMPUTER POWER PAD™ PLUS** learning unit.

CABINET LOCKS

LCD SCREEN

CONTRAST SWITCH

VOLUME SWITCH

SPEAKER

9 LED STATUS DISPLAY BAR

ON SELECTOR

OFF SELECTOR

MEMBRANE ACTIVITY SELECTOR

EXPANSION CARTRIDGE DOOR

COMPUTER KEYBOARD

AC ADAPTOR PORT

PRINTER PORT

MOUSE PORT

PULL OUT CARRYING HANDLE
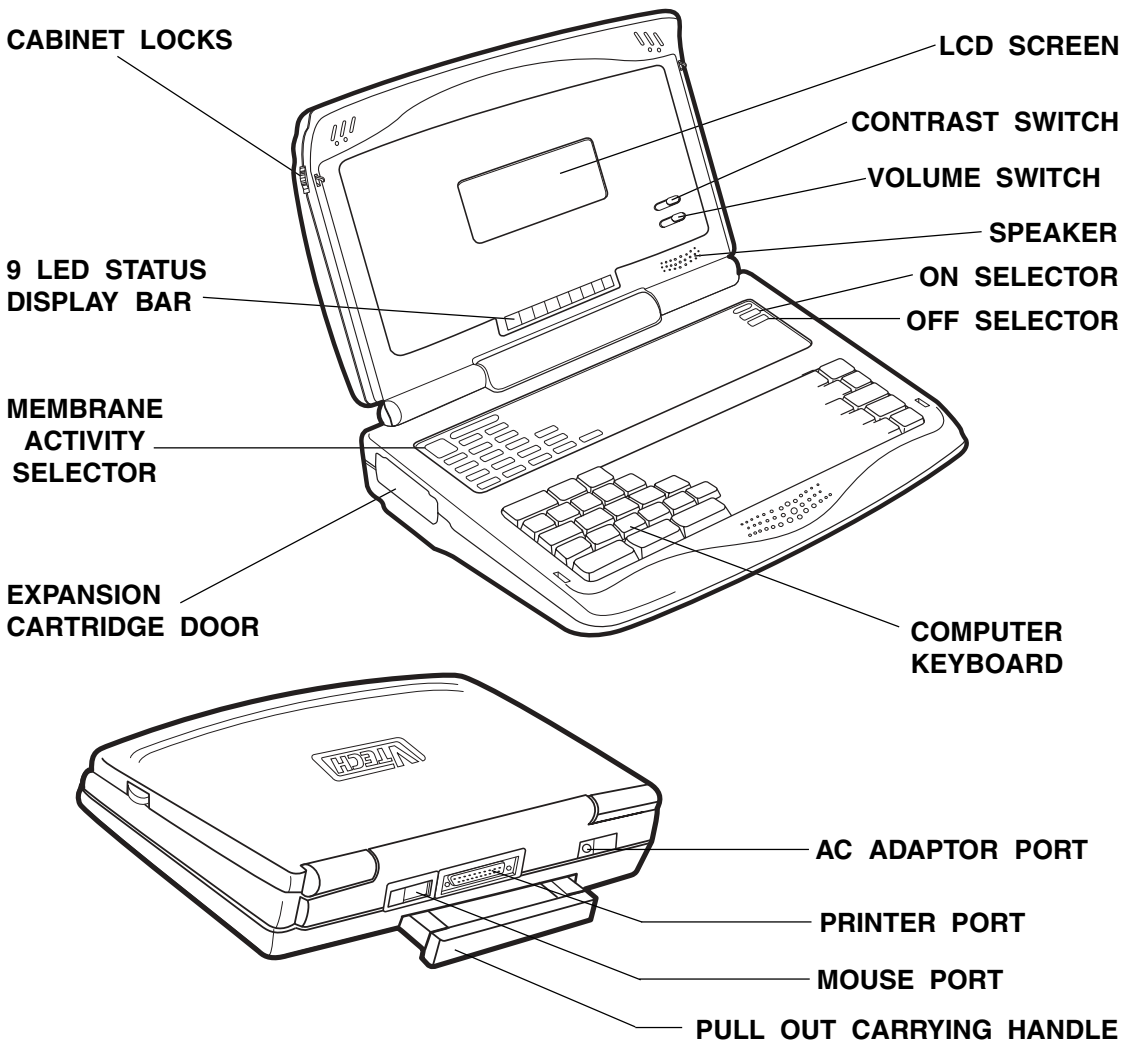
# CHAPTER 2:   GETTING STARTED

The **PRECOMPUTER POWER PAD™ PLUS** learning unit operates on 4 "AA" (UM-3/LR6) size batteries for the main compartment or a 9V AC adaptor. 2 "AA" (UM-3/LR6) batteries are required to backup the unit.

MAIN BATTERY INSTALLATION

1. Make sure the unit is **OFF**.

2. Locate the main battery cover on the back of the unit and open it.

3. Insert 4 "AA" (UM-3/LR6) size batteries as illustrated. **DO NOT USE RECHARGEABLE BATTERIES** in this unit. (The use of Rayovac Renewable/Rechargeable Alkaline batteries is encouraged.)

4. Replace the battery cover.

5. Turn the unit **ON**.
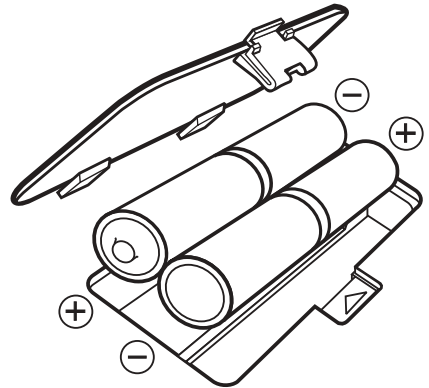
BATTERY NOTICE

- Install batteries correctly observing the polarity (+,-) signs to avoid leakage.

- Do not mix old and new batteries.

- Do not use batteries of different types.

- Remove exhausted or new batteries from equipment when you are not going to use it for a long time.

- Do not dispose of batteries in fire.

- Do not attempt to recharge ordinary batteries.

- The supply terminals are not to be short-circuited.

- Non-rechargeable batteries are not to be recharged.

- Rechargeable batteries are to be removed from the toy before being charged.

- Rechargeable batteries are only to be charged under adult supervision.

NOTE: If the unit suddenly stops working, or the sound seems weak, turn the unit off for 15 seconds, then turn it back on. If the problem persists, it may be caused by weak batteries. Please install a new set of batteries and try the unit again.
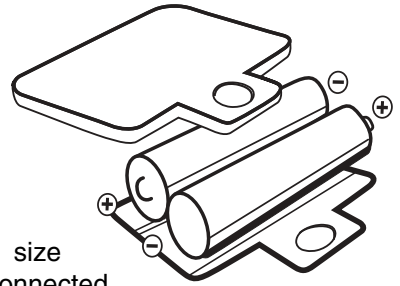
BACKUP BATTERY INSTALLATION

1. Make sure the unit is **OFF**.

2. Locate the backup battery cover on the back of the unit and open it.

3. Insert 2 "AA" (UM-3/LR6) size batteries as illustrated. **DO NOT USE RECHARGEABLE BATTERIES** in this unit. (The use of Rayovac Renewable/Rechargeable Alkaline batteries is encouraged.)

4. Replace the battery cover.

5. Turn the unit **ON**.

NOTE: While replacing the backup batteries, the 4 "AA" size batteries must be kept in the unit or the unit must be connected to the 9V adaptor while the adaptor is plugged in. If not, the information stored in the following activities will be lost:

- Word Processor
- BASIC
- User Name and Personal Message
- Last Scores
- Quick Menu Icons

AC ADAPTOR CONNECTION

Use a standard 9V ⎓ 300mA ✚–◉)– AC adaptor.

1. Make sure the unit is **OFF**.

2. Locate the adaptor jack on the back of the unit.

3. Plug the adaptor into a wall outlet.

4. Plug the adaptor into the unit's adaptor jack.

5. Turn the unit **ON**.

NOTE: Do not leave the adaptor plugged in for a long period of time if the unit is not in use. If the unit suddenly stops working or the sound seems weak, it may be the result of the adaptor connection. Turn the unit off and unplug the adaptor from the unit for 15 seconds. Next plug the adaptor back in and turn the unit on. If the problem persists, it may be the result of the adaptor's wiring or the unit. Please call our Consumer Services Department at 1-800-521-2010 in the U.S., 1-800-267-7377 in Canada and a service representative will be happy to help you.

The **VTECH®** AC adaptor is perfectly suitable to operate this product. Many retailers carry the adaptor, however, if you are unable to find one locally, you can send $10.00 plus $5.00 for shipping and handling (Illinois residents please add an 8.25% sales tax.) to:

Adaptor c/o

VTECH® Industries, LLC

101 E. Palatine Road

Wheeling, IL 60090-6500

Please do not send cash.

PRINTER CONNECTION

The **PRECOMPUTER POWER PAD™ PLUS** learning unit can support 12 different kinds of printers.   For details, please refer to Chapter 6.

MOUSE CONNECTION

Use our standard mouse, included with the **PRECOMPUTER POWER PAD™ PLUS.**

1. Make sure the unit is **OFF**.

2. Locate the mouse jack at the back of the unit.

3. Slide open the mouse port door and insert the mouse connector into the unit.

4. Turn the unit **ON**.

5. The mouse will work best if it is kept on the mouse pad.
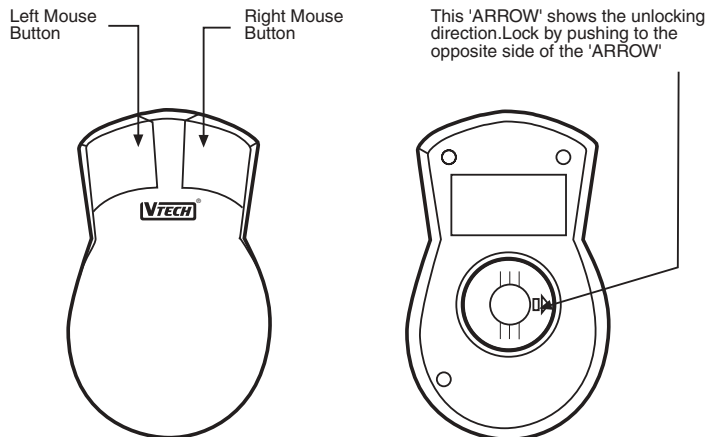
The mouse functions the same as a real computer mouse. Move the cursor on the screen by moving the mouse in the direction you would like the cursor to move. The Left mouse button functions as a select key (**Enter** key) while the Right mouse button functions as an **Esc** key.

GENERAL OPERATION

ON BUTTON & OFF BUTTON

ON
OFF
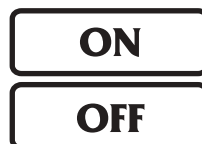
Turn on your **PRECOMPUTER POWER PAD™ PLUS** learning unit by pressing the **ON** button located at the upper right-hand side of the Membrane Activity Selector. A welcome animation will be displayed and you can begin play. Turn the unit off at any time by pressing the **OFF** button.

Automatic Shut Off

If there is no input into the **PRECOMPUTER POWER PAD™ PLUS** unit for about 20 minutes, the unit will automatically shut off to save power. To turn the unit back on after an automatic shut off, press the **ON** button again. We recommend turning the unit **OFF** when not in use. If the **PRECOMPUTER POWER PAD™ PLUS** unit is not in use for a long period of time, remove the main compartment batteries or unplug the adaptor.

CONTRAST SWITCH

Depending on your lighting conditions, slide the Contrast Switch to the left or right to allow for better viewing.

VOLUME SWITCH

Adjust the volume by sliding the Volume Switch to the left or right.

LED STATUS DISPLAY BAR AND LCD SCREEN

LED Light

There are 9 icons on the LED status display bar. Each icon represents an activity or function.
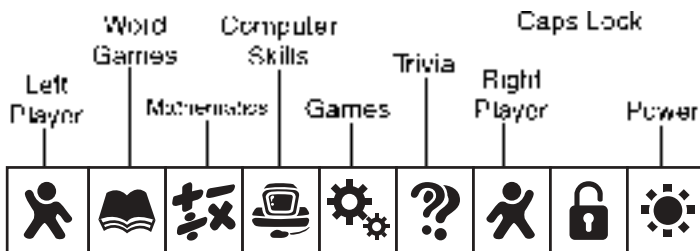
LCD SCREEN

On top of the LCD screen, a status bar is displayed.
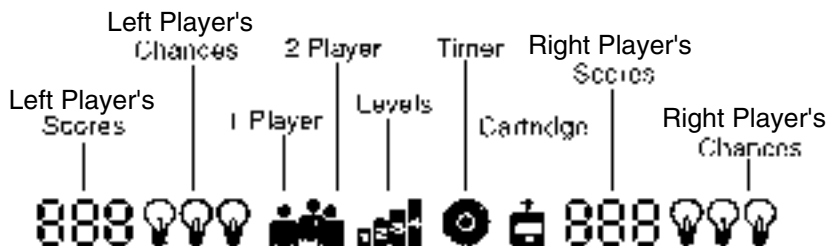
CHAPTER 3:   THE KEYBOARD

The computer keyboard on **PRECOMPUTER POWER PAD™ PLUS** combines the operation of a standard computer keyboard with several other functions described below.

SPECIAL KEYS

Enter Key:

Press this key after typing or choosing an answer to input your selection.

Shift Key:

Press this key to type capital letters or the symbols shown on top of the number keys.

Esc Key:

Press this key to exit an activity. By repeatedly pressing the **ESC** key, you can return to the main menu.

Caps Lock Key:

Press this key to make all letters appear in upper case. Press this key again to return to normal typing mode. When the Caps Lock function is activated, the Caps Lock light will turn on.

Answer Key:
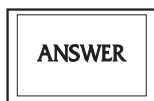
Press this key to see the correct answer to any question.

Right Player/Left Player Keys:
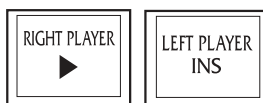
Press these keys with activities featuring a 2-player mode. The first person to hit his or her appropriate left or right player button will get the opportunity to answer the question first.

Cursor Keys:

Press the [▶ RIGHT PLAYER] key to move the cursor to the right.
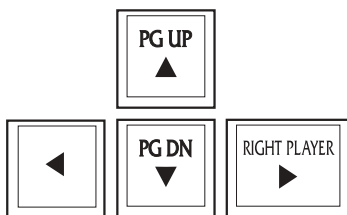
Press the [◀] key to move the cursor to the left.

Press the [▼ PG DN] key to move the cursor downward.

Press the [▲ PG UP] key to move the cursor upward.

Help Key:

Press this key at any time and you will see helpful hints to assist you with the current screen.

Hint Key:

```
HINTS
HELP
```

Press the Shift key and this key simultaneously when inputting text in Trivia activities when you need a hint. You will be given three multiple choice answers to choose from. In Rocket Fuel, you may replay the current stage.

Break Key:

```
BREAK
ESC
```

Press the Shift and Break keys simultaneously when you want to interrupt a program in the BASIC activity while it is running.

Alt Key:

```
ALT
```

Press this key and the letter 'P' to activate the printing function in the activities.

Press this key and the "3" key to get the symbol "#".

Erase Key:

```
ERASE
AC
```

Press this key when you are inputting text. This will clear the entire input line so that you can re-enter the text.

AC Key:

```
ERASE
AC
```

Press this key for an 'All Clear' screen in the Calculator activity.

Insert Key:

```
LEFT PLAYER
INS
```

Press this key when you want to insert text in the Word Processor, BASIC and Design A Card activities.

Delete Key:

```
DEL
```

Press this key when you want to delete the character at the cursor position.

Backspace Key:

```
BACKSPACE
```

Press this key when you want to delete the character before the cursor position.

3, #, and £:

```
£  #
3
```
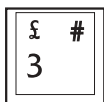
Press this key to type the number "3".

Press Shift and this key simultaneously when you want to type the symbol "£".

Press Alt and this key simultaneously when you want to type the symbol "#".

ACTIVITY SELECTOR

There are 38 activities in the **PRECOMPUTER POWER PAD™ PLUS** unit and they are divided into 5 categories. This includes Word Games, Mathematics, Computer Skills, Games and Trivia.   Press any one of the activities to go into the activity directly.

MAIN MENU /DEMO	WORD GAMES		MATHEMATICS		COMPUTER SKILLS	GAMES	TRIVIA	FUNCTION
	Word Puzzles	Word In Word	Addition	Flip Flop Fractions	Keyboard Skills	Spy Trap	Science	ON
Mystery Letter	Comparatives	Vocabulary Builder	Subtraction	Ratios	Typing Challenge	Rocket Fuel	English	OFF
Word Recall	Synonyms	Word Maker	Multiplication	Algebra	Word Processor	Design A Card	Geography	Level
Plurals	Antonyms	Sentence Scrambler	Division	Story Problems	BASIC Tutor	Spell Checker	General	Player
Tenses	Letter Drop	Grammar Quiz	Fractions	Equation Builder	BASIC	Calculator	Print Screen	Cartridge

On Key:

```
ON
```

This key is used to turn the unit **ON**. When the unit is **OFF**, press this key to turn the unit **ON**.

Off Key:

```
OFF
```

This key is used to turn the unit **OFF**. When the unit is turned **ON**, press this key any time to turn the unit **OFF**.

IMPORTANT: When using an AC adaptor, always make sure to **FIRST PRESS THE OFF KEY** on the unit before unplugging the adaptor.

Player Key:

> **Player**

Press this key to change from 1-player mode to 2-player mode and vice versa for activities with 2-player mode. If you want to change the player mode, press this key first and then select a player mode by typing the number 1 or 2. If you select the 2-player mode, you will be prompted to enter the names of the first player and second player.

Level Key:

> **Level**

The unit provides 4 levels of challenge in most of the activities. If you want to change the level, press this key first and then select a level by typing a number 1, 2, 3, 4. The first level is the easiest and the fourth level is the most difficult.

Cartridge Key:

> **Cartridge**

This key is used to access **VTECH® PRECOMPUTER** expansion cartridges that are compatible with the unit. An expansion cartridge must be inserted into the unit to operate the cartridge feature.

NOTE: Cartridges are sold separately. Please refer to Chapter 12 for details and a listing of **VTECH® PRECOMPUTER** expansion cartridges.

Print Screen Key:

> **Print Screen**

This key is used to print the current screen. Press this key at any time, and the current screen will print through the connected printer.

Main Menu/DEMO Key:

> **MAIN MENU /DEMO**

This key is used to return to the main menu. Press this key at any time and you will return to the main menu immediately. When you are already in the main menu, pressing this key will show the demo of this unit.

CHAPTER 4:   ACTIVITIES AND FUNCTIONS

HOW TO PLAY

SELECTING/CHOOSING/HIGHLIGHTING

During the course of entering the activities and during game play, you will be asked to either select, choose or highlight an object, a number, a letter or a word. This can be done in two different ways:

Mouse

You can move the cursor arrow with the mouse. When the cursor arrow is on the item you want to choose, press the left mouse button, or the Enter key.

You may also move the cursor to highlight text. To highlight, select text by pressing the left mouse button and dragging the cursor over the text.

You may exit an activity, go to previous menu, and close pop-up windows by pressing the right mouse button, or the ESC key.

Cursor Keys

You can move the cursor arrow with the cursor keys on the keyboard. When the cursor arrow is on the item you want to choose, press the Enter key.

Also, you may select a highlighted option by pressing the cursor keys. If the highlighted option is the one you want, press the Enter key.

CUSTOMIZED SCREEN AND TIPS OF TODAY

After turning on the unit, a welcoming animation and the customized screen will appear. You can change the name and the message of the customized screen in System Setup. Please see Chapter 6 for details.

After the customized screen appears, the Tips of Today pop-up on the screen. There are 55 different interesting facts that will be randomly shown each time the unit is turned on.

ENTERING ACTIVITIES

After the Customized Screen and Tips of Today are displayed, the Main Menu will appear.

There are 5 large icons on top of the Main Menu. You can choose from the following: Word Games ▨, Mathematics ▦, Computer Skills ▨, Games ▨, and Trivia ▨. Use 1 of the following 2 ways to enter into one of the five categories:

1. Press any one of the five activity buttons from the Membrane Activity Selector.

2. Choose an activity icon on the screen.

After choosing the category (Word Games, Mathematics, etc.), you may select an activity: Choose an activity on the screen. Due to the limitation of the screen, you will have to scroll through the activity list by using the UP and DOWN arrow icons located on the right side of the screen. Or you can use the UP or DOWN arrow keys on the keyboard. Press the Enter key or the left mouse button to enter the selected activity.
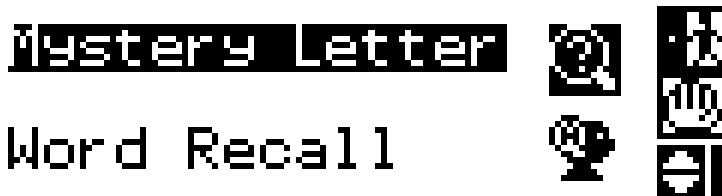
During any of the activities, press the ESC button to quit the activity and return to the main menu.

During any of the activities, press the Main Menu/Demo key to return to the main menu.

At the bottom of the Main Menu, there are three smaller icons. Choose from: Demo Icon ▨, Help Icon ▨ and System Setup ▨.

Demo Icon   ▨

When this icon is selected, the demo mode begins. The unit will automatically enter one of the Word Games, Mathematics, Computer Skills, Games or Trivia activities, and answer a question. This process will repeat until you press any key, or move the mouse.

Help Icon   ▨

When this icon is selected, helpful text will assist you with the current screen.

System Setup   ▨

When this icon is selected, System Setup is entered. Please refer to Chapter 6 for details of System Setup.

PLAYER MODES:

The unit will automatically begin in 1-player mode when the unit is turned on. To enter the 2-player mode, press the Player key first and then type the number "2". The unit will prompt you to enter the names of the first player and the second player.

NOTE: The following activities do not feature the two-player mode:
- **Word Puzzles**
- **Spy Trap**
- **Rocket Fuel**
- **Keyboard Skills**
- **Typing Challenge**
- **Word Processor**
- **BASIC Tutor**
- **BASIC**
- **Design A Card**
- **Spell Checker**
- **Calculator**

GENERAL DISPLAY

In most of the activities, you will see a display with status information, useful icons and a working area. The status information will include the players' scores, the number of chances remaining to answer a question, the current level, and the time indicator. At the right side of the screen, there are several icons displayed. They include the Quit icon, the Help icon, and the Up/Down arrow icons. The Up/Down icons are used to scroll the text, if the text is too long to be displayed on one screen. Besides clicking on the icons with your mouse, you can also press the Up/Down cursor keys on your keyboard.

WORD GAMES

MYSTERY LETTER

A word (missing a letter) will appear on the screen. Type in the missing letter and press the Enter key to confirm your answer.

WORD RECALL

The unit will first display a word on the screen. After 3 seconds, the word will disappear. Type in the same word as originally displayed. The underlines tell you how many letters are in the word. Press the Enter key to confirm your answer.

PLURALS

A singular form of a noun will appear on the screen. Type in the plural form of the given word and press the Enter key to confirm your answer.

TENSES

Two tenses of a verb will appear on the screen. Type in the missing tense (present, past or past participle) of that verb and press the Enter key to confirm your answer.

WORD PUZZLES

This is a crossword puzzle game with 10 missing words in each puzzle. Use the cursor keys or mouse to select one of the missing words. Press the Enter key to receive a clue for the chosen word. Type in the word for that clue and press the Enter key to confirm your answer. If you need to see the clue again, press the Hints key and the clue will appear. Also, you may use the Erase key to clear any word you have typed in, and the unit will delete the word. After you have answered this clue, choose another word until you have entered all of the 10 missing words.

COMPARATIVES

This activity shows three forms of adjectives or adverbs. Two comparatives will be displayed on the screen, and you need to input the third one. Type in the missing comparative and press the Enter key to confirm your answer.

SYNONYMS

The unit will display a word on the screen. Type in a word that has the same meaning. The underlines tell you how many letters are in the word. Press the Enter key to confirm your answer.

ANTONYMS

The unit will display a word on the screen. Type in a word that has the opposite meaning. The underlines tell you how many letters are in the word. Press the Enter key to confirm your answer.

LETTER DROP

An incomplete word will appear on the bottom row with its missing letter above it. Use the Left/Right cursor keys or mouse to place the missing letter in its correct position and press the Enter key to confirm your answer.

WORD IN WORD

The unit will display a word on the screen. Use the Left/Right cursor keys or mouse to move the pointer and select a letter to be removed. Try to remove a letter so that the remaining letters still make a word. Press the Enter key to confirm your answer.

VOCABULARY BUILDER

The unit will display a word on the screen with three definitions of the word. Only one is the correct answer. Choose the correct definition of the word and enter your selection by pressing the corresponding number or pressing the Enter key or clicking your mouse.

WORD MAKER

The unit will display a prefix or a suffix of a word at the bottom of the screen. Several suffixes/prefixes scroll across the screen above the word. When the correct suffix/prefix is above the word, press the Enter key to input your answer.

SENTENCE SCRAMBLER

A group of words will appear on the screen. You must rearrange the words to form a correct sentence. Select the word you think is the first word of the sentence with the arrow keys or the mouse cursor, and then press the Enter key or the left mouse button. The word will move to the answer line. Repeat the same process for the second word, the third word and so on until the entire sentence is constructed. If you make a mistake, you can select the word from the answer line with your mouse and the word will move to the top of the screen. When you select the last word of the sentence, the unit will check whether your selections are correct or incorrect.

GRAMMAR QUIZ

A sentence will appear on the screen with one grammatical error. Choose the grammatically incorrect word with your arrow keys or the mouse cursor. Then press the Enter key or left mouse button. If you pick out the grammatical error, 3 multiple choice options will appear on the screen. Select the option that makes the sentence grammatically correct by pressing its corresponding number, or moving the mouse cursor or pressing the Up/ Down arrow keys to highlight your choice then press the Enter key to input your answer.

MATHEMATICS

ADDITION

An addition problem will appear on the screen. Type in your answer, from right to left, using the number keys on the keyboard and press the Enter key to confirm your answer.

SUBTRACTION

A subtraction problem will appear on the screen. Type in your answer, from right to left, using the number keys on the keyboard and press the Enter key to confirm your answer.

MULTIPLICATION

A multiplication problem will appear on the screen. Type in your answer, according to the position of the blinking cursor, using the number keys on the keyboard and press the Enter key to confirm your answer.

DIVISION

A division problem will appear on the screen. Type in your answer, from left to right, using the number keys on the keyboard and press the Enter key to confirm your answer.

FRACTIONS

A fraction will display on the screen. 3 multiple choice options will be given. Decide which option is the correct answer and press its corresponding number or click on the answer with your mouse.

FLIP FLOP FRACTIONS

An equation which involves turning a fraction into a decimal/percentage will appear on the screen. Type in the answer using the number keys on the keyboard and press the Enter key to confirm your answer. When inputting your decimal answer, place a zero before the decimal point when the answer is less than 1. Example: "0.94" is correct. ".94" is incorrect.

RATIOS

A ratio problem will appear on the screen. Type in the answer to make the ratios equal by using the number keys on the keyboard and press the Enter key to confirm your answer.

ALGEBRA

An algebra problem will appear on the screen. Type in the value of "x" or "y" using the number keys on the keyboard and press the Enter key to confirm your answer.

STORY PROBLEMS

In this activity the **PRECOMPUTER POWER PAD™ PLUS** learning unit challenges you to find answers to math problems that are presented as story problems instead of numerical equations. The question will appear on the screen. You may type your answer or press the Hint key to choose from 3 multiple choice options. Select your answer by typing in the corresponding number, using the mouse or use the Up/Down arrow keys to highlight your selection then press the Enter key to confirm your answer.

EQUATION BUILDER

The unit will display an equation. Three signs < (less than), > (greater than) and = (equal to) will scroll across the screen. When the correct sign is at the middle of the equation, press the Enter key to choose the correct sign to complete the equation.

COMPUTER SKILLS

KEYBOARD SKILLS

You can learn keyboarding skills through this helpful typing tutorial. This activity is divided into Basic and Expert courses.

Basic Course

In the basic course, you will type the letters displayed in the upper right corner of the screen. The hand and the keyboard on the screen indicates which finger should be used

to type each letter. Each correct letter equals 1 point. After typing 100 letters (50 for the left hand, 50 for the right hand), the score and the rewarding screen will be shown.

Expert Course

In the expect course, follow the screen and type the given text. After you have completely typed the text, your typing speed and accuracy will appear on the screen.

TYPING CHALLENGE

This activity helps to improve your keyboarding skills through this exciting typing game. The cannon on the right side of the screen will fire letters to the castle on the left side. Type the letter before it hits the castle. If the castle on the screen is hit 8 times, one chance is deducted. You will win the game if you can type all the given letters before your three chances are up.

WORD PROCESSOR

This activity offers word processing for your documents. Please see Chapter 5 of this manual for further details.

BASIC TUTOR

This activity will acquaint you with the fundamental **BASIC** computer programming concepts. At the end of the text, there is a program for the game "Rock, Paper, Scissors." You can learn the technique of a **BASIC** program by writing your own game.

BASIC

This is an intensive computer programming activity. Complete instructions are provided in Chapter 7 of this manual.

DESIGN A CARD

The **PRECOMPUTER POWER PAD™ PLUS** learning toy has several built-in pictures, including holiday, birthday, and celebration scenes. With these pictures, you can print letter greetings and folded cards along with your personal messages to give to your friends and relatives.

To create and print a Letter Greeting:

Select Letter Greeting.

Choose a picture to be used in the Letter Greeting.

Type in your text message. You are allowed up to eight lines of text. Press the Enter key several times. The unit will ask you if you have finished entering your message. Select yes or no.

Select Print.

To create and print a Folded Card :

Select Folded Card.

Choose a picture to be used in the folded card.

Type in your text message. You are allowed up to eight lines of text. Press the Enter key several times. The unit will ask you if you have finished entering your text. Select yes or no.

Select Print.

SPELL CHECKER

Spell Checker is an electronic word list that contains approximately 75,000 words and is used to check the correct spelling of words. This program can work independently or within the Word Processor activity.

The Spell Checker searches words phonetically. English words can be difficult to spell because the same sound can sometimes be spelled several different ways. Remember, Spell Checker never actually spells a word for you but will check for spelling errors and gives you suggestions for correcting the possible misspelling.

Type a word the way you think it is spelled and press the Enter key. **PRECOMPUTER POWER PAD™ PLUS** will spend a few seconds checking the dictionary. If the word is spelled correctly, the unit will respond with "Correct!" If the word you typed is not in the dictionary, it will give you a list of possible words to correct the misspelled word. To continue checking additional words, continue typing without pressing the Enter key.

CALCULATOR

This activity allows you to use the unit as an advanced, scientific calculator. Please see Chapter 8 of this manual for instructions.

GAMES

SPY TRAP
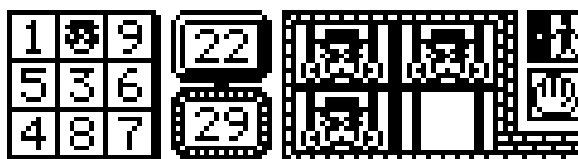
The object of the game is to catch all of the four spies within the time alotted. The spies are hidden behind the numbers. The only way to reveal a spy is to select 2 to 3 continuous numbers that add up to the number stated in the middle of the screen. When a spy is revealed, select the spy to send him to jail. There is a time limit to catch the spies. If you cannot catch the spies within the time limit, you will lose a turn. The following are

the rules of the game:

1. Press the number key or use your mouse to select the numbers. You may select any number. If all nine of the squares fill up, you will lose a turn.

2. Try to select the numbers so that 2 to 3 continuous numbers that you choose, add up to the number in the middle of the screen.

3. A spy appears in one of the blank squares. Press the Space bar or click on the spy immediately to put the spy in jail. If you don't catch a spy within 5 seconds, he will disappear.

4. If you cannot catch four spies within the time limit, you will lose a turn.

Repeat the above steps until all four spies are in jail.

ROCKET FUEL
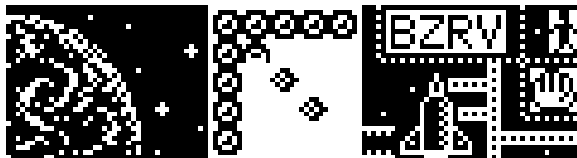
     Robot

     Fuel

     Rock

     Rock

     Rock

The object of the game is to push all of the fuel into the rocket so that the rocket has enough fuel to travel to the next planet.

Use the cursor keys to control the robot in pushing the fuel into the rocket. The following are guidelines when playing this game:

1. The robot can only push the fuel. It cannot pull fuel.

2. The robot can only push one fuel tank at a time. It cannot push two fuel tanks simultaneously.

3. If you find that you cannot continue pushing the fuel tanks into the rocket, you may press the Hint (Shift & Help) key. This restarts this stage. You can then try again with another approach. Remember: you have only three chances to use the Hint key.

4. The rocket will start travelling to another planet only after you have pushed all of the fuel into the rocket.

Note: You may click on the Help icon to learn playing tips.

The game also gives you the opportunity to load the game for different levels . You need to enter the password that appears in the top right hand corner of the screen to reload the stage.

TRIVIA

This challenging trivia game has 1000 questions in 4 different topics: Science, English, Geography and General. All topics are available with a 2-player mode and 4 levels.

Once you have selected a topic, a question will appear on the screen. If you know the answer to the question type in your answer and the press the Enter key to input your answer. If you don't know the answer, you may select 3 multiple choice options by pressing the Hints key. Decide which option is the correct answer and press its corresponding number. Using the Hints key will result in losing one chance.

DEMO MODE

To access the demo mode, press the Main Menu/Demo key. You may also select the Demo icon located on the bottom right hand corner of the screen. This mode demonstrates some of the activities in the **PRECOMPUTER POWER PAD™ PLUS**. When the demo mode starts, the **PRECOMPUTER POWER PAD™ PLUS** enters the activities in all categories. After the unit demos one activity it will return to the Main Menu. This process is repeated until you press any key or move the mouse.

SYSTEM SETUP

System Setup allows you to change various defaults. These include printer setup, quick menu setup, customize screen setup and more. Please see Chapter 6 for further details.

CHAPTER 5: WORD PROCESSOR

The **PRECOMPUTER POWER PAD™ PLUS** offers you one of the first and most important applications found in computers: word processing. With this word processor, you will be able to create, edit, save and print documents you have created. The unit can hold approximately 3500 characters or 500-600 words before data has to be saved or printed.

The bottom line represents the status of the text on the screen.

L=1 "L" stands for a line of text. The number (i.e. "1") represents the first line of text.

L=2 would mean the user is editing the second line of text. A "line of text" refers to one line (60 characters) on an 8 1/2 X 11 sheet of paper - not one line on the LCD viewing screen. PLEASE NOTE THAT 60 CHARACTERS WILL TAKE UP 3 LINES ON THE LCD VIEWING SCREEN BUT TRANSLATE TO ONE LINE OF TEXT ON AN 8 1/2 X 11 SHEET OF PAPER WHEN PRINTED (SEE PRINT SECTION). This feature allows the user to effectively print documents using a standard 8 1/2 X 11 format.

J=L means the current line is justified left.

NB   means the current word is not bolded.   B means the current word is bolded.

CH means which character the cursor is on in a particular line.

PLEASE NOTE THAT THE VT-25 THERMAL PRINTER PRINTS 25 CHARACTERS PER LINE ON A STANDARD ROLL OF THERMAL PAPER. YOUR PREPARED TEXT WILL AUTOMATICALLY BE ADJUSTED TO FIT THIS FORMAT WHEN YOU SELECT THE VT-25 THERMAL PRINTER IN PRINTER SETUP.   WHILE THE FORMATTING WILL NOT CHANGE ON THE LCD SCREEN, THE TEXT WILL PRINT CORRECTLY TO FIT THE VT-25 FORMAT.

The Word Processor has a menu with many functions. You may view the Word Processor menu by pressing the Help key. The Word Processor menu will appear with the following options: File, Edit, Format, Tools, Print, Help and Exit.

FILE OPTIONS

Under the File Options menu, you may select four different functions: New, Load, Save and Delete. To enter the File Options menu, press the Help key and select File Options.

New

New is the command to create a new file. Every time you enter the Word Processor activity, you will see the same document you worked on the last time you were in Word Processor. To create a file, select New from the FILE options and it will ask if you want to create a new document. If you select "Yes", it will ask if you want to overwrite the current document. If you select "Yes", the document will be deleted, allowing you to create a new one. Selecting "No" will return you to the existing document. If you want to save your document in order to create a new one, you must have a RAM cartridge. This cartridge allows you to save multiple documents and is sold separately.

Load

Load is the command used to retrieve an existing file from the optional RAM cartridge. Select Load from the File Options and it will list all of the files in the RAM cartridge. Select the file you want to retrieve and press the Enter key. The chosen file will then appear on the screen.

Save

Saving a file is a very important option in Word Processor because if you forget to save the file, your document will be lost permanently. You must have a RAM cartridge in order to save a file. Select Save from the File Options and it will prompt you to input the name of your file. Type in your file name and press Enter to save the file. The **PRECOMPUTER POWER PAD™ PLUS** can store one page, 8 1/2 X 11. But if you would like to save the document before creating a new one, you must have a RAM cartridge. To rename a file, enter System Setup and select RAM Cart. Manager.   Please note that the filename can only be up to 8 characters long.

Delete

When you no longer need a file, erasing it from the optional RAM cartridge is a good idea because it will free up more space for other files. Select Delete from the File Options and it will prompt you with a list of files in the optional RAM cartridge. Select the file to delete and press the Enter key. A message will appear on the screen asking you to confirm your selection. Be careful when deleting a file because whatever you delete will be gone permanently.

Note: If you have purchased our **VTECH POWER LINK™**, and connect it to the unit correctly, you may also Save, Load or Delete a file on the connected PC. In the File Options, select Load. The unit will ask you whether to load a file from RAM Cartridge or from PC. If you select PC, the files on the PC will be listed. You may then select a file on the PC to be loaded into the unit's main memory. The same applies to the Save and Delete functions. Please refer to Chapter 11 for more details about our **VTECH POWER LINK™**.

EDIT OPTIONS

Most simple editing can be accomplished by using the Backspace, Insertion (INS) and Deletion (DEL) keys. When you want to change large blocks of text, you need to do block editing. The EDIT menu is for editing blocks of text. You can find Edit Options by pressing the HELP key.

Define a Block

The first step in block editing is to define or mark a block of text. There are two ways to define a block of text. 1) Drag the mouse over the desired text to highlight it. 2) Place the cursor at the first character of the block you want to edit, then select Block Begin from the EDIT menu. When the cursor is at the end of the block, select Block End from the EDIT menu. After a block of text is defined, you can use one of the four blocking tools: block copy, block cut, paste block or clear block.

Block Begin

This marks the beginning of a block of text.

Block End

This marks the end of a block of text. The text between the Block Begin mark and the Block End mark will be highlighted, up to 60 characters or one line of printed text.

Block Copy

After a block of text has been defined, select Block Copy from the EDIT menu. The original block will remain and you can paste the block in any location in the document.

Block Cut

To cut a block of text, first define the block of text and select Block Cut from the EDIT menu. The block will be removed from its current position and will be placed in memory. You can now paste the block in any location in the document.

Paste Block

After you have used the Block Cut or Block Copy option, move the cursor to the position where you want the block of text to be pasted. Select Paste Block from the EDIT menu and the block of text you defined will be pasted to the new location.

Clear Block

To erase a block of text, first define the block of text and select Clear Block from the EDIT menu to clear the block. The defined block will be permanently cleared from the document.

FORMAT OPTIONS

There are four options in the FORMAT menu. They are: Justify Left, Justify Right, Justify Center, and Bold.

Justify Left

By default, the text is aligned left with the margin, Justify Left.

Justify Right

To align your text to the right margin, choose Justify Right.

Justify Center

To align your text so it is centered within your document, choose Justify Center.

Important note:

You will not be able to view the format you selected on the screen. It will be reflected in the printed document. This is due to the differences between the screen size and the printed document.

Bold

There are two types of fonts, bold font and normal font. If you want to bold a word, place the cursor on any letter of the word, and then select Bold from the FORMAT menu. The entire word will be bolded. You may also use your mouse. Click and drag on the word you want bolded to highlight it. Then select Bold from the FORMAT menu. Your word will be bolded. The Bold command also applies to a block of text. After you have defined a block of text, select Bold from the FORMAT menu. The entire block of text will be bolded.

TOOLS OPTIONS

The **TOOLS** menu provides two functions: Check Spelling and Symbols.

Check Spelling

Spell checker checks a word to see if it is in the unit's dictionary. To check the spelling of a word, highlight a word using your mouse. Then choose Tools Options and select Check Spelling. Press the Enter key. If the word does not exist in the unit's dictionary, it will give you a list of possible words for reference.

Also, you may spell check an entire document. Select Check Spelling from the TOOLS menu. The entire document will be checked word by word. When there is a word that is not found in the dictionary, several options will be provided: Ignore Word, Edit Word, or Suggestions.

Ignore Word

If you think the word is spelled correctly, select Ignore Word and press the Enter key. The Spell Checker will skip this word and continue checking the remaining text.

Edit Word

If you know the correct spelling of the misspelled word, select Edit Word and press the Enter key. Type in the correct spelling of the word and press Enter. The Spell Checker will change the word within your document automatically.

Suggestions

If you don't know the correct spelling of a word, and you would like the unit to provide you suggestions, select Suggestions and press the Enter key. A list of similar words will appear on the screen. You may scroll from a list of possible suggestions, and then press the Enter key to select a choice. There may be instances where the unit does not have any suggestions. The unit will then say "No Suggestions."

Symbols

Symbols gives you a list of useful characters to use in your documents. Press the Symbol key located on your keyboard or select Symbols from the TOOLS menu. A window will appear showing all of the different symbols you can choose from. Press the scrolling arrows on the screen or the arrow keys on your keyboard to locate a symbol. Press the Enter key to select it. The symbol window will close automatically and the symbol you have chosen will appear in your document. Press the Esc key to close the window if you do not choose a symbol. Remember you can also select additional symbols located on the number keys.

PRINT OPTIONS

To view the printing options, press the Help key and you will see the Word Processor menu. Select Print Options. There are three features in this menu: Printer Setup, Print and Print Preview.

Printer Setup
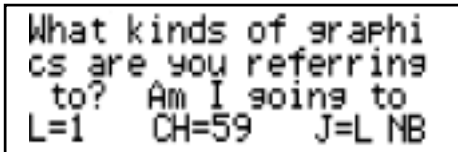
Printer Setup allows you to select a printer. This can also be done through System Setup. Please see Chapter 6 for details.

Print
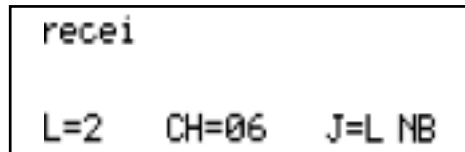
In order to use the print feature, you must connect it to one of the printers compatible to the **PRECOMPUTER POWER PAD™ PLUS**. Please see the list of printers listed in Chapter 6 under Printer Setup.

When this option is selected, the unit will ask you whether to print the text in Single or Double Line Spacing. Select one as you like. The unit will then ask if you are ready to print. Select yes or no. The current text will be printed if you selected yes. Make sure the printer cable is correctly connected, and the correct printer is selected in Printer Setup. Please note that 60 characters take up 3 lines of text on the LCD Viewing Screen, but translate to one line of text on an 8 1/2 X 11 sheet of paper when printed. (See Examples)

On screen:
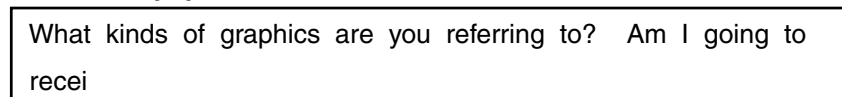
```
What kinds of graphi
cs are you referring
 to?  Am I going to
L=1    CH=59    J=L NB
```

```
recei



L=2    CH=06    J=L NB
```

Printed on paper:

```
What kinds of graphics are you referring to?   Am I going to
recei
```

Print Preview

If you have purchased our **VTECH** P**OWER LINK™**(sold separately), you can use the PC monitor to view your text before it is printed. Make sure the **VTECH POWER LINK™** is correctly connected, then select Print Preview from the PRINT menu. The text will be displayed on your PC screen. Use the Up/Down arrows to scroll through the text, and press the Esc key when you have finished viewing the file.

HELP

Several pieces of Help Text will be shown when this option is selected. These helpful hints will provide you with additional information to guide you through play.

EXIT

Selecting this option will bring you back to the main menu.

CHAPTER 6: SYSTEM SETUP

To enter System Setup, click on the System Setup icon located at the bottom right-hand corner of the screen. The System Setup menu will appear with the following options: Printer Setup, Tips of Today, Screen Saver, Clear Last Score, Icon Box, Quick Menu Setup, Customize Setup, Demo Mode, Ram Cart. Manager and Power Link.

PRINTER SETUP

Due to the extensive varieties of printers, not all compatible printers are listed. Please check with your printer manufacturer for information on reconfiguring your printer.

There are a number of printers which **PRECOMPUTER POWER PAD™ PLUS** is compatible with. Printer Setup allows you to select a printer to print your documents. **PRECOMPUTER POWER PAD™ PLUS** supports the following printers:

> VTECH Thermal VT-25
>
> EPSON LQ-X70
>
> EPSON 24 Pin
>
> EPSON 9 Pin
>
> EPSON Stylus
>
> EPSON Stylus Color II
>
> Canon BJC 4100
>
> Canon BJ 200
>
> Canon BJ 30
>
> Canon BJ 300/330
>
> HP Laser IV L
>
> HP DESKJET

Before selecting a printer, make sure the printer is correctly connected to the **PRECOMPUTER POWER PAD™ PLUS** learning unit. After setting up the printer, you can print a document from the Word Processor activity or print any screen. When you want to print a screen, press the Print Screen key on the Membrane Activity Selector.

If no printer is selected, you will be unable to choose a printer using this feature.

Note: In Printer Setup, Epson® Stylus Color II is displayed as Epson® Stylus Color.

TIPS OF TODAY

The Tips of Today will provide an interesting fact every time the **PRECOMPUTER POWER PAD™ PLUS** unit is turned on. You may turn the Tips of Today **ON** or **OFF**, by pressing the Enter key or selecting it with your mouse.

SCREEN SAVER

The unit features a screen saver option. The screen saver will appear after two minutes with no input. You can turn this feature **ON** or **OFF** by pressing the Enter key or selecting it with your mouse.

CLEAR LAST SCORE

The **PRECOMPUTER POWER PAD™ PLUS** learning unit will store all players' last scores in memory. This will allow you to check future scores to measure your progress.

Select the Clear Last Score option. Last scores cleared will appear on the screen. Select OK to clear the last scores stored in the **PRECOMPUTER POWER PAD™ PLUS** learning unit.

ICON BOX

You may turn the Icon Box **ON** or **OFF** by pressing the Enter key or selecting it with your mouse. When the Icon Box is turned ON, the unit will specify each icon when you place the mouse cursor over an icon for 1 second.

QUICK MENU SETUP

Quick Menu is a useful tool for advanced users. You can select three activities to put into Quick Menu. This allows you to quickly access your favorite three activities directly from the Main Menu instead of selecting from a list of activities.

Go to System Setup. Select Quick Menu Setup and press the Enter key. Check to be sure the Quick Menu feature is "ON". You can turn this feature **ON/OFF** by pressing the Enter key or selecting it with your mouse.

Select First Icon using your mouse or the Up/Down arrow keys and pressing the Enter key. The unit will display all the activities to choose from. Scroll through the list and select your first activity. Press the Enter key. The unit will then return to the Quick Menu Setup screen.

Select Second Icon and repeat this process.

Select Third Icon and repeat this process.

Return to the Main Menu. There you will see the three icons you selected at the bottom of your screen.

You can enter the activities you chose immediately when you select these icons.

CUSTOMIZE SETUP

In Customize Setup, you can customize your opening screen, opening sound effect and closing sound effect.

Customize Screen

The Customized Screen is the screen shown after the opening animation. You may personalize the screen by entering your name and your message. This information will be displayed each time you turn on the **PRECOMPUTER POWER PAD™ PLUS** learning unit. Also, we have provided three different default messages for you to choose from. To customize your screen, select Customize Screen and press the Enter key. A Customize Screen menu will appear.

To enter your name, select Enter Name and click on the left mouse button or press the Enter key. Then type in your name and press the Enter key.

To enter your personal message, select Enter Message and click on the left mouse button or press the Enter key.

If you want to choose a default message, select Default Messages and click on the left mouse button or press the Enter key. Choose from: VTech - Precomputer Power Pad (TM) Plus COPYRIGHT (C); Proverb 1 - "Triumph" is try added to umph.; Proverb 2 - Reach for your potential and your potential will reach for you.

After you have typed in your personal message, or selected a default message, you may preview it. Select Preview Screen and click on the left mouse button or press the Enter key. The message you input will appear on the screen. To see your customized screen, turn the unit off and then back on. Your customized screen will appear.

Opening Sound

There are three different sound effects that you can choose from for the opening sound. Select Opening Sounds and press the Enter key. Then choose either Opening Sound 1, Opening Sound 2 or Opening Sound 3 and press the Enter key or click on your left mouse button.

Closing Sound

There are also three different sound effects that you can choose from for the closing sound. Select Closing Sounds and press the Enter key. Then choose either Closing Sound 1, Closing Sound 2 or Closing Sound 3 and press the Enter key or click on your left mouse button.

DEMO MODE

In System Setup, select Demo Mode and press the Enter key. The unit will show several activities from all categories (Word Games, Mathematics, Computer Skills, Games and Trivia) automatically. This process will repeat until you press any key or move the mouse.

RAM CART. MANAGER

The RAM Cart. Manager can be accessed through System Setup. The **RAM** Cart. Manager is functional only when utilizing a **RAM** cartridge. **RAM** cartridges are sold separately. Insert the cartridge into the **PRECOMPUTER POWER PAD™ PLUS** unit, located on the left side. The RAM Cart. Manager has the following functions: List Files, Save File, Load File, Rename File, Delete File and Format Cartridge.

List Files

When this function is selected, the files stored in the **RAM** cartridge are listed on the screen.

Save File

When this function is selected, you will be asked to choose whether to save a BASIC program or a Word Processor file. After you have made your selection, provide a filename for your file. This process allows the BASIC program or Word Processor file to be saved into the **RAM** cartridge.

Load File

When this function is selected, the files stored in the **RAM** cartridge are listed on the screen. You can select one of the files and load the file into the main unit. If it is a Word Processing file, the unit will take you to the Word Processor activity. If it is a BASIC file, the unit will bring you to the BASIC activity. To view the BASIC program, type LIST and press the Enter key. Continue pressing the Enter key to view each line.

Rename File

When this function is selected, the files stored in the **RAM** cartridge are listed on the screen. You can select one of the files and provide a new filename for the selected file. The file will be renamed.

Delete File

When this function is selected, the files stored in the **RAM** cartridge are listed on the screen. You can select one of the files. When you confirm that you want to delete the file, the file is removed from the **RAM** cartridge.

Format Cartridge

When this function is selected, all files stored in your **RAM** cartridge will be cleared. After you select Format Cartridge, the unit will prompt you to confirm you would like your files cleared. If you select Yes, all data on the **RAM** cartridge will be cleared.

POWER LINK

If you have purchased our **VTECH POWER LINK™**, you can connect the **PRECOMPUTER POWER PAD™ PLUS** unit to a Personal Computer. Please see Chapter 11 for details.

CHAPTER 7: BASIC

INTRODUCTION

WHAT IS BASIC?

BASIC is a computer language. The name BASIC stands for Beginner's All-purpose Symbolic Instruction Code. It was developed by professors at Dartmouth College in the mid-1960s. It was designed for students who had no previous experience in programming computers.

BASIC is a basic language; however there are differences in the language based on the computer that uses it in much the same way that English is different depending on which country it is spoken in (Great Britain or the United States) or which part of the country the language is spoken in (East Coast, Midwest, South or the West Coast).

The differences in the language will depend on the computer that is being used and on the computer that produced the language for the computer manufacturer. Microsoft BASIC is found on Apple II+, IBM PC and PC jr., Laser Computers, Commodore VIC20 and Commodore 64 and others. Other computers such as the Timex Sinclair ZX80 and the Texas Instruments 99/4 use versions of **BASIC** similar to MS-BASIC.

WHAT IS A PROGRAM?

A computer program is a series of instructions that tells a computer what tasks you want it to perform. Computer programs are written in a programming language. **BASIC** is one of the languages that both a human and a computer understand and so **BASIC** can be used to write a program that a computer can carry out for you.

WHY SHOULD I LEARN TO USE A COMPUTER?

Computers can do many things if they are given instructions. For a particular job to be done, by a person or a machine, we must specify the steps which must be done to do the job. The computer becomes an extension of our capabilities. To do this requires us to learn how to talk to our computer. This chapter will help you to get started.

WHAT IS THIS CHAPTER FOR?

This chapter is a step-by-step guide for understanding programs and learning to use the computer language called **BASIC**.

WHO IS THIS CHAPTER FOR?

This guide is written for students and adults who have little or no computer experience. With a little time and effort you will discover that there is nothing difficult about learning to talk to a computer.

WHAT IF I MAKE A MISTAKE?

Don't worry about making a mistake, this program allows you to experiment. The more you experiment, the more you will learn.

THE KEYBOARD

1. The numeric (top row) keys are used for entering numbers. The letter keys are used for entering letters.

2. The cursor is the blinking symbol "_" on the display that indicates where the next character that is pressed on the keyboard will be entered in the computer.

3. The **SHIFT** key is used with another key to enter a character into the computer. For example to enter the "+" character, you must press **SHIFT** and the key marked "+ =". If you just press the "+ =" key then the "=" character will be entered.

4. The Left Arrow key and the Right Arrow key are used to position the cursor left or right, respectively. They do not erase any character that is displayed, but you can type over anything in their positions.

5. To enter a space, simply press the **SPACE** bar. Each time you press the **SPACE** bar, one space is inserted on the display line.

6. The **INS** and **DEL** keys are used to insert or delete one character at a time on the display where the cursor is positioned.

   When the **INS** key is pressed once, it will be in the insert mode. All characters to the right of the cursor position will be shifted one character to the right to make room for the new character once it is input through the keyboard. Pressing the **INS** key again will go to the overwrite mode.

   The **DEL** key is used to delete one character at a time on the display where the cursor is positioned. The **DEL** key will shift all characters on the display one position to the left, thereby erasing the character under the cursor.

7. Before anything on the display is actually sent, you must press the **ENTER** key. This key acts much like a Return key on a typewriter. You press all the keys that comprise a statement to the **PRECOMPUTER POWER PAD™ PLUS** learning unit and then press **ENTER**. **PRECOMPUTER POWER PAD™ PLUS** will process your command and the information.

8. Every time **BASIC** is selected, it is in the overwrite mode. That is, the character you type will appear on the screen whether there is a character at the cursor position or not.

9. The "^" character on the ^ 6 key (which is used only in the **BASIC** program) is used to tell the computer you want to raise the number preceding it to a power of the number following it.

10. The **BREAK** key is used to do the following. When you are typing a line, but before you press **ENTER**, it will erase all that you have typed; or, if you are running a **BASIC** program, you can interrupt it by pressing this key. You can restart a program by typing **CONT** and pressing the **ENTER** key.

    When using the **INPUT** command, **PRECOMPUTER POWER PAD™ PLUS** will ask you to supply it with some data from the keyboard. **PRECOMPUTER POWER PAD™ PLUS** tells you it needs input with a prompt. The prompt is the "?" symbol and it appears on the display indicating that the computer is waiting for you to type something. The letters and numbers that you press will appear on the LCD screen.

THE LCD SCREEN

The **PRECOMPUTER POWER PAD™ PLUS** learning unit uses a Liquid Crystal Display (LCD) screen. Each line will display 20 characters at a time. The Left Arrow key and Right Arrow key are used to scroll the 20 character display window left or right, respectively.

In **BASIC**, pressing the **ENTER** key allows you to see the next printed statement that your program is displaying. You need to do this so the output doesn't scroll off the end of the line.

GETTING STARTED

This activity lets you type in your own programs and run them. Follow these simple steps:

1) Turn on **PRECOMPUTER POWER PAD™ PLUS**.

2) Choose the **BASIC** activity from the Membrane Activity Selector.

There are two modes available; **Command** and **Run**.

Type in this program:

10   PRINT "HI THERE"   *press* **ENTER**

This is a simple way of writing a program. Type in the program lines and remember to press the **ENTER** key. Each line starts with a number and is followed by a statement. **PRECOMPUTER POWER PAD™ PLUS** stores the line with the other lines into memory. Later you can execute the program by typing the command, **RUN**. Remember to press the **ENTER** key after typing **RUN**. The results appearing on the LCD screen are: **HI THERE**.

There is a short cut.

Enter the following (no line number in front):

PRINT "HI THERE"   *press* **ENTER**

This time **PRINT** was used as a command and the results appeared immediately on the display after the **ENTER** key was pressed. The computer executes the command right away, without waiting for you to type **RUN**. When you do this, the statements are not saved for future re-use. They are executed immediately and discarded. This is not recommended for creating programs but highly recommended for use as a calculator.

The following are some additional commands to be used:

NEW

This command clears the memory of any **BASIC** statements that have been previously entered.

LIST

This command displays each line of your program starting with the lowest line number. Each time you press **ENTER**, the next lines are displayed. You can stop this by pressing the **SHIFT** and **BREAK** keys. If you enter the command with a line number after the word, i.e., LIST 50, **PRECOMPUTER POWER PAD™ PLUS** will list the statement at line 50.

RUN

This command instructs **PRECOMPUTER POWER PAD™ PLUS** to begin executing each **BASIC** statement with a line number that was typed into memory. The computer will start with the lowest line number and proceed up to the highest numbered statement.

EDIT

Use the **EDIT** command when you want to change a statement that has been typed into memory without re-typing the entire line. Type **EDIT** and the line number and press the **ENTER** key. The statement will appear on the display. Use the **LEFT-ARROW** and **RIGHT-ARROW** keys to move the cursor. Use the **DEL** key to remove an unwanted character, or type in a new character.

You can type in line-numbered **BASIC** statements in any order. The **PRECOMPUTER POWER PAD™ PLUS** will sort them out for you and **LIST** them or **RUN** starting with the lowest numbered statement to the highest numbered statement. It is a good idea to number your lines in increments of 10 (10, 20, 30...) or 100 (100, 200, 300...). This way you will have room to add more statements if you decide to change your program in the future.

You can insert an entirely new line in a program between two existing ones by using a line number that doesn't exist. To delete an existing line-numbered statement, type the line number and press the **ENTER** key. You can also change an existing line by re-typing the entire line.

AUTO

When you want to type in a program, type in the line number before the statement. With the **AUTO** function, the line number will generate automatically.

e.g.	AUTO	generate the line no.	starting from 10 with increments of 10
	AUTO 100	generate the line no.	starting from 100 with increments of 10
	AUTO 100, 5	generate the line no.	starting from 100 with increments of 5
		i.e.	100
			105
			"
			"

To end the **AUTO** mode, press **ENTER** without input or press the **SHIFT** key and the **BREAK** key at the same time.

CONT

This command causes the program to resume executing after encountering the **BASIC** command called **STOP**. The program will be carried on with the next statement after **STOP**. Type **CONT** to resume the program after you press the **SHIFT** and **BREAK** keys.

BASIC COMPUTER TUTORIAL

EXAMPLE OF A BASIC PROGRAM

You and Teresa went to the local video store to rent some movies. Teresa brought back 12 but 4 were too scary for you so you returned them. On that trip you came home with 7 new movies. How many are you going to watch this afternoon? You could work this out yourself, but here is a **BASIC** program that can do the arithmetic for you.

Type in:

```
10   PRINT  12-4+7              press ENTER

20   END                       press ENTER
```

Now type **RUN** and press **ENTER**. What happens? The answer, 15, appears on the screen.

In **BASIC**, you write a series of line-numbered statements that tell the **PRECOMPUTER POWER PAD™ PLUS** what to do. The first statement, numbered 10, tells the computer to work out the sum of three numbers and then **PRINT** the answer on the screen. The next statement, number 20, tells the computer that this is the end of the program and that it can stop **RUNNING**. However, the last statement is not necessary in this program because you only want to print out the sum of 3 numbers, therefore, it could be removed.

Remove that last line by typing 20 and press **ENTER**. Now type **RUN** and press **ENTER**. What happens? You get the same results.

Suppose you typed:

```
10   PRONG 12-4+7                press ENTER
```

Now type **RUN** and press **ENTER**. What happens? You get a strange message, "**? SYNTAX ERROR IN 10**" in the display. That means you made a mistake in **BASIC** grammar and this is the **PRECOMPUTER POWER PAD™ PLUS** unit's way of telling you this. You need to **EDIT** the line or re-type it, changing "**PRONG**" to "**PRINT**" and then **RUN** the program again to get the correct answer.

You can use **PRECOMPUTER POWER PAD™ PLUS** as a calculator in arithmetic statements like the one above by not using a line number.

Just type:

```
PRINT 12-4+7                    press ENTER
```

The answer will appear on the screen.

Another short cut is that you could use the "**?**" symbol to stand for the word "**PRINT**." When you are using **BASIC** as a calculator in "command mode", think of the question mark as meaning "What is 12-4+7?" When you are using the question mark as a "**PRINT**" command in a program, the computer will replace the "**?**" with the word "**PRINT**" for you.

LET'S DO SOME ARITHMETIC

In the previous section you learned to program the sum of three numbers using the **BASIC** program. Numbers like 1, 3, 27, 14.3, etc., are called **CONSTANTS**, numbers that do not change value. The program added and subtracted the constants 12, 4 and 7. The order that you do addition is unimportant: 6+10 is the same as 10+6. In subtraction, the order is important: 10-6 is not the same as 6-10. So the order that you write numbers and do arithmetic operations is very important. In **BASIC**, operations are from left to right.

The * symbol is used to represent multiplication. Like addition, the order of the numbers is unimportant. Here's an example. There are 2.204 pounds to a kilogram. How many pounds does a 6 kilogram parakeet weigh?

Type this:

```
10    PRINT 6*2.204              press ENTER

RUN
```

The symbol / is used for division. Here, like in subtraction, the order of the numbers is important since 15/3 is 5 and 3/15 is .2. How many kilograms does a 6 pound parakeet weigh?

Type this:

```
10    PRINT 6/2.204              press ENTER

RUN
```

You can also raise a number to a power. To do this you need the ^ sign. The expression 5^3 means 5*5*5 or 125; similarly, 3^5 means 3*3*3*3*3 or 243. There are fractional powers; for example 2^.5 is the square root of 2 or 1.414.... Here's an example: I bet you 1 dollar and throw the dice 10 times; each time you double your money. How much have you won?

Type this:

```
10    PRINT 2^10                 press ENTER

RUN
```

When you use all the operations together, it can get a bit complicated. After a winning baseball game, your 7 person team is awarded 3 cans of pop for the game plus another 11 cans because you finished first in the league. How many cans does each player get?

Type this:

```
10   PRINT 3+11/7               press ENTER

RUN
```

Is it really evaluated from left to right? Yes, but was it the answer you were expecting? If the answer came out to 4.57143, the computer first divided 11 by 7 getting 1.57143 and then it added 3 to the result giving 4.57143. You probably were expecting the answer to be 2 because 3+11 is 14, then divided by 7 is 2.

You can see that expressions are not simply evaluated from left to right. It is necessary to have an exact set of rules to follow.

Here they are:

Functions	Order in which they are performed
( ) things in parentheses	(1st)
^ raising to a power	(2nd)
* / multiplication and division	(3rd)
+ - addition and subtraction	(4th)

The computer will always look at an expression in parentheses first and follows those commands. It could be an expression or more sets of brackets. Among the expression, raising to a power is calculated first, followed by multiplication and division from left to right, followed by addition and subtraction from left to right. If you're not sure how the computer will evaluate the expression, simply put brackets around the expression you want computed first. Remember the brackets must always be in pairs, one right bracket for each left one. If you don't use both brackets, you will receive a "**? SYNTAX ERROR**" message.

NUMERIC VARIABLES

You have seen how you can use **BASIC** to print numbers and messages. You can also give values to a **BASIC** program yourself. The computer uses a letter to stand for a value. This is called a variable. For example LET D = 609. This statement puts the value 609 into a memory box called "D."

Try this. Type:

```
10   LET A=8                    press ENTER
```

The computer creates a box in memory and calls it "A". It puts the number 8 in this box.

Now type:

```
20    LET B=10                    press ENTER
```

The computer creates a box called "B" and places 10 into it.

Type:

```
30 LET B=15                       press ENTER
```

Since there is a box called "B" already with a value of 10 in it, it doesn't make another box called "B" with a value of 15 in it. The number 10 is just replaced with the number 15.

Now type:

```
40    LET C=A+B                   press ENTER
```

This statement is a bit more complicated. Here's how it works. First, the computer searches for a memory box called "B" and finds the number 15. The "+" sign tells the computer to add the numbers found in "A" and "B" together. It computes this and the answer is 23. Now, where is the answer placed? The "=" tells the computer to store the answer in a memory box called "C". The computer searches for a box called "C". It doesn't find one so it creates one in memory and then puts the answer there.

Of course, if there was a memory variable called "C" that had a number in it from a previous operation, the old number would be replaced by the new one in this statement.

Now let's finish this by typing:

```
50    PRINT "FIRST NUMBER"; A     press ENTER

60    PRINT "SECOND NUMBER"; B    press ENTER

70    PRINT "THE SUM IS"; C       press ENTER

RUN
```

You will see the following on the screen:

FIRST NUMBER 8   *press* **ENTER**

SECOND NUMBER 15   *press* **ENTER**

THE SUM IS 23

Let's take a look at the print statements on lines 50 through 70. The words in quotes are called a **STRING** or a **LITERAL**. Whatever you put between a set of quotation marks will appear on the screen exactly the way you typed it. Remember that quotation marks come in pairs!

Next, the semicolon tells the print statement to print what is immediately to the right of the end of the string. This is the number 8, which is the value in memory box A.

Suppose that you asked the computer to multiply 3 million times 3 million.

Let's try. Type:

---

10   PRINT 3000000*3000000   *press* **ENTER**

RUN

The answer on the screen is 9E+12. This is the computer's way of showing extremely large numbers. A number with the letter E and a number to the right of the decimal point is called scientific or exponential notation. You find the decimal point and move the number of places specified after the "E" to the right filling in with zeros. The long way to write out the above answer is 9,000,000,000,000. The procedure works in reverse for very small numbers. The number 9E-12 is .000000000009. This is a very small positive number. The number -9E+12 is a very large negative number while the number -9E-12 is a very small negative number.

STRING VARIABLES

String variables are similar to the numeric variables that we have been working with so far except that the variables contain alphabetic characters (numbers, letters and symbols). The name of the memory variable always contains a $ to distinguish it as a string variable. String variables are not used in arithmetic but allow you to store things like your pet's name. Here are some examples:

VARIABLE NAMES	CONTENTS
A	675
B	2.3434
C$	CURTIS
A$	ALPHABET SOUP

Here's an example of storing a string variable:

```
10   LET A$="ALPHABET SOUP NO 123"
```

You can have a numeric variable called A and a string variable called A$. The $ lets **BASIC** know how to tell them apart.

NOTE: For both numeric and string variables, only the first 2 characters of the variable names are valid. Also, they cannot resemble the name of any command.

Examples: **TOTAL** is interpreted as the **TO** command and **POTATO** is interpreted as variable **PO**.

CONSTANTS

A constant is something that doesn't change. The computer stores it in memory just like a variable. However, since a constant doesn't change it has no variable name. The number 6 is a constant; so is 4.567 or 28967.35. "QUICK BROWN FOX" is a string constant.

You can store constants to a variable. That's usually done to start out a program; later the contents of the variables change. Suppose we want to count to 10.

Type in this program:

```
New                        press ENTER

10   N=0                   press ENTER

20   N=N+1                 press ENTER

30   PRINT N               press ENTER

40   IF N<10 THEN 20       press ENTER
```

```
50    PRINT "THE ANSWER IS"; N press ENTER

RUN
```

The statement at line 10 stores the numeric constant zero into N, a numeric variable. In statement 20 the variable will have a numeric constant,1, added to itself and then the sum of that operation will be stored in place of the value previously stored there.

The program in the above example contains a programming construction called a loop. A loop is one or more **BASIC** statements, usually called a set, that can be executed as many times as you want. The statement in line 40 contains an **IF** statement. It is called a conditional statement and will be discussed in detail under the topic called **Making Decisions**.

INPUTTING DATA

We have been putting information into the computer by typing constants into programs using statements like the following:

```
10    LET N=10                          press ENTER

20    LET A$="NANCY LIKES CHOCOLATE CUPCAKES"
```

Another way to supply data is by using an **INPUT** statement.

Try this out by typing:

```
NEW

10    INPUT "GIVE ME A NUMBER"; N     press ENTER

20    PRINT "YOUR NUMBER IS"; N       press ENTER

RUN
```

The unit will prompt you to input a number with the character. Type any number of digits that you like and press **ENTER**.

You can also input alphabetic data into string variables like this program:

```
10    INPUT "WHAT IS YOUR NAME"; N$   press ENTER

20    PRINT "HI THERE"; N$
```

You can use as many input statements as you need to get all the values into your program.
Try this:

```
NEW

10   INPUT "GIVE ME A NUMBER"; N1        press ENTER

20   INPUT "AND ANOTHER"; N2            press ENTER

30   PRINT "I WILL ADD THEM"            press ENTER

40   C=N1+N2                            press ENTER

50   PRINT "THE ANSWER IS"; C           press ENTER
```

Type **RUN** and press **ENTER** to see what happens.

MAKING DECISIONS

The **IF** statement tells the computer that it has to make a decision. It does this by comparing two numbers, or arithmetic expressions or string variables. It uses special symbols to represent a condition.

  The symbol > means greater than.

  The symbol < means less than.

  The symbol = means equal to.

  The symbol > = means greater than or equal to.

  The symbol < = means less than or equal to.

Here are some conditions:

  5 < 10   20 > 10

They are both true because

  5 is less than 10

  20 is greater than 10

The **IF** statement has a condition either **TRUE** or **FALSE**. The computer evaluates the condition and decides that if a condition is **TRUE** it will do something for the **TRUE** condition.

Take the following:

```
IF A > 90 THEN PRINT "YOU ARE SMART"
```

41

The A > 90 is a condition. The print "YOU ARE SMART" is the command given for the true condition. In the above example, let's give A the value 80. Would the message be printed? No, it would not be printed because the condition is false (80 is less than 90).

Let's try a program to compute the area of a rectangle.

Type:

```
NEW

10    INPUT "ENTER THE LENGTH";L   press ENTER

20    INPUT "ENTER WIDTH";W         press ENTER

30    LET A=L*W                     press ENTER

40    PRINT "THE AREA IS";A         press ENTER

50    INPUT "ANOTHER? (Y/N)";R$     press ENTER

60    IF R$="Y" THEN 10             press ENTER

70    PRINT "THAT'S ALL FOLKS!"     press ENTER

80    END

RUN
```

This program uses the **INPUT** statement to get values for numeric variables and prints a computed result. It then prompts for a string variable and makes the decision to begin again if the value typed in is a Y.

Here's another one.

Type:

```
NEW

10    INPUT "GIVE ME A NUMBER";A

20    INPUT "AND ANOTHER";B

30    PRINT "ADD, SUBTRACT, MULTIPLY OR DIVIDE"

40    PRINT "TYPE IN THE FIRST LETTER OF THE"
```

```
50    PRINT "ARITHMETIC OPERATION YOU WANT"

60    PRINT "ME TO DO FOR YOU"

70    INPUT R$

100   IF R$="A" THEN C=A+B : GOTO 200

110   IF R$="S" THEN C=A-B : GOTO 200

120   IF R$="M" THEN C=A*B : GOTO 200

130   IF R$="D" THEN C=A/B : GOTO 200

140   PRINT "YOU MADE A MISTAKE"

150   PRINT "TRY AGAIN"

160   GOTO 30

200   PRINT "THE ANSWER IS ";C

300   END
```

This is a long program but it has a lot of new information that is worthwhile to know. Line 70 contains an **INPUT** statement without the prompt string. Lines 100 through 130 contain two statements for the command when the condition is true. One is a **LET** statement without the word **LET** (C=A+B) and the other is a **GOTO** statement. Both of the statements are separated from each other by the colon (: symbol). The **GOTO** statement tells the computer the number of the next statement to do. Line 140 is an error trap. It tells you that you have not followed instructions.

You can experiment some more with this program and put in a decision to start the program all over again.

If you change line 300 to be **GOTO** 10, the program runs continually. You can stop it by pressing the **SHIFT** and **BREAK** keys and resume it by typing in **CONT** and press **ENTER**.

LOOPING

A loop is a set of one or more instructions. These instructions can be repeated as many times as you want. You can create a loop with a **GOTO** statement.

A program like the following will run continually:

```
10   INPUT "GIVE ME A NUMBER";N

20   PRINT "YOUR NUMBER IS";N

30   GOTO 10

RUN
```

You can modify the program to get out of a loop by using an **IF** statement to control the loop like the program that calculates the area of a rectangle.

Another way to create a loop is through the use of the **FOR** and **NEXT** statements. These statements surround the instructions that you want to repeat.

For example, type the following:

```
NEW

10   FOR N=1 TO 10          press ENTER

20   PRINT "HELLO"          press ENTER

30   NEXT N                 press ENTER

RUN
```

The word "**HELLO**" appears 10 times on the screen. You can change line 20 to print the value of N every time the loop repeats.

Type:

```
20   PRINT "N IS";N          press ENTER
```

We could always rewrite the program like this:

```
10    N=1

20    PRINT "N IS";N

30    N=N+1

40    IF N > 10 THEN END

50    GOTO 20
```

We can also count by 2's. Let's bring back the previous program and change line 10.

The entire program looks like this:

```
NEW

10    FOR N=1 TO 10 STEP 2      press ENTER

20    PRINT "N IS";N            press ENTER

30    NEXT N                    press ENTER
```

The **STEP** 2 part changes the meaning hidden in the **NEXT** N statement to be N = N + 2 or any other number that gets put in the **STEP** part.

We can even count backwards.

Try this:

```
NEW

10    FOR N=10 TO 1 STEP -1

20    PRINT N

30    NEXT N

40    PRINT "BLAST OFF"

RUN
```

MORE ABOUT GROUPS - GOSUB ... RETURN

How much is 10 degrees Celsius in Fahrenheit? What is 100 degrees Fahrenheit in Celsius? Here's a program that gives you the answers. It uses the **GOSUB** and **RETURN** statements to create a group of instructions that can be executed from various parts of the program. Remember when you use a **GOSUB**, the program branches to the line number that you specify in the statements that will be executed sequentially until a **RETURN** statement is encountered. At that point the program will resume at the next statement following the **GOSUB**. Confusing? Not really, but first some more background about our problem.

The formula for converting Celsius to Fahrenheit is:

F=(9/5*C)+32

The formula for converting Fahrenheit to Celsius is:

C=(F-32)*5/9

Now for the program!

Type:

```
New

10   INPUT "ENTER THE CELSIUS TEMP";C

20   GOSUB 500

30   INPUT "ENTER THE FAHRENHEIT TEMP";F

40   GOSUB 600

50   END

500  F=(C*9/5)+32

510  PRINT "THE FAHRENHEIT TEMP IS";F

520  RETURN

600  C=(F-32)*5/9

610  PRINT "THE CELSIUS TEMP IS";C

630  RETURN

RUN
```

REFERENCE SECTION

The **REFERENCE SECTION** contains a brief explanation of all the commands and statements you will use in this chapter.   Refer to this when you need help.

CLEAR

The **CLEAR** statement is used to assign more memory space for the string variables.

Example:

```
10    Clear 100
```

This command will assign 100 bytes of memory for strings. If the **CLEAR** command is not used, the computer will assume the number of bytes of memory for strings to be 50. The use of the **CLEAR** command only will reserve the same number of bytes as the default value.   However, if a value follows the **CLEAR** command, the computer will assign the number of bytes of that value. If you want to use more strings in your program, set this number to a larger one but, at the same time, you will have less space for your program.

CONT

Also see STOP

This command causes the program to resume executing after encountering the **BASIC** command called **STOP**. The program will carry on with the next statement after **STOP**. You can type **CONT** to resume the program after you hit the **SHIFT** and **BREAK** keys.

DIM

Line # DIM array-name (array-size).

The **DIM** command reserves space for one dimensional numeric or string arrays. The array-name may be up to 6 characters long but only the first 2 characters are valid. For a string array the last character must be a $. The array can contain up to 100 elements (0-99).

Example:

```
10    DIM FRIEND$(50)
```

```
10    DIM PRICE(19)
```

EDIT

Use the **EDIT** command when you want to change a statement that has been typed into memory without re-typing the entire line. Just type **EDIT** and the line number and press the **ENTER** key. The statement will appear on the display. Use the LEFT-ARROW and RIGHT-ARROW keys to move the cursor. Use the **DEL** key to remove an unwanted character, or simply type in new characters.

Example:

10 INPUT B	*press* **ENTER**
EDIT 10	*press* **ENTER**
10 INPUT B_	

Then use Left-Arrow key to move the cursor back under "B".

10   INPUT B

Then type in "C".

10   INPUT C_

You can type in line-numbered **BASIC** statements in any order. **PRECOMPUTER POWER PAD™ PLUS** will sort them out for you and **LIST** them or **RUN** them starting with the lowest numbered one. It is a good idea to number your lines in increments of 10 (10, 20, 30...) or 100 (100, 200, 300...). This way you have room to add more statements if you decide to change your program in the future.

You can insert an entirely new line in a program by using a line number that doesn't exist between two existing ones. You can delete an existing line-numbered statement by merely typing the line number and pressing the **ENTER** key. Of course, you can change an existing line by merely re-typing the entire line.

END

Line # END

The **END** statement is used as the last command in a program. It stops the program.

Examples:

160 END

999 END

PSET

This command is used for drawing a specified point on the screen.

PSET X, Y

(X, Y) is a coordinate of the specified point to be shown.

X represents a value of a horizontal position.

Y represents a value of a vertical position.

Example:

```
10   CLS
20   PSET 100, 8
RUN
```

The result: a screen pixel at coordinate (100, 8) will be turned on.

PRESET

This command turns off a specified point on the screen.

PRESET X, Y

(X, Y) is the coordinate of the specified point to be cleared.

X   represents a value of a horizontal position.

Y   represents a value of a vertical position.

Example:

```
10   CLS
20   FOR X= 50 TO 100
30   PSET X, 8
40   FOR DELAY= 1 TO 70
50   NEXT DELAY
60   PRESET X, 8
70   NEXT X
80   END
```

SOUND

This is a command to generate a sound note.

SOUND consists of two functions: frequency and duration

frequency   The frequency of the sound in hertz; a value in the range

  0 < frequency parameter < 256

duration   The number of the system clock ticks so the sound lasts; a value in the range

  0 < duration parameter < 256

FOR ...   TO ...   STEP ...   NEXT

Line#   **FOR** variable = initial value **TO** final value **STEP** stepsize (optional)

Line#

Line#

Line#

Line#   **NEXT** variable

The **FOR ...   NEXT** statement repeats a task a set number of times without having to rewrite it. All statements between the **FOR** and **NEXT** command are repeated based on the initial value, the final value and the stepsize. If the **STEP** portion of the command is not used, it is assumed to be 1.

Example:

```
60    FOR ITEMS=1 TO 20

70    INPUT PRICE

80    SUM=PRICE+SUM

90    NEXT ITEMS

RUN
```

FUNCTION

A function is a mathematical procedure which when applied to a certain value will give a new value. We call the value in brackets ( ), the argument, and the new value, the result.

Example:

SQR is a square root function.

Type PRINT SQR (9).   (press **ENTER**)

The answer is 3.

Example:

Y=9 : X=SQR(Y) : PRINT X   *press **ENTER***

The answer is 3.

In these two examples, 9 is the argument, SQR is the function and 3 is the result.

A LIST OF NUMERIC FUNCTIONS

Function	What it does
ABS (X)	Returns the absolute (positive) Value of X
SGN (X)	Returns the sign of the argument
	X negative returns - 1
	X positive returns + 1
	X zero returns 0
SQR (X)	Returns the square root of X. X cannot be negative.
LOG (X)	Gives the natural logarithm of X, i.e., the logarithm to the base e (=2.71828). The value of the argument must be greater than zero.
EXP (X)	Gives you the value e^x, i.e., the natural antilogarithm of X.
INT (X)	Gives the greatest integer which is less than or equal to X.
RND (X)	Gives a random whole number between 1 and X. If X equals zero, RND (X) returns a random number between 0 and 1. X cannot be negative.
SIN (X) COS (X) TAN (X)	The argument of the trigonometrical functions is taken to be in radians (1 radian=$360/2\pi$ = 57.296 degrees). The range of X is -999 < (X) < 999.
ATN (X)	This gives the result of ARC TANGENT in radians.

ARITHMETIC FUNCTIONS

ABS (X)

This gives the absolute (positive) value of the argument.   So ABS (-7)=7.

Example:

PRINT ABS (7-2*4)   *press* **ENTER**
1

SGN (X)

This function will give the value of +1 if X is positive, 0 if X is zero, and -1 if X is negative. So SGN(4.3)=1; SGN(0)=0; SGN(-276)=-1

Example:

A=6   *press* **ENTER**
PRINT SGN (A); SGN (A-A)   *press* **ENTER**
1   0

INT (X)

This converts numbers which are not whole into the largest whole number below the argument.   So **INT** (5.9)=5; also **INT** (-5.9)=-6.   Note that with negative arguments, the absolute value of the result returned by **INT** will be greater than that of the number.

Example:

PRINT INT (-6.7)   *press* **ENTER**
-7

RND (X)

This will produce a random number between 1 and X if X is a positive number.

Example:

```
PRINT RND (19)                          press ENTER
```

You will get a number between 1 and 19. **RND** (0) will give you a number between 0 and 1.

Note: X cannot be negative.

Important Note: From now on, the ENTER key sign will be deleted for simplicity. Remember to press the ENTER key after each line of entry.

STRING FUNCTIONS

We can also use functions to act on strings. Take a look at the following:

LEN

This function computes the length of the string argument, which must be in brackets. So if you type **PRINT LEN ("JOHN")** the computer will return the result 4. This is telling you that there are 4 characters in the string "JOHN". Blank spaces have the value of characters. Thus if you put in spaces "J O H N", it comes out as 7 characters.

STR$

The **STR$** function changes a number argument into a string. Take a look at the following example and see how it works.

Example:

```
A$=STR$(73)
```

This is the same as saying A$="73".

Here is a sample program.

Type the next example:

```
10    A$=STR$(7*3)

20    B$=A$+"BIG"

30    PRINT B$

RUN

21BIG
```

VAL

VAL works like STR$ but in reverse. It changes a string argument into a number. Look at the following short program.

Example:

```
10   A$="33"

20   B$="20"

30   C=VAL(A$+B$)

40   D= VAL (A$) + VAL (B$)

50   PRINT C;D

RUN

3320  53
```

GRAPHICS FUNCTION

PGET function

Returns the color attribute of a specified pixel.

PGET(X, Y) = n

n	Returns
1	the current coordinates(X, Y) turns the pixel status ON
0	the current coordinates(X, Y) turns the pixel status OFF

SUBSTRINGS

It is also possible to get substrings of strings. A substring is a part of a string. For example: "ABC" is a substring of "ABCDE". The following three functions operate on substrings.

LEFT$ (A$,N)

This will return the substring from the left-most of string A$, the first character to the Nth character.

Example:

```
10   A$="ABCDE"

20   B$=LEFT$ (A$+"FGH",6)

30   PRINT B$

RUN

ABCDEF
```

RIGHT$ (A$,N)

This will return a substring but starting from the Nth character from the end and running to the last one - the right-most character in the string A$.

Example:

```
10   A$="WHY"

20   B$=RIGHT$(A$+"ME",4)

30   PRINT B$

RUN

HYME
```

MID$ (A$,M,N)

This function returns a substring of the string A$ starting from the Mth character with a length of N characters.

Example:

```
10   A$="ABCDEFGH"

20   B$=MID$(A$,2,3)

30   PRINT B$

RUN

BCD
```

ASC(A$)

The ASC statement will return the ASCII code, a code for representing alphanumeric information, for the **FIRST** character of the specified string. Brackets must enclose the string specified. Refer to the appendix of **THE ASCII CODE TABLE** (Page 72). For example, the ASCII decimal value of "X" is 88. If A$="XAB", then ASC (A$)=88.

Example:

```
10    X=ASC("ROY")

20    PRINT X

RUN

82
```

CHR$ (N)

This statement works the opposite way as the ASC statement. The **CHR$** statement will return the string character which corresponds to the given ASCII code. The argument may be any number from 32 to 127 or any variable expression with an integer value within that range. Brackets must be put around the argument.

Example:

```
30    PRINT CHR$(68)

RUN

D
```

GOSUB...RETURN

Line#   **GOSUB** first line number of subroutine.

Line#

Line#

Line#

Line#   first line number of subroutine

Line#

Line#   **RETURN**

The **GOSUB** command tells the computer to **GOTO** another line number. After the process has been completed, a **RETURN** statement is used to send the computer back to the line immediately after the **GOSUB**. These statements are used to process a series of commands that are frequently used.

```
30    GOSUB 120

.

.


other program lines



.

.

120  PRINT "WELCOME TO THE"

130  PRINT "PRECOMPUTER POWER PAD PLUS"

140  RETURN
```

GOTO

Line #   **GOTO** line number

The **GOTO** statement is used to change the normal flow of the program (which is from the lowest statement number to the highest). A **GOTO** command transfers control to the specified line.

Examples:

```
10    GOTO 130

200  GOTO 65
```

IF...THEN...ELSE

In general terms, the **IF**...**THEN**... statement is used for **CONDITIONAL BRANCHING**. It uses the general form "**IF** (condition) **THEN** (action clause)". A condition is made up of an expression, a relation and another expression.

Any **BASIC** expression, either numeric or string, may be used, but both expressions must be the same type.

Relations or comparisons used in the **IF...THEN** statement are the following:

= Equal to

< = Less than or equal to

< > Not equal to

> = Greater than or equal to

< Less than

> Greater than

Examples of how you can use conditions:

IF....THEN A=B

IF....THEN GOTO

IF....THEN GOSUB

IF....THEN PRINT

IF....THEN INPUT

Example:

```
30    IF X >25 THEN 60
```

If the condition X>25 is true, the computer is told to go to line 60 (Note: the **GOTO** is optional after **THEN**).

If the condition is not true, that is, if X is not greater than 25, then the computer simply carries on with the normal line number order in the program. Notice that it is not necessary to use the **ELSE** part of the command here, as this is optional.

Example:

```
10    INPUT A,B
20    IF A > B THEN 50
30    IF A < B THEN 60
40    IF A = B THEN 70
50    PRINT A; "IS GREATER THAN"; B:END
60    PRINT A; "IS LESS THAN"; B: END
70    PRINT A; "IS EQUAL TO";B
80    END
RUN
? 7   (pick a number)
?? 3  (pick a number)

7 IS GREATER THAN 3
```

Example:

> 40   IF P=6 THEN PRINT "TRUE" ELSE PRINT "FALSE"

In this example, if P=6 the computer will print **TRUE**. Any other value will print **FALSE**. In either case the computer will carry onto the next line.

It is possible for more than one statement to follow the **THEN** or **ELSE** command. A colon separates the statements.

Example:

> 50   IF A =5 THEN PRINT "TRUE": S=S-3:
>
> GOTO 90 ELSE PRINT "FALSE": K=K+8

So if A equals 5 the computer will print **TRUE**, subtract 3 from the variable S and go to line 90. If A does not equal 5 the computer will print **FALSE**, add 8 to the variable K and then carry on with the next normal line.

LOGICAL OPERATORS

Logical operators are used **IF**...**THEN**...**ELSE** and such statements where a condition is used to determine subsequent operations within the user program. The logical operators are: **AND**, **OR**, and **NOT**.

For the purpose of this discussion, A and B are relational expressions having only **TRUE** and **FALSE**. Logical operations are performed after mathematical and relational operations.

Operator	Example	Meaning
NOT	NOT A	If A is true, NOT A is false.
AND	A AND B	A AND B has the value true, only if A and B are both true.
		A AND B has the value false if either A or B is false.
OR	A OR B	A OR B has the value true if either A or B or both are true.
		It has the value false if both are false.

TRUTH TABLES

The following tables are called **TRUTH TABLES**. They illustrate the results of the previous logical operations with both A and B given for every possible combination of values.

TRUTH TABLE FOR "NOT" FUNCTION

A	NOT A
T	F
F	T

TRUTH TABLE FOR "AND" FUNCTION

A	B	A AND B
T	T	T
T	F	F
F	T	F
F	F	F

TRUTH TABLE FOR "OR" FUNCTION

A	B	A OR B
T	T	T
T	F	T
F	T	T
F	F	F

Note that T = TRUE and F = FALSE.

Example:

```
10      INPUT A,B,C

20      IF A=B AND B=C THEN PRINT "A=B=C"

30      IF (NOT A=B) OR (NOT B=C) THEN 50

40      END

50      PRINT "A=B=C IS FALSE"

60      END

RUN

? 10    (pick a number)

?? 5    (pick a number)

?? 7    (pick a number)

A=B=C IS FALSE
```

Moreover **AND**, **OR**, and **NOT** can be used to manipulate numerical values. These operations are based on binary numbers with 1 and 0 representing **TRUE** and **FALSE** respectively.

For example:

NOT 1=-2 [1=binary 00000001 and -2=binary 11111110, so it just changes the 1 to 0 and 0 to 1. In other words, TRUE(1) changed to FALSE(0) and FALSE(0) changed to TRUE(1).]

OR 13=15 [6=binary 00000110 and 13=binary 00001101, so, with reference to the OR truth table, 6 OR 13 =15=binary 00001111]

AND 13=4 [6=binary 00000110 and 13=binary 00001101, so with reference to the AND truth table, 6 AND 13=4 binary 00000100]

INPUT

Line #   **INPUT** "(optional character string)"; variable 1, variable 2,....

INPUT allows the user to type in the value of a variable at the time the program is **RUN**. If an optional character string is used, this message will be printed before the question is asked. The type of data to be **INPUT** varies according to the type of the variable.

Examples:

```
35    INPUT AMOUNT
```

```
140  INPUT "WHAT IS YOUR NAME";NAME$
```

LET

Line #   **LET** variable = variable expression

The variable expression is calculated and the result is stored under the variable. The word LET is optional.

Examples:

```
40    LET SUM=A+B+C
```

```
25    LET AMOUNT=PRICE-DISCOUNT
```

LIST

LIST (optional line number)

LIST is used to display the active program. If the optional line number is omitted, the program will be displayed from the first line-on. If the line is longer than 20 characters, you must use Right Arrow key to move to the right. To continue the **LISTING** press the **ENTER** key.   To discontinue the **LISTING** press the **SHIFT** and **BREAK** keys.

Examples:

```
LIST
```

```
LIST 50
```

NEW

NEW erases all program lines from the active program area.

PRINT

Line #   **PRINT** expression and/or character string

The **PRINT** statement is used to produce output on the display panel. The **PRINT** command will print one or several items - either expressions or strings. Each item in the list should be separated by a comma or a semicolon.

Example:

```
80    PRINT NAME$; "IS COMING"

230  PRINT "SUM="; A+B+C
```

READ AND DATA

When it is necessary to enter a lot of information or data into the computer, using the **INPUT** statement can be very time consuming. To help out, use the **READ** and **DATA** commands.

Example:

```
10    DATA 10,60,70,80,90

20    READ A,B,C,D,E

30    PRINT A;B;C;D;E

RUN

10 60 70 80 90
```

The **READ** statement consists of a list of variable names with commas between each variable.

The **DATA** statement consists of a list of expressions separated by commas. These expressions can be either numeric or strings. The **READ** statement makes the computer look up the value of its variables from the **DATA** statement. When the computer goes to **READ** first it will assign the first expression from the **DATA** list. The next time it goes to **READ** it will assign the second value and so on. If the **READ** runs out of **DATA** you will get "**? OUT OF DATA ERROR**."

RESTORE

If you want to use the same data later on in the program, you can do so by using the **RESTORE** statement.

Example:

```
10    DATA 1,3,8,9
20    READ A,B,D
30    RESTORE
40    READ X,Y
50    PRINT A;B;D
60    PRINT X;Y
70    END
RUN
1 3  8
1 3
```

The **RESTORE** command makes subsequent **READ** statements get their values from the start of the first **DATA** statement.

Example:

```
10    REM FIND AVERAGE
20    DATA 0.125,3,0.6,7
30    DATA 23,9.3,25.2,8
40    S=0
50    FOR I=1 TO 8
60    READ N
70    S=S+N
80    NEXT
90    A=S/8
100  PRINT A
RUN
9.52813
```

REM

Line # **REM** text

REM is used to add comments in your program which are ignored when the program is **RUN**.

Example:

```
10    REM**GUESSING GAME**

20    REM TEST OF SORTING
```

RUN

RUN tells the computer to begin to perform your program beginning with the lowest statement number.

STOP ... CONT

Line # **STOP**

CONT

The **STOP** command halts the **RUNNING** of a program at that line. This is helpful for debugging. To **CONTINUE** at the next line after the **STOP** command, type **CONT** directly without a line number.

Example:

```
800  STOP
```

APPENDIX

EXAMPLE PROGRAMS

MOONWEIGHT

```
10    PRINT "Weight on the Moon"
20    INPUT "Your Weight in Lbs." ; WEIGHT
30    MOONWEIGHT = WEIGHT /6
40    PRINT "Your moon weight would"
50    PRINT "be" ; MOONWEIGHT; "pounds."
60    PRINT "Wow"
RUN
```

ROCK, PAPER, SCISSORS

```
10    PRINT "Rock, Paper, Scissors"
20    PRINT "Type in P, R, S"
30    INPUT "and see if you win.  ->"; ANSWER$
40    PRINT "You :" ; ANSWER$;
50    MYGUESS = INT (RND (0)*(3) + 1)
60    IF MYGUESS = 1 THEN PRINT " Me : Rock"
70    IF MYGUESS = 2 THEN PRINT " Me : Paper"
80    IF MYGUESS = 3 THEN PRINT " Me : Scissors"
90    INPUT "To play again press Y : "; AGAIN$
100  IF AGAIN$ = "Y" OR AGAIN$ = "y" THEN 20
110  END
RUN
```

CANDY KISSES

```
10    PRINT "How many candy kisses"
20    PRINT "would equal your"
30    PRINT "weight if each kiss"
40    PRINT "weighed one ounce"
50    INPUT "Enter your weight." ; WEIGHT
60    INPUT "Enter a guess.";GUESS
70    AMOUNT = WEIGHT *16
80    DIFF = ABS (AMOUNT-GUESS)
90    PRINT AMOUNT; "kisses will"
100  PRINT "equal your weight."
110  PRINT "You were "; DIFF; "off."
120  IF DIFF= 0 THEN PRINT "Wow that was right on!"
130  END
RUN
```

LIFE

```
10    PRINT "If an average life"

20    PRINT "span is 70 years"

30    PRINT "Then how many"

40    PRINT "generations would have"

50    PRINT "lived in 2000 years?"

60    INPUT "Enter a guess.";GUESS

70    AMOUNT = INT (2000/70)

80    DIFF = ABS (AMOUNT-GUESS)

90    PRINT "The answer was " ;AMOUNT

100  PRINT "You were "; DIFF

110  PRINT "generations off."

120  END

RUN
```

THE COOLEST PERSON

```
10    PRINT "Enter the coolest"

20    INPUT "person you know";COOL$

30    FOR COUNT = 1 TO 50

40    PRINT COOL$;" is super cool!"

50    NEXT COUNT

60    END

RUN
```

```
10    DIM N$(5)

20    PRINT "The Fortune Teller"

30    INPUT "Are you a boy or a girl" ;S$

40    INPUT "Pick a number between 2-5"; NUMBER

50    FOR COUNT = 1 TO NUMBER

60    IF S$ = "boy"  OR S$="BOY" THEN 70 ELSE 90

70    INPUT "Enter a girl's name"; N$ (COUNT)

80    NEXT

85    GOTO 110

90    INPUT "Enter a boy's name"; N$ (COUNT)

100  NEXT COUNT

110  Y= INT (RND (NUMBER))

120  TG$ = N$ (Y)

130  PRINT "The person of your"

140  PRINT "dreams is " ; TG$

RUN
```

LEARN SCHEDULE

```
10    DIM WEEK$(6)

20    DIM EVENT$(6)

30    DATA "SUNDAY","PLAY TIME"

40    DATA "MONDAY","LEARN ECOLOGY"

50    DATA "TUESDAY","LEARN ENGLISH"

60    DATA "WEDNESDAY","LEARN MUSIC"

70    DATA "THURSDAY","LEARN HISTORY"

80    DATA "FRIDAY","LEARN GEOGRAPHY"

90    DATA "SATURDAY","PLAY FOOTBALL"

100   REM(*)LIST(*)

110   FOR W=0 TO 6

120   READ WEEK$(W)

130   READ EVENT$(W)

140   PRINT WEEK$(W),EVENT$(W)

150   NEXT W

999   END

RUN
```

MAD LIB'S

```
10    REM * MAD LIB'S *

20    PRINT "Mad Lib's"

30    INPUT "Adjective"; A1$

40    INPUT "Verb"; V$

50    INPUT "Adverb"; A2$

60    PRINT "Once upon a time"

70    PRINT "there was a "; A1$

80    PRINT "dog that decided to"

90    PRINT V$; " "; A2$;" down the"

100  PRINT "hill to fetch its"

110  PRINT "bone."

120  END
```

SECRET NUMBER

```
0     REM **Secret Number**

10    NO = RND(100)

20    PRINT "Hi! I've got a secret number"

30    PRINT "between 1 and 100."

40    INPUT "Guess it by typing a number"; ANSWER

50    IF ANSWER = NO THEN GOTO 200

60    IF ANSWER > NO THEN GOTO 100

70    PRINT "No! The secret number is bigger."
```

```
80    GOTO 40

100  PRINT "No! The secret number is smaller."

110  GOTO 40

200  PRINT "Yes! The number is "; NO;"."

210  END

RUN
```

PATTERN PICTURE

```
10    CLS

20    REM **DRAW A PICTURE**

30    FOR Y=0 TO 7

40    X= 50+Y

50    PSET X,Y : X=X+1

60    IF X<70-Y THEN GOTO 50

70    NEXT

80    FOR Y=8 TO 15

90    X=50+15-Y

100  PSET X,Y : X=X+1

110  IF X<55+Y THEN GOTO 100

120  NEXT

130  REM REVERSE THIS PICTURE

140  FOR X=49 TO 70

150  FOR Y=0 TO 15

160  IF PGET(X,Y)=0 THEN PSET X,Y ELSE PRESET X,Y

170  NEXT

190  END

RUN
```

TWINLKE TWINKLE LITTLE STAR

```
10    REM Twinkle Twinkle Little Star

20    DATA 62,62,19,19,10,10,19,30,30,36,36

30    DATA 50,50,62,19,19,30,30,36,36,50

40    DATA 19,19,30,30,36,36,50,62,62,19,19

50    DATA 10,10,19,30,30,36,36,50,50,62

60     FOR I=1 TO 42

70    READ F

80    SOUND F,20

90    NEXT I

100  END

RUN
```

THE MUSIC NOTE VALUE TABLE

	Do	Re	Mi	Fa	So	La	Te	Do
High Octave	62	50	36	30	19	10	03	0
┃ ↓	126	114	100	94	83	74	67	64
	190	178	164	158	147	138	131	128
Low Octave	254	242	232	226	215	206	199	196

THE ASCII CODE TABLE

Decimal Value	Printable Character	Decimal Value	Printable Character	Decimal Value	Printable Character
32	(Space)	64	@	96	' (Accent)
33	!	65	A	97	a
34	"	66	B	98	b
35	#	67	C	99	c
36	$	68	D	100	d
37	%	69	E	101	e
38	&	70	F	102	f
39	' (Apostrophe)	71	G	103	g
40	(	72	H	104	h
41	)	73	I	105	i
42	*	74	J	106	j
43	+	75	K	107	k
44	,	76	L	108	l
45	-	77	M	109	m
46	.	78	N	110	n
47	/	79	O	111	o
48	0	80	P	112	p
49	1	81	Q	113	q
50	2	82	R	114	r
51	3	83	S	115	s
52	4	84	T	116	t
53	5	85	U	117	u
54	6	86	V	118	v
55	7	87	W	119	w
56	8	88	X	120	x
57	9	89	Y	121	y
58	:	90	Z	122	z
59	;	91	[	123	{
60	<	92	\	124	¦
61	=	93	]	125	}
62	>	94	^	126	~
63	?	95	_ (Under score)	127	(THE ERROR)

THE ERROR MESSAGES

CANNOT CONTINUE

An attempt is made to continue a program that:

1. Has halted due to an error.

2. Has been modified during a break in execution, or

3. Does not exist.

DIVISION BY ZERO

A division by zero is encountered in an expression, or the operation of involution results in zero being raised to a negative power.

EXTRA IGNORED

More than one parameter is entered to '**INPUT**' command.

ILLEGAL DIRECT

A statement that is illegal in direct mode command.   Example: **INPUT**

ILLEGAL FUNCTION CALL

A parameter that is out of range is passed to a math or string function. This error may also occur as the result of:

1. A negative or unreasonably large subscript.

2. A negative or zero argument with **LOG**.

3. A negative argument to **SQR**.

4. A negative mantissa with a non-integer exponent.

5. An improper argument to **MID$**, **LEFT$**, **RIGHT$**.

MISSING OPERAND

The operand of some commands are missed.

NEXT WITHOUT FOR

A variable in a **NEXT** statement does not correspond to a previously executed unmatched **FOR** statement variable.

OUT OF DATA

A **READ** statement is executed when there are no **DATA** statements with unread data remaining in the program.

OUT OF MEMORY

A program is too large, had too many **FOR** loops or **GOSUB**, too many variables, or expressions that are too complicated.

OUT OF STRING SPACE

String variables have caused **BASIC** to exceed the amount of free memory remaining.

OVERFLOW

The result of a calculation is too large to be represented in the number format. If underflow occurs, the result is zero and execution continues without an error.

REDIMENSIONED ARRAY

Two **DIM** statements are given for the same array, or a **DIM** statement is given for an array after the default dimension of 10 has been established for that array.

REDO

A string is assigned to a numeric variable during the execution of the **INPUT** command.

RETURN WITHOUT GOSUB

A **RETURN** statement is encountered for which there is no previous unmatched **GOSUB** statement.

STRING FORMULA TOO COMPLEX

A string expression is too long or too complex. The expression should be broken into smaller expressions.

STRING TOO LONG

An attempt is made to create a string more than 255 characters long.

SUBSCRIPT OUT OF RANGE

An array element is referenced either with a subscript that is outside the dimensions of the array or with the wrong number of subscripts.

SYNTAX ERROR

A line is encountered that contains some incorrect sequence of characters (such as unmatched parentheses, misspelled command or statement, incorrect punctuation, etc.)

TYPE MISMATCH

A string variable name is assigned a numeric value or vice versa; a function that expects a numeric argument is given a string argument or vice versa.

CHAPTER 8: CALCULATOR ⊞

The Calculator function turns the **PRECOMPUTER POWER PAD™ PLUS** unit into a calculator with a 14-digit memory. The number keys and the 19 specially marked keys in the second and third rows of the keyboard are used in the Calculator activity. To clear the screen, use the [ERASE AC] key at the top right of the keyboard.

BASIC CALCULATOR OPERATIONS

The basic calculator symbols are:

Addition: [S +]   or   [SHIFT] + [+ =]

Subtraction: [D -]   or   [- -]

Multiplication: [F ×]

Division: [G ÷]

USING THE MEMORY FEATURES:

To input a number to memory: [H MIN]

To recall a number from memory: [J MR]

To add a number to the number in memory: [K M+]

To subtract a number from the number in memory: [L M-]

Example:

Input	Display
23 + 45 + 78 [ENTER] [K M+]	M =146 23+45+78_ =
[ERASE AC]	M =146 _

Input	Display

34 - 78 [ENTER]	M=146
	  34-78
	  =-44

[K / M+]	M=102
	  34-78_
	  =

[ERASE / AC]	M=102 _

23 - 6 + 9 [ENTER]	M=102
	  23-6+9
	  =26

[L / M-]	M=76
	  23-6+9_
	  =

ADVANCED FUNCTIONS

The **Calculator** has special function keys located on the second and third rows of the keyboard. Always press the function key first when using it in a problem and then enter the numbers it is to operate on.

Aim	Operation	Display
Square root of a number	[Q / √x] 9 [ENTER]	sqrt 9 = 3
Square of a number	[W / x²] 3 [ENTER]	sqr 3 = 9
The constant e to the power of the entered number. (e=2.718282)	[O / eˣ] 2 [ENTER]	exp 2 = 7.38906
LN function	[I / LN] 100 [ENTER]	ln 100 = 4.60517
log 10 function	[P / LOG] 100 [ENTER]	log 100 = 2

TRIGONOMETRY FUNCTIONS

All the trigonometric functions can take two forms of input-radians and degrees. If you just type in a number, the **Calculator** assumes the number is in radians. To enter a number in degrees, press the degree sign after inputting the number.

Function	Operation	Display
SINE	SIN 60 ENTER	sin 60 = -0.30481
SINE	SIN 60 E° ENTER	sin 60° = 0.866025
COSINE	COS 60 ENTER	cos 60 = -0.952413
COSINE	COS 60 E° ENTER	cos 60° = 0.5
TANGENT	TAN 60 ENTER	tan 60 = 0.32004
TANGENT	TAN 60 E° ENTER	tan 60° = 1.73205
ARC TANGENT	ATN 60 ENTER	atn 60 = 1.55413
ARC TANGENT	ATN 60 E° ENTER	atn 60° = − − E − − (atn 60° produces an error)
π(Constant)*	π	(3.1415927)

*This special constant can be entered into any problem by using this key.

CHAPTER 9: TIME LIMITS

Categories	Activities	Timing Code
Word Games	All Word Games (except Word Puzzles) Word Puzzles	1 2
Mathematics	All Math Games	1
Trivia	All Trivia Games	1
Games	Spy Trap Rocket Fuel	3 None
Computer Skills	All Computer Skills	None

TIMING CODE

1. In the one player mode, the answer must be input within 60 seconds. In two player mode, the player has 10 seconds to press their player button to answer first. When it is your turn, you have only 30 seconds to answer.

2. After you have viewed the hint for a missing word, you have 1 minute to answer.

3. Level   Time limit to catch the spies (seconds)

    1   60

    2   45

    3   30

    4   30

CHAPTER 10: SCORING

Category	Activities	Scoring Code
Word Games	All Word Games (except Word Puzzles) Word Puzzles	1 2
Math Games	All Math Games	1
Trivia Games	All Trivia Games	1
Games	Spy Trap Rocket Fuel	3 4
Computer Skills	All Computer Skills (Except Keyboard Skills and Typing Challenge) Keyboard Skills Typing Challenge	None 5 6

SCORING CODE   POINTS

1. **One Player Mode**

   5 Questions per round

   Correct answer on 1st try   20

   Correct answer on 2nd try   15

   Correct answer on 3rd try   10

   Two Players Mode

   10 Questions per round

   Starting Score   100

   Correct answer   10

   Wrong answer   -10

2. Missing words per puzzle   10

   Correct answer on 1st try   20

   Correct answer on 2nd try   15

   Correct answer on 3rd try   10

3. A spy is caught   1

   Every four spies caught   4

   Every spy who gets away   -2

4. Successfully finished a stage   50

   Every time a hint is used   -25

5. Only the Basic Course will count scores

   A letter typed correctly   1

6. A letter cannon removed

   Level 1   5

   Level 2   4

   Level 3   3

   Level 4   2

CHAPTER 11: POWER LINK

If you have purchased our **VTECH POWER LINK™**, you can connect the **PRECOMPUTER POWER PAD™ PLUS** unit to an IBM 386 or higher compatible personal computer. This feature allows you to save and load files to your personal computer. The **VTECH POWER LINK™** is sold separately at your local retailer or you may order it directly from our Consumer Services Department at 1-800-521-2010 in the U.S. or 1-800-267-7377 in Canada.

CONNECTING THE CABLE

At the back of the **PRECOMPUTER POWER PAD™ PLUS** unit, there is a printer port. Connect the **VTECH POWER LINK™**'s cable to this port. Please see Chapter 1 for a diagram.

CONTROLLING VTECH POWER LINK™

In System Setup, choose the option **POWER LINK**, and press the Enter key or use your mouse to select it. You can turn this option ON/OFF by pressing the Enter key or selecting it with your mouse. Please make sure the POWER LINK function is on in order to perform the following activities: Trivia PC, File Transfer and Print Screen. If the connection is successful, "Installing Power Link. Please wait" will appear on the LCD screen. If the unit says "POWER LINK NOT READY," please refer to the **VTECH POWER LINK™** manual.

Trivia PC

You may play the Trivia activities on a personal computer using the monitor as a viewing device when the Trivia PC option is turned ON. Select POWER LINK and choose the option Trivia PC.

To enter a trivia activity, the **VTECH POWER LINK™** cable must be connected to both the PC and this unit. You will see the trivia questions being shown on the personal computer monitor. Type in your answer or press the Shift + Help key to view your three multiple choice answers, and then press the Enter key. Your score will also be shown on the PC monitor.

NOTE: The **VTECH POWER LINK™** feature must be in Trivia PC to use the Trivia Playback feature.

File Transfer

In File Transfer, you may choose from the following options: View File, Save File, Load File and Delete File. Please make sure you select the **VTECH POWER LINK™** feature through System Setup.

View File

After selecting this option, you can view the PC monitor for a list of files in the PC. The following are the file extensions you may view using this option: PCW, BMP, PCG, TXT. Use the up/down arrows on the **PRECOMPUTER POWER PAD™ PLUS** learning unit to view files on the PC monitor and press the Enter key to select the file. The content of the file will be shown on the PC monitor. Use the up/down arrows to scroll the text. After you have finished viewing the file, press the ESC key to return to the menu. Press the ESC key again to return to the File Transfer menu.

Save File

After selecting this option, you can choose to save a Word Processor file or save a BASIC program. The unit will ask you to save a TXT file or BASIC program, then press the Enter key to select option. Next, you will be prompted to input the filename. Do not use spaces as characters, and please remember you have up to 8 characters. The data will now be saved on your personal computer.

Load File

After selecting this option, you can view a list of files in the personal computer on the PC monitor. Use the up/down arrows on the **PRECOMPUTER POWER PAD™ PLUS** to scroll through the list of files on the PC monitor. Press the Enter key to select the file. You can only load files with a PCW extension or a BAS extension (example: test1.pcw). The unit will say "Data exists. Overwrite data?" If you select yes, please remember you will lose any existing data in your **PRECOMPUTER POWER PAD™ PLUS** Word Processing activity or BASIC activity. The file will be loaded into the main unit.

Delete File

After selecting this option, you can view the PC monitor for a list of files in the PC. Use the up/down arrows on the **PRECOMPUTER POWER PAD™ PLUS** to scroll through the list of files on the PC monitor. The unit will ask if you would like to delete the selected file. If you select yes, please remember this file will be gone permanently.

Print Screen

If you press the Print Screen key on the **PRECOMPUTER POWER PAD™ PLUS** membrane activity selector, you will be able to capture any screen and view it on the PC monitor using the VIEW function. Please refer to your **VTECH POWER LINK™** manual for further details on this feature.

Additional File Transfer Option

You may transfer a file from your personal computer to a RAM cartridge. This will allow you to carry more than one file with you. Load the file into your **PRECOMPUTER POWER PAD™ PLUS** Word Processing or BASIC activity. Then press the Hints key. Select File Options. Choose save. The unit will ask you to save the file to a RAM cartridge or PC. Select RAM and press the Enter key. The unit will prompt you to enter a new filename. Type in your filename. Remember you only have 8 characters. Your file is now also saved to the RAM cartridge.

To transfer a file from the RAM cartridge to the PC, you must first load the RAM cartridge. Press the Hints key and select File Options. Choose load and the unit will ask you to load from the RAM cartridge or PC. Choose RAM and press the Enter key. Select your file and press Enter. The message "Data exists. Overwrite data?" will appear. Select yes and press the Hints key again and choose File Options. Select save and press the Enter key. The unit will ask you to save file to RAM cartridge or PC. Select PC and then input your filename. Please remember do not use spaces in your filename. Your file is now transferred to your personal computer.

Note: To free up space on your RAM cartridge, you may delete that file from the cartridge.

CHAPTER 12:
HOW TO USE AN EXPANSION CARTRIDGE

There is an entire library of optional expansion cartridges available for the **PRECOMPUTER POWER PAD™ PLUS** unit.

To use a cartridge, follow these steps:

1. Make sure the unit is **OFF**.

2. Insert a cartridge into the slot located on the left-hand side of the unit.

3. Turn the unit **ON**.

4. Press [**Cartridge**] key on the Membrane Activity Selector and the cartridge activity will be accessed.

Look for the following titles at your local retailer or order them directly from our Consumer Services Department. Just call 1-800-521-2010 in the U.S., 01235-546810 in the U.K. or 1-800-267-7377 in Canada. A service representative will be happy to help you.

Item No. 80-1410 SUPER SCIENCE™

Item No. 80-1533 FAMOUS THINGS & PLACES™

Item No. 80-0989 BIBLE KNOWLEDGE™

Item No. 80-1001 FANTASY TRIVIA™

Item No. 80-1002 GENERAL KNOWLEDGE II™

Item No. 80-1003 SPORTS HISTORY™

Item No. 80-2314 FAMILIAR FACES™

Item No. 80-2315 HISTORICAL HAPPENINGS™

Item No. 80-2333 ARTS, ENTERTAINMENT & MORE™

Item No. 80-2334 CUSTOMS & CULTURES™

Item No. 80-12051 SPACE SCHOLAR™

Item No. 80-12053 FRENZY OF FACTS™

Item No. 80-1531 32K **RAM** Memory Expansion Cartridge (Expands the memory of the BASIC programming activity and the Word Processor activity.)

When the **RAM** Memory Expansion Cartridge is plugged in, the **RAM** Cart. Manager will open. Please refer to Chapter 6 for more details.

CHAPTER 13: CARE AND MAINTENANCE

1. Keep the unit clean by wiping it with a slightly damp cloth.

2. Keep the unit out of direct sunlight and away from heat.

3. Remove the batteries when the unit is not in use for extended periods of time.

4. Do not drop the unit on hard surfaces or try to dismantle the unit.

5. Unplug the AC adaptor when the unit is not in use.

6. Do not expose the unit to moisture or water.

7. Please remove the protective clear plastic film covering the LCD screen before using this product.

IMPORTANT NOTE:

Creating and developing learning aids is accompanied by a responsibility that we at VTECH® take very seriously. We make every effort to ensure the accuracy of the information which forms the value of our product. However, errors sometimes can occur. It is important for you to know that we stand behind our products and encourage you to call our Consumer Services Department at 1-800-521-2010 in the U.S. or 1-800-267-7377 in Canada with any problems and/or suggestions that you might have. A service representative will be happy to help you.

Note:
This equipment generates and uses radio frequency energy and if not installed and used properly, that is in strict accordance with the manufacturer's instructions, it may cause interference to radio and television reception. It has been type tested and found to comply within the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

• reorient the receiving antenna

• relocate this product with respect to the receiver

• move this product away from the receiver