

**Texas Instruments**

*Home Computer*

**Products**

**Demonstration  
Guide**



TRAINING RETAIL  
ACCOUNT INFORMATION

NETWORK

(TRAIN)

D R A F T

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Creating a Learning Climate  
Retail Training for Trainers

Texas Instruments  
Consumer Products Group

Second Draft

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## TRAINING OF TRAINERS

## A G E N D A

- 9:00
1. Administrative Overview - Trainer
    - Expenses
    - Checkout
  2. Ice Breaker
    - One minute biography
  3. Training purposes and overview
    - Hand out agenda
  4. Two things like about self and expectations from training
  5. Definition of learning climate
    - How we just created one
    - What techniques to use
  6. Definition of learning and training (brief lecture)
  7. Phases in the training process (brief lecture)
  8. Assumptions in adult learning
    - Guided discussion - brainstorming
- BREAK
- 5 - 10 minutes
  9. Effective communication techniques
    - A. Film on communication breakdown
    - B. Brief role playing - a communication breakdown
    - C. Slide presentation
    - D. Skit on breakdown (A skit is a rehearsed dramatic presentation from a prepared script)
  10. Written feedback on preceding events
    - Paper and pencil evaluation
- LUNCH
- Or end of Session I

## SESSION II (Or After Lunch)

Note: Session I can be done on one day and Session II on another day.

1. Introduction to role playing
  - A. What it is
  - B. Why (What techniques of the demos can be used in training)
  - C. How
  - D. When
  
2. The demonstration exercise: role playing
  - A. Two types of demonstrations:
    - The novice customer
    - Computer literate customer
  
3. Critique of role playing session
  - A. Critique elements of each role play exercise as they apply to retail training design/session.
  
- BREAK 5 - 10 minutes
  
4. Training goals and objectives (Lecture/discussion)
  - A. Examples of goals and objectives
  - B. Guidelines - list terms
  
5. Training design

OUTLINE OF DISCUSSIONTRAINING AND LEARNING

- A. Interpersonal Communication
- B. Ice Breaker
- C. Learning Theories
- D. Training Phases
- E. Feedback

ROLE PLAYING - THE DEMONSTRATION

- A. Demonstration for the Consumer(s)
- B. Analyze and Discuss
- C. The EIAG Model
- D. Feedback

TRAINING DESIGN EXERCISE

- A. Presentation
- B. Objectives
- C. Role Assignments/Retail Training Activity (In class)
  - 1. Large multi-location chain
  - 2. Local/regional dealer
  - 3. Specialty electronics/computer retailer
- D. Training Presentations
  - 1. Evaluation of Presentation
  - 2. Resources
- E. Feedback
- F. Evaluation of Training

## TRAINING OF TRAINERS

### Outline

#### I. DEFINITION OF TRAINING:

Training is the designing, conducting, and facilitating of a participatory learning experience which is predicated on communication plus the Collett five (5) "C's".

1. How to speak more clearly
2. How to speak more concisely
3. How to speak more confidently
4. How to speak more convincingly
5. How to speak more colorfully

Training also affects and effects an attitudinal and behavioral change.

#### II. GOALS OF TRAINING FOR TRAINERS:

1. To provide competence in training skills
2. To provide knowledge of product
3. To provide credibility in
  - a. Presentation
  - b. Product
  - c. Performance
  - d. Promotions

#### III. GOALS FOR RETAILERS:

Goal A: To provide an understanding of the product as a total concept.

Objective A1: To have retailers identify the console, software, hardware and peripherals.

Objective A2: To demonstrate the setup of the console.

## TRAINING OF TRAINERS - Outline

Page -2-  
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## III. GOALS FOR RETAILERS (continued)

\*Goal B: To provide an understanding of the system sales.

Objective B1: To have the retailers identify their target customers.

Objective B2: To have retailers classify the target customers on the basis of need.

Objective B3: To have retailers compare TI 99/4A with other home computer products.

Goal C: To provide an understanding to retailers of selling software:

Objective C1: To have retailers name the 5 areas of software.

Objective C2: To have retailers demonstrate an example from each area of software packages.

Objective C3: To have retailers explain the application of the software package during demonstration in C2.

Objective C4: To have retailers identify the configurations of peripherals for software in stock.

Goal D: To provide an understanding to retailers of the supportive services.

Objective D1: To have retailers explain the warranty

Objective D2: To have retailers identify the nearest Exchange Centers.

Objective D3: To have retailers quote the toll free numbers.

Objective D4: To have retailers state the communication network available from TI regarding the 99/4A.

Objective D5: To have retailers name the 99'er magazine as a supportive service.

Objective D6: To have retailers explain TICAC and its role in computer literacy.

\* See Exhibit A

## TRAINING OF TRAINERS - Outline

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-----  
III. GOALS FOR RETAILERS (continued)

Objective D7: To have retailers explain what is a user group.

Objective D8: To have retailers state the role and existence of 3rd party offerings as a supportive service.

## IV. PREPARATION SKILLS:

- A. Pre-training contact by trainer
- B. Design a format of sessions
- C. Assess audience levels
- D. Delivery of session
- E. Evaluating session\*\*

## V. PROCEDURE FOR INCREASING THE KNOWLEDGE BASE OF THE PSR TRAINEE:

- A. Determine specialized interest of PSRs and use these interests in assignment of hardware and software.
- B. Assign PSRs the necessary hardware/software.
- C. Rotate the software and hardware among PSRs to enhance their skills.
- D. Compile software capabilities and applications and disseminate this information throughout the PSR network.

\*\* See Exhibits B and C

RETAIL TRAINING ACTIVITY: PROBLEMS

1. Sales Managers and supervisory personnel do not block out adequate time for themselves for product training.
2. The ABC Co. does not have written job descriptions for those individuals taking the product training.
3. Retail sales people have significant anxiety (cyberphobia) about computers.



Retail Training Activity: Formulating Training Goals and Behavioral Objectives

In your assessment of the ABC Co. you discovered several problems that you then translated into training needs. For each of the problems listed below, write a training need. Then write a training goal to meet that need and at least one behavioral objective to fully or partially accomplish the goal.

PROBLEM
NEED
GOAL
SPECIFIC BEHAVIORAL OBJECTIVE(S)

EXAMPLE TRAINING DESIGN  
FOR RETAIL TRAINING

Level A - Initial Training Session

I. DEFINITION OF TRAINING:

Training is the designing, conducting, and facilitating of a participatory learning experience which is predicated on communication plus the Collett five (5) "C's".

1. How to speak more clearly
2. How to speak more concisely
3. How to speak more confidently
4. How to speak more convincingly
5. How to speak more colorfully

Training also affects and effects an attitudinal and behavioral change.

II. GOALS OF TRAINING FOR TRAINERS:

1. To provide competence in training skills
2. To provide knowledge of product
3. To provide credibility in
  - a. Presentation
  - b. Product
  - c. Performance
  - d. Promotions

III. PREPARATION SKILLS:

- A. Pre-training contact by trainer
- B. Design a format of sessions
- C. Assess audience levels
- D. Delivery of session
- E. Evaluating session\*\*

\*\* See Exhibits B and C

## EXAMPLE TRAINING DESIGN FOR RETAIL TRAINING - Level A

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## IV. TRAINING PROCEDURE:

## A. Contact store - confirm

*Store manager and/or Dept. manager*

1. Location and time of training
2. # of people to be trained and length of training
3. Equipment available - how much, what kind

*level of training, knowledge, computer literacy.*

## B. Prepare yourself on "How To Sell"

1. Be familiar with computer comparison charts
2. T.I. in computer development (and calculator) history  
(Be prepared to discuss - optional)
3. Know the many system expansion possibilities
4. Be familiar with the extensive range of software
5. Computer speech capability

C. Arrive approximately  $\frac{1}{2}$  hour before session to check equipmentD. Have computer set up to welcome participants to training  
(TE-II - text to speech) (Optional)

## V. GOALS FOR RETAILERS:

Goal A: To provide an understanding of the product as a total concept.

Objective A1: To have retailers identify the console, software, hardware, and peripherals.

Objective A2: To demonstrate the setup of the console.

\*Goal B: To provide an understanding of the system sales.

Objective B1: To have the retailers identify their target customers.

Objective B2: To have retailers classify the target customers on the basis of need.

Objective B3: To have retailers compare TI 99/4A with other home computer products.

\*See Exhibit A

## EXAMPLE TRAINING DESIGN FOR RETAIL TRAINING - Level A

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## V. GOALS FOR RETAILERS (continued)

- ✓ Goal C: To provide an understanding to retailers of selling software:
- Objective C1: To have retailers name the 5 areas of software.
  - Objective C2: To have retailers demonstrate an example from each area of software packages.
  - Objective C3: To have retailers explain the application of the software package during demonstration in C2.
  - Objective C4: To have retailers identify the configurations of peripherals for software in stock.
- Goal D: To provide an understanding to retailers of the supportive services.
- Objective D1: To have retailers explain the warranty.
  - Objective D2: To have retailers identify the nearest Exchange Centers.
  - Objective D3: To have retailers quote the toll free numbers.
  - Objective D4: To have retailers state the communication network available from TI regarding the 99/4A.
  - Objective D5: To have retailers name the 99'er magazine as a supportive service.
  - Objective D6: To have retailers explain TICAC and its role in computer literacy.
  - Objective D7: To have retailers explain what is a user group.
  - Objective D8: To have retailers state the role and existence of 3rd party offerings as a supportive service.

## EXAMPLE TRAINING DESIGN FOR RETAIL TRAINING - Level A

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## VI. BEGINNING THE SESSION:

- A. Introduce self and any other T.I. people present.
- B. Have participants introduce themselves.
- C. Give an overview of the training session.
- D. Distribute handouts to all present.

## VII. THE SESSION: (Make sparing use of slides and great use of Retail Guides)

- A. History of computers - about 5 minutes (May not be needed - see TIPS)
  1. T.I.'s involvement in computers
  2. Center on slides which display computer works
- B. Terminology and Buzz Words - use Retail Training Guide. See TIPS.  
 (RAM, ROM, CPU, BYTE, etc.)
- C. Overview of Retail Training Guide (Hand out and go through Retail Training Guide. Show selected slides if available)
  1. User friendly - what this means
  2. Initial 99/4A package
  3. Software available
    - a. Command modules - over 80
    - b. Cassette tapes
    - c. Diskettes (show sample of each)
- D. Console and pertinent equipment
  1. Unpacking and setup of initial system
  2. Tour of the console
  3. Problems with equipment (see trouble shooting and assistance in the Retail Guide)
- E. Areas of software (D E E P C)
  1. Date base
  2. Entertainment
  3. Education
  4. Personal Finance/Home Management
  5. Compute literacy (mention and show a few examples of each)
- F. Software booklet (how to identify and read)

## EXAMPLE TRAINING DESIGN FOR RETAIL TRAINING - Level A

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## VII. THE SESSION (continued)

G. Peripherals (Discuss what is available and the different configurations.) Use software as an example of peripheral needs of customers, e.g. Personal Record Keeping needs storage devise.

H. Mention the hotline numbers.

I. Warranty and use of Exchange Center

J. Computer comparison charts.

*General Consumer Hotline -  
better to contact user group -  
Brad Dawson 893-0108*

## VIII. HANDS ON (allow 15-30 minutes for this)

A. Use a controlled technique, e.g. make sure you tell participants what to do.

1. Let each attendee have experience with console.

2. Use simple program to write name.

3. Use simple program to make computer talk.

4. Make use of D E-E P C.

B. Allow 15-30 minutes of free time for participants to "play".

## IX. END OF SESSION

A. Questions

B. Evaluation

EXAMPLE TRAINING DESIGN  
FOR RETAIL TRAINING

Level B - Follow-up Training

I. DEFINITION OF TRAINING:

Training is the designing, conducting, and facilitating of a participatory learning experience which is predicated on communication plus the Collett five (5) "C's".

1. How to speak more clearly
2. How to speak more concisely
3. How to speak more confidently
4. How to speak more convincingly
5. How to speak more colorfully

Training also affects and effects an attitudinal and behavioral change.

II. GOALS OF TRAINING FOR TRAINERS:

1. To provide competence in training skills
2. To provide knowledge of product
3. To provide credibility in
  - a. Presentation
  - b. Product
  - c. Performance
  - d. Promotions

III. PREPARATION SKILLS:

- A. Pre-training contact by trainer
- B. Design a format of sessions
- C. Assess audience levels
- D. Delivery of session
- E. Evaluating session\*\*

\*\* See Exhibits B and C



## EXAMPLE TRAINING DESIGN FOR RETAIL TRAINING - Level B

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## IV. TRAINING PROCEDURE:

- A. Contact store - confirm
  - 1. Location and time of training
  - 2. # of people to be trained and length of training
  - 3. Equipment available - how much, what kind
- B. Prepare yourself on "How to Sell"
  - 1. Be familiar with computer comparison charts
  - 2. T.I. in computer development (and calculator)  
May not be needed
  - 3. Know the many system expansion possibilities
  - 4. Be familiar with the extensive range of software
  - 5. Computer speech capability
- C. Arrive approximately 1 hour before session to check equipment
- D. Have computer set up to welcome participants to training  
(TE-II - text to speech) (Optional)

## V. THE TRAINING SESSION:

- A. Handouts are available:
  - 1. Slim Jims
  - 2. Comparison sheets of other computers
  - 3. Configuration sheets for word processing, Logo, communications, Plato, etc.
  - 4. Hotline numbers
- B. Introduce self
- C. Have participants introduce selves (ice breaker - see TIPS)

## VI. OVERVIEW OF TRAINING SESSION

## EXAMPLE TRAINING DESIGN FOR RETAIL TRAINING - Level B

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## VII. INTRODUCTION OF SYSTEM WITH EMPHASIS ON PERIPHERALS AND SOFTWARE

Peripherals

- A. Cassette recorder - capabilities/limitations  
Low cost for limited data storage (200K on 60-min. tape)
- B. Peripheral Expansion Box - advantages over cassette recorder and stand alone
  - 1. Cuts cable clutter
  - 2. Single power source
  - 3. Compact setup
  - 4. Disk drive memory system
- C. Contents of P.E.B. - use software as an example of value of P-Box, e.g. Logo, TI-Writer, Multiplan, Pascal
  - 1. Expanded memory card
  - 2. Disk drive and controller - up to 3 disk drives
  - 3. Single side and single density - 90K per disk
  - 4. RS 232C
    - a. Serial
    - b. Parallel - requires adaptor
    - c. P-Code Card
- D. Other Peripherals
  - 1. Printer
  - 2. Phone Modem
- E. Wafer Tape Usage
  - 1. Needs hexbus adaptor (\$60.00)

*Tape Counter  
Tape Control  
Remote*

*Video Concepts*

## VIII. SOFTWARE - SEE SOFTWARE HANDOUT. Discuss those software pieces in your training handout.

Demonstrate examples of each area:

- A. Education (Speech Synthesizer) - examples are:
  - 1. Reading Fun/Reading Roundup/Scholastic Spelling
  - 2. Addition/Subtraction/Multiplication/Division
  - 3. Plato System - K-12; 108 diskettes, Plato Interpreter

## EXAMPLE TRAINING DESIGN FOR RETAIL TRAINING - Level B

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## VIII. SOFTWARE (continued)

## B. Personal Finance/Home Management - examples are:

1. Home Financial Decisions
2. Household Budget Management
3. Personal Record Keeping
4. TI-Writer
5. Multiplan

## C. Computer Literacy - examples are:

1. Logo - Sprites, Graphics  
(Trainers should have a disk with examples of graphics music)
2. Extended Basic
3. Pascal
4. Pilot

## D. Entertainment - examples are:

1. Parsec/Munchman (fun)
2. Hunt the Wumpus/Amazing (teaches logical thinking)

## E. Data Access

1. TE-II
2. Modem

## F. Third Party Software

## IX. DISCUSS NEW PRODUCTS AND PROMOTIONS

## X. HANDS ON

1. Allow participants to "play", stressing use of software

## XI. WRAP-UP

1. Question/answer session
2. Cost comparisons for competitor
3. Third party hardware
4. TI compatible
5. Evaluation

T I P S

- The training session for retailers should be a minimum of 3 hours.
- Arrange a pre-training assessment with the store manager.
- Have store manager introduce you during training.
- Allow touching of system by trainees.
- Encourage participants to make mistakes.
- You make mistakes which best illustrate the ease and use of the system.
- Review training periodically to assure that objectives are met.
- Practice using several pieces of software before session until you feel comfortable.
- Use slide presentation sparingly.

Some suggestions for lead in discussions - when there is time and the need:

1. Discuss how fast technology is moving--who can remember the first televisions? Pocket transistor radios? Handheld calculators? Video games?
2. Ask how they feel affected by computers in their daily lives. How do they feel about computer errors (is it really the computer or the operator?)
3. Ask how extensively computers are used in medicine, geology, space exploration, cars, factories, banks, stores (cash registers, etc.), and homes (microwave ovens, programmable thermostats, etc.).
4. See if they can think of any computer terminology which is creeping into our language ("I was programmed at a very early age to worry," or "This does not compute.")
5. Suggest that home computers can help people keep abreast of our fast-moving technological culture--by offering the opportunity for self-education in the home.

- Post training contact follow-up - phone and/or stop by store to discuss questions for clarification and general assistance.
- Business attire a MUST, e.g. men - coat and tie; women - dress or skirt and blouses.
- Know your format - DO NOT READ.

EXHIBIT A<sub>7</sub>

## VERBS FOR WRITING GOALS AND OBJECTIVES\*

Some words are appropriate for writing learning goals. They are general rather than specific. Some of these are:

- to know
- to learn
- to develop
- to understand
- to appreciate
- to know relevant ways
- to increase
- to improve
- to know how

Other words are much more specific, and are appropriate to describing terminal behavior(s) when writing behavioral objectives. Some of these are:

- to list
- to identify
- to name
- to classify
- to diagram
- to write
- to display
- to compare
- to quote
- to match
- to explain
- to solve
- to place
- to state
- to select
- to order (in a given sequence)
- to translate
- to demonstrate

---

\*Adapted from Margolis

Please circle the score you feel is appropriate.

EVALUATION

High Score

Low Score

How much did you feel you needed this training session? 1 2 3 4 5 6 7 8 9

How much do you feel that others needed this training? 1 2 3 4 5 6 7 8 9

Do you feel the training accomplished objectives stated earlier? 1 2 3 4 5 6 7 8 9

What did you like most about the training session?

What did you like least about the training session?

What is your overall reaction to the training session?

Please give us suggestions for future seminars.

Would you like another training session in the near future? yes no





E X P E C T A T I O N S

- Interchange of ideas, networking
- Enhance and solidify the training program
- To find out what stores should have for demonstrations and POP displays
- Improved PSR network communication
- Specific ideas to take back for training PSR's to become trainers
- Specific definitions of role (PSR)
- Knowledge about sales techniques
- To get necessary equipment, hands on
- Retail customer information on configurations
- A training format
- Exchange of "how to" information
- Information network for PSR's
  - CC-40 phone hook-up
- Knowledge of future direction - GOALS AND OBJECTIVES
- Awareness of adult learning styles
- Aware of training techniques for "difficult" situations, e.g. no equipment, varying audience levels (attitudes, values), competitors
- Knowledge of sales responsibilities

Note: You may want to use this in your training sessions with PSRs or just be aware of some unspoken expectations.

H A N D O U TPreface:

The content of the training for retailers should be based on your background knowledge as a PSR/demonstrator, product literature available through the network, and from peers and customers. You will have flexibility in selecting the emphasis and techniques for delivering the training to the retailers.

## DEVELOPING A TRAINING DESIGN

A trainer should ask himself the following questions:

- Are the participants going to be professional staff, paraprofessional staff, a mix? Are part-time staff included?
- How much difference is there in educational levels?
- Are there varying cultural backgrounds? Is language a problem? Will I need to rely more heavily on non-verbal communication--demonstrations, graphics?
- Are there special topics participants want to know about? Have they been involved in planning the training? In choosing topics?
- With regard to specific topics, how much do they know? How much incorrect information do they know? Will they have to be persuaded that the training is worthwhile?

The Training Design and the Trainee

As we discussed in Module I there are great variations in the way people learn. One difference is the time needed by various individuals to master a specific learning task. There are also differences in interest, need, aptitude, and achievement, differences in ability to deal with the abstract or the concrete, in the interest span, and in audio or visual perception. There are differences in the degree to which an individual needs to be guided and in the amount of practice he requires. One of the most complex tasks of the training designers is to predict the effectiveness of each type of learning experience for different types of learners. The trainer needs to think about which learning tasks specific types of learners will best accomplish.

In selecting and organizing methodology, therefore, we have to deal with two variables: what the trainee already knows that will help him master the learning tasks and the learning style of the trainee. We need to be aware of alternative methodologies to select those that will best match the abilities of the learner; we must formulate criteria for matching appropriate methodologies to appropriate students (Bonathy, 1968).

### From Behavioral Objectives to a Methodology

In making decisions about the appropriate methodologies to employ in a given training design, the trainer has certain guidelines to follow. These guidelines can be phrased as a series of questions:

1. Does the methodology structure the learning situation so that--
  - a. the learning tasks are fully or partially accomplished;
  - b. the specific content information is taught or reinforced;
  - c. previous learning is reinforced; and
  - d. the behavioral objectives are fully or partially accomplished?
2. Does the content give adequate information for mastering the learning task(s)?
3. Is the selected methodology feasible in terms of scheduling and implementation of the training program?

This approach enables the trainer to systematically examine each portion of the training design and to choose the most appropriate methodologies.

### Choosing Methods

Trainers must choose specific methods based on the desired training outcomes. Beginning trainers sometimes ask, "Is it more appropriate to use role playing or buzz groups in this particular session?" This query must always be answered with another query: "What are you trying to accomplish in this session?" Form follows function. It is impossible to specify the value of any particular training method without reference to the goals of the training.

In forming a methodology, one must consider which type of method best fits different training goals: a change in the trainee's knowledge, attitude, behavioral skill, or performance on the job.

The following is adapted from Miles (1973).

#### Knowledge

The basic requirement for altering knowledge (concepts, facts, etc.) is that information be presented clearly, and that the learner have plenty of opportunity for questioning and clarification.

In short, the presenter of the information must be able to get feedback on the success of his attempts to communicate. Otherwise, it is unreasonable to expect accurate learning.

Appropriate methods for communicating information include lecture (if followed by a question period), open discussion, listing of questions on cards, etc.; symposia (in large meetings) with representatives from the audience present to question a speaker for clarification; films, TV, tape recordings, or readings with the opportunity for analysis by the training group.

### Attitudes

If attitudes, feelings, or opinions are to be changed, some research suggests that it is important to provide a nonthreatening situation where a person can tentatively shift his attitudes without feeling defensive or threatened. In addition, other studies (Cartwright, 1957) indicate that most attitudes are socially responsive: a person holds attitudes as a part of his membership in specific groups (such as school staff) and more general reference groups (such as "effective English teachers"). The durability of a new attitude is probably a function of whether the learner feels approved and rewarded by an individual or group important to him when he expresses that attitude, either covertly or overtly. In general, the success of appeals to emotion, fear, prestige, or credibility as a means of opinion change is variable. A frequent finding is that the "sleeper effect" occurs--initial opinion changes are not durable; opinions often revert to their original level after some time has passed.

If attitude change is desired, it is appropriate to utilize small, informal, open-ended discussion groups where the individual will not feel threatened. To the degree that these discussion groups are important or valuable to the person, attitude changes are more likely to be durable.

Other training methods that are helpful for bringing about attitude change include interview situations in which one member listens carefully to another member's description of his job attitudes and problems, and role playing. Role playing can be especially helpful in attitude change because the learner actually experiences the new attitude, feels little threat, and is supported by other members of the training group. The "inspirational" speaker often used in larger conferences is unlikely to bring about permanent attitude change in any intended direction (although he may be able to produce either a temporary glow or negative reaction). If the speaker is unusually nonthreatening, symbolizes an important reference group, and can help learners analyze their attitudes thoughtfully, then a talk by him may help in changing attitudes. Not many speakers meet these three criteria.

## Behavioral Skills

Change in the actual ability to do something usually requires guided practice with feedback about the success or failure of the practice. Many people believe that group-relevant skills, such as keeping a discussion on the topic, can be learned by talking about or reading about techniques for coping with particular problems. However, skills must be learned through practice. It is possible to learn all about driving a car by reading a book, but the actual driving can only be learned by doing, by seeing the results, and doing it again.

Methods using video or audiotape recording and playback are helpful for improving skills in group behavior (also helpful are intermittent process analysis, use of a group observer, coaching sessions, critiques of role playing, etc.), as is any method involving immediate analysis of the effectiveness of behavior.

## Job Performance

Research indicates that following through on an action usually depends on the individual's commitment to a group decision about the action. Other research indicates that follow-through after training is higher when the learner feels supported and reinforced on the job by other members of a team with whom he has attended training.

From this point of view, the best methods for influencing post-training action are those that involve group discussion and group decision-making to undertake specific actions on the job. Individual planning sessions followed by reporting to the group (for support and reinforcement) are also appropriate, as are team planning sessions and many other activities.

## The Relationship of Method to Outcome

It should be apparent by now that choice of a specific method should depend on the desired outcome. Some methods can be used to promote change in more than one area; for example, role playing, with variations, may be used to bring about change in information, change in attitude, improvement in skill, or to help ensure follow-through on the job. The important thing is to identify the type (usually types) of outcomes desired, and then select training methods that meet the basic requirements suggested above.

## Organizing the Methodology: Selecting and Ordering Activities

In selecting and ordering training activities, the trainer must consider: the appropriateness of each activity to trainees' needs, the relation of activities to the trainer's range of competence, inherent self-evaluation and correction in each activity, multiple

learning, the initial impact desired, the order of activities, the variety of activities, and a few practical points (Miles, 1973, and NJCATI, 1968).

#### Appropriateness to Trainee Needs

Activities should relate to the needs of trainees. Training should be designed so that participants will have practice that will be useful to them in their job situation. A person who needs to improve his interviewing skills and is in training to learn these skills should participate in related activities, such as role playing.

#### Relation to the Trainer's Range of Competence

This is a crude but realistic criterion: trainers should not try things they feel they cannot handle. However, some insecurity is natural, and much skill can be learned. Also, consultants or other trainers with special skills may be recruited for the training session, and new skills can be learned from observation, practice, and feedback.

#### Inherent Self-evaluation and Correction

Good training activities should contain provisions for their own evaluation and correction. Trainees need to be able to evaluate each activity as a learning experience necessary for an inexperienced trainer or for a training of trainers for subsequent programs.

#### Multiple Learning

Training activities should encompass the various aspects of learning. They should provide for cognitive, affective, and psychomotor learning. An activity that encourages facile solutions to complex problems is undesirable. A single training activity may have a rather narrow focus; however, a series of training activities should be structured so as to facilitate several levels of learning to accomplish one or more objectives. Often two or more behavioral objectives can be attained through one series of training activities; thus multiple learning at various levels is accomplished.

#### Impact

The initial impact of a training session is particularly important in that it establishes the tone for the session and can either facilitate or hinder learning. For example, in certain situations an activity with a dramatic impact can pique the curiosity but it may be inappropriate in other situations when training may seem

threatening. The choice of activity depends on several things:

- The nature of the training content, and how readily it lends itself to various kinds of activities.
- The kind of atmosphere one wants to establish and maintain throughout the training session.
- How much the trainees need to know about the trainer and about each other.
- How much time the trainer has to present his material and the kind of presentation to which the material lends itself. (Consider whether the information will be lost because of inattention to a presentation that seems cold or abrupt.)
- What the most pressing needs of trainees are.

These and other considerations must be weighed when a trainer plans his presentation. An unpleasant, uninteresting, or merely boring first impression may be difficult to undo.

#### Order of Activities

The order of training activities should be determined by the objectives of each session, by the type of training, and by the training goals. There must also be a logical progression from one activity to the next.

If the trainer decides to begin a session on interviewing techniques with a role-playing exercise in a small group, he must consider which type of activity should follow to reinforce the learning gained. He may decide to use a small-group discussion to identify and highlight various interviewing techniques, or he may feel that a discussion in the large group would allow a better exchange of ideas. If he begins a session with a lecture on classes of drugs subject to abuse, he may want to follow with a discussion of the content, or perhaps with an exercise that utilizes the information presented in the lecture.

One must consider the training objectives and decide what type of activity builds on previous information and what type enhances the overall session. One would not want a lecture to follow a lecture with no chance for participants to practice what they learn. Training activities must follow a logical progression and should reflect the needs of the trainees.

## Variety of Activities

A variety of activities enhances learning and makes training more interesting. By moving from didactic to experiential learning, from issues that are "heavy" and threatening to others that are less controversial, from one medium to another, the trainer varies activities to facilitate learning. Enough time should be allotted for participants to identify, analyze, and generalize their experiences in each training activity.

The creative trainer should be able to come up with something just right for his prospective trainees. If he has gathered the information on training needs carefully, his thoughts about what training methods might work are the most useful guides for developing a good training design.

Some common activities used in training are:

- Guided group discussions
- Group problem-solving exercises
- Buzz groups
- Role plays
- Structured role plays
- Role reversals
- Group dynamics analysis
- Nonverbal exercises
- Discussion stimulators
- Case studies
- Videotape playback
- Written exercises
- Brainstorming
- Analysis of films or videotape
- Process analysis
- Fishbowl (group observing group)



## Practical Considerations

When selecting methods, the circumstances of each training situation dictate several practical considerations. In most cases, these include such things as:

- How much total time is available for the training program
- How often and how long participants can be released from their jobs
- Schedules of consultants, trainers, trainees
- Need to provide time for participants to practice skills they will use on the job
- How often and for what duration training facilities are available
- Transportation requirements (if any)
- Available funds for materials, salaries, renting facilities, food, etc.
- Time periods that trainees and trainers are able to work without becoming fatigued (varies by group)

## Clarity of the Design

The overall training design must have one other criterion: clarity. The design finally selected should be planned in sufficient detail so that each person involved knows what he is to do and when he is to do it. Each step in the design should be described in detail along with notations of responsibilities and time involved.

## SUMMARY

Here are two approaches trainers can use to create a training design.

### The First Approach

#### Step One

Based upon the behavioral objectives and learning tasks, the trainer should block out a rough schedule establishing the sequence and length of training sessions. Sessions should be ordered so that one builds upon the other in a logical sequence.

### Step Two

Using the learning tasks and specific content areas of the curriculum, he should list sequentially and in small steps *what* the trainees will learn in the training session.

### Step Three

After listing *what* the trainees will learn, the trainer should select the methods and techniques by which they will learn each step. The trainer must be sure to include participatory activities such as discussions and practice sessions, if information is to be presented through lecture, film, demonstration, etc. He should ask himself whether the method selected is appropriate for the complexity of the learning task. Simple learning tasks generally do not require time-consuming methods or complex techniques. Even when a series of learning activities are combined into a practice session the methodology does not need to be elaborate. *Are methods varied to make training more interesting?*

As was discussed in Module I, people learn best when a variety of training methods and participatory techniques are employed. It is too simplistic to say that people learn best by doing--rather people learn best if they understand what it is they are expected to do, if they practice those behaviors, receive feedback on their performance, and practice again if necessary. If the trainer wants to impart new information he might choose a lecture, film, reading, etc. If the trainer wants to build on information that trainees already have, he might employ methods such as brainstorming, group discussion, problem solving, etc.

Variety means not just mixing methods, but matching methods to expected outcomes. The trainer should ask himself such questions as: *Am I lecturing about information trainees already know? Am I asking trainees to generate information or practice skills that they don't have? Will these activities confuse trainees unnecessarily? Will they fragment the group or create cliques that would hinder the learning process? Or do these activities facilitate the learning process?*

### Step Four

When he has finished selecting his training activities, the trainer should establish approximate time allocations to complete each step of the training design. If a given activity requires more time than he has been allotted for the session, he should consider other activities that might accomplish the same learning in less time. If the activities he has selected seem the most effective ways of accomplishing the learning tasks, but there isn't sufficient time in the session to accomplish them, the trainer should

consider reducing the number of learning tasks (and possibly objectives) so they can be accomplished in a given training session.

It is more important that the trainees learn a few things that they can apply to their jobs than learn *about* many things and be unable to perform tasks they came to training to learn.

#### Step Five

The trainer should review the training design and write a detailed description of the methodology specifying the expected trainer and trainee behavior for each step.

He should read over the design and refine it if necessary, reviewing it for the following points:

- Does this plan follow the guidelines?
- Can the goal realistically be met by this plan, given the level of preparation of the trainees, their needs and interests, and the circumstances of the training?
- Does each part of the plan contribute to accomplishing the behavioral objectives? Does each step lead into the next one? Do the later steps build on learnings acquired in the earlier steps?
- Could any other method do as well or better? If so, should it be used?

#### The Second Approach

The second approach is similar to the first except that steps three and four are combined. After listing *what* the trainees will learn, the trainer should select the appropriate method and determine approximate time allocation for that step. As the training design is created, the trainer knows how much time has been used for each learning task in the session.

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TRAINING DESIGN WORKSHEET

TIME	WHAT	HOW	MATERIALS AND EQUIPMENT

APPENDIX C

*Pat  
Cowell's  
5/20/83*

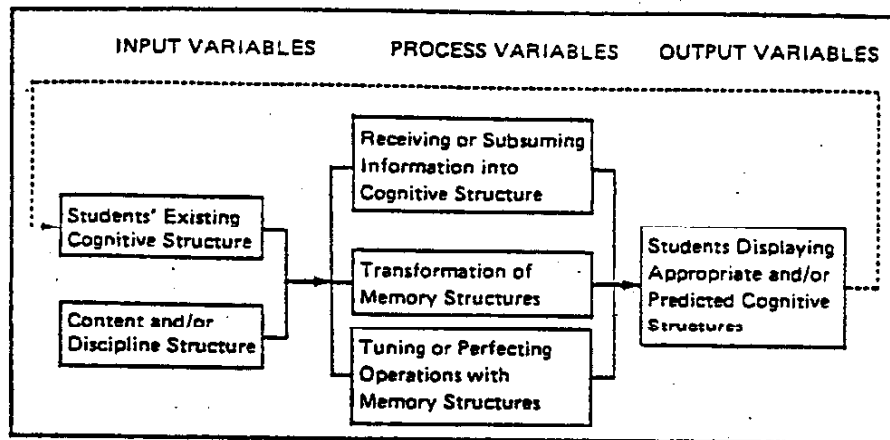
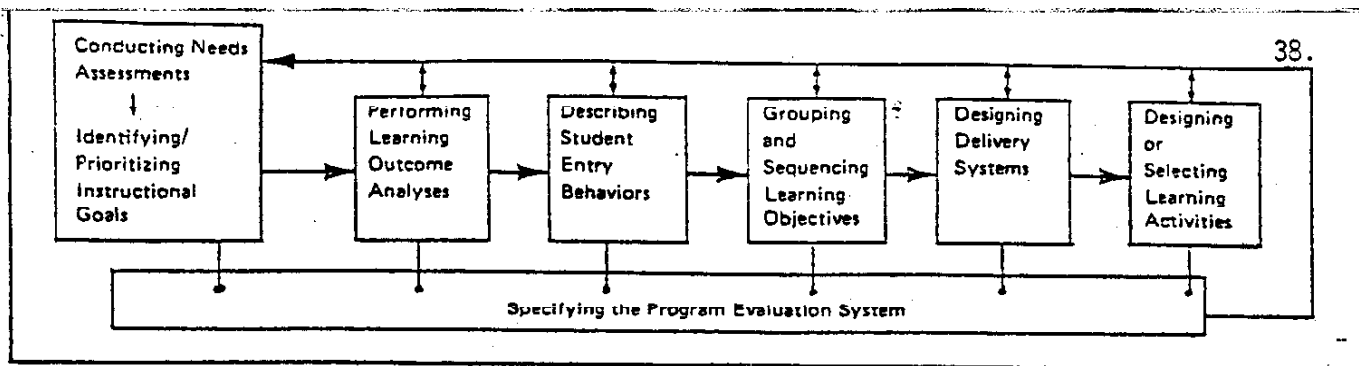


TABLE 1. Examples of key questions or issues that arise when instructional design occurs under theoretically different conceptualizations of human learning.

	Conducting Needs Assessments	Performing Task Analyses	Assessing Student Entry Behaviors	Grouping and Sequencing of Learning Objectives	Designing Delivery Systems	Designing Learning Activities
<b>Behavioral Theory</b>	Are discrepancy analyses presented in behavioral terms? Are routine needs assessment techniques generally followed? Are needs assessments routinely updated?	Can terminal outcomes be subdivided into appropriate enabling or prerequisite behaviors? Has the task analysis product been verified empirically?	Can existing levels of behavior be pinpointed and charted? Is reinforcement history known?	Does sequencing follow established rules of shaping and chaining? Do sequencing patterns follow from task analysis?	General questions in delivery include the following: Are learners informed of objectives? Do materials actually elicit desired behavior? Are provisions made for reinforcement? Is progress based on mastery?	Do activities meet standard behavioral requirements (i.e., small steps, active responding, frequent feedback)?
<b>Cognitive Theory</b>	Does assessment procedure express desired and existing conditions in terms of cognitive structure characteristics? Does assessment procedure seek information processing needs? Does assessment procedure stress "learning how to learn" skills? Are needs assessments routinely updated?	Does analysis yield a task or information structure? Are information processing requirements noted throughout? Does the task analysis process make explicit the difference between novice and expert behavior? Is the task analysis suitable for the targeted variation of cognitive instruction (e.g., inductive vs. deductive)?	Can structural aspects of memory be identified? Have processing skills required for relevant variations of cognitively based instruction been assessed? What prerequisite intellectual skills and information are present? Have developmental concerns (such as the mode in which material is represented) been considered?	Is sequencing consistent with targeted theoretical variation (i.e., inductive vs. deductive)? Are grouping and sequencing decisions sensitive to hypothesized periodic variations in learning behavior (such as shown in figure 2)?	Has conscious choice been made from among the several cognitively based instructional options currently available? Has above choice been made in context of decisions made within previous components Are materials adequate for model chosen?	Are specific activities consistent with theoretical option chosen? Are specific activities consistent with all decisions made within previously considered components?



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S O F T W A R E  
D E S C R I P T I O N S



## MINI MEMORY

This module increases the versatility of the 99/4A home computer by providing additional memory for the system and important tools for program development. In addition, it contains a built-in battery, which permits the programs and data stored in the ram of the module to be retained when the computer is turned off, even if the module is removed from the console.

The advantage of this is the fast storage and retrieval of data which is used frequently in an application or storing assembly language programs which perform rapid computations.

### Features:

- Increases memory by 4-K
- Capability of implementing assembly language programs. The module allows loading of assembly language programs for direct access to the programmable components in the computer. Assembly language programs can also directly access devices such as the joysticks or cassette tape recorders through their interface ports on the console.
- Assembly language subroutines, which include Peek and Poke, to be called from TI-Basic programs. These subroutines can perform functions which would be inefficient or impossible to implement in Basic. Do not have 20K memory available to you when you use new mini-memory for assembly language. Can only use 4K in module for assembly language.
- "Easy Bug Debugger" section that deals with debugging an assembly language program.
- Portable

One word of caution -- the manual takes it for granted that access to assembly language programs is being done by an experienced assembly language programmer.

Peripherals: None

Target Audience: Customers wanting additional memory  
 Customers with some computing experience  
 Customers who want assembly language without the cost  
 of purchasing the whole package for assembly

## HOME FINANCIAL DECISIONS

Probably the easiest of all the modules to demonstrate and get a fast understanding of how the computer can save time in dealing with figures that nearly anyone can understand.

This module is a step-by-step guide to evaluating everyday financial questions.

### Features:

- General loans
- Home and car buying
- Personal savings

This module lets you explore a variety of financial decisions in each of the following categories:

- Loans
- Home Purchase
- Automobile leasing or buying
- Individual savings

1. The LOANS section has been designed to help in evaluating payment and interest alternatives.
2. The RESIDENCE section helps determine everything from the size of a monthly house payment to comparing two houses to find which one is the better buy, to the considerations involved in renting or buying a house.
3. The CAR section can help evaluate a new car loan, the cost of keeping a car versus buying a new one, and the cost of leasing a car.
4. The SAVINGS section evaluates four areas involved with individual savings plans.

While this is an easy module to use, the manual does have information typed in the borders to assist in the demonstration or just getting used to the module.

## HOME FINANCIAL DECISIONS

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\*\*For a fast and easily understood demonstration, use car (3) and then buy a car (1). Everyone will be able to identify with the information presented.

Peripherals: None

Target Audience: Anyone with a need for clarity in home financial decisions

MIND CHALLENGERS

This module has two computer games that test the powers of memory and logic.

1. The MEMORY MATCH portion is a game of musical memory: a series of notes created by the computer or an opponent. The object is to try to play the same notes in the same sequence, similar to an electronic game called "Simon". Each time a certain series is remembered, a note is added.
2. MIND GRID: tests and improves the power of logical deduction. The computer hides up to 64 game pieces of varying shapes and colors. After guessing at the location of the pieces, the computer gives additional clues. The object is to solve the locations in the lowest number of guesses.

Features:

- Create randomly generated games, so no two are alike
- Offer games as easy or challenging as selected
- Allow play against the computer or another opponent

Peripherals: None

Target Audience: Game oriented  
Education value - for anyone wanting to improve  
memory and problem solving

### HUNT THE WUMPUS

More than a game, this cartridge utilizes logical thinking skills to enable the hunter to find and shoot the wumpus without falling into slime pits or being captured by the wumpus who feeds on unwary visitors to its cavern.

Armed with a single arrow, the hunter explores the maze of caverns, searching for clues to find where the wumpus is hiding. In the first set of mazes the clues are shown and by remembering these and knowing the rules, logical thinking will find the cavern of the wumpus.

Features are:

-Each game is played in a new, randomly generated maze.

-Choosing a maze based on skill level.

-Challenging the powers of deduction, memory and concentration with options that can be included in the hunt.

There are three levels of play, four options and over 70 total mazes available.

Peripherals: Joysticks (optional)

Target Audience: Entertainment bound  
Those who want to instill problem solving skills.

## SECURITIES ANALYSIS

If you are not familiar with security investments, this module may seem rather confusing. While it is not important to understand everything that this module does, it is important to know some of the areas it covers.

### Features

- Help gather the information needed for informed, effective decisions
- Quickly perform complex financial analysis based on the critical investment values that relate to a given situation. For example, it will compute the theoretical value of a stock or use the black-scholes options pricing model to estimate a fair value of options.
- Compute the appropriate price or yield on a bond, or calculate the net present value and internal rate of return for up to 99 variable cash flows.

By following the instructions in the manual and on the display screen, these securities analysis techniques are available:

- Stock analysis for yield and valuation
- Option analysis for pricing, hedges and spreads
- Bond analysis for yield to maturity and market price
- Basic financial analysis tools for compound interest, annuities, variable cash flows and calendar calculations

### IMPORTANT

One of the most useful features of the securities analysis module is the ease it offers for performing a sensitivity analysis - testing an investment calculation to see how it responds to slight changes in key values. Sometimes slight variations in one or more input values can influence the final investment decision.

The Texas Instruments Thermal printer (NOT RS-232 TYPE) can be used for obtaining printed copies.

## SECURITIES ANALYSIS

Page -2-  
-----Peripherals: NoneTarget Audience: Customer who needs stock, bond and financial analysis

## STATISTICS

This module can perform statistical calculations with speed and accuracy leaving more time to concentrate on analyzing the results.

The module is designed for easy use. Without programming experience or special computer training, one can perform calculations in the following categories:

### Features

- Descriptive statistics, including mean, standard deviation, and frequency tables
- Correlation
- Linear regression
- Inferential statistics, including T-tests and analysis of variance
- Significance level calculators

The module program guides in entering the data set. First, to help set up the file structure, the computer prompts for entering the category names and the type of data they will contain. Then the values for each category as prompted on the screen can be entered. When the data file is complete, the selection of the analysis you want performed and typing of the names of the categories to be analyzed can be done simply. The module then performs all of the calculations and displays the results.

For future analysis of a data file, the file contents must be stored on a mass storage device such as a cassette or diskette. Stored files are easily reloaded for further analysis.

Transmitting data files to another 99/4A computer can be done via the RS232 interface and the telephone coupler. With a printer attached, printed copies of displayed results are available.

In addition, the file structures of this module, Personal Record Keeping and Personal Report Generator are designed to be compatible. Applying the capabilities of one of these modules to data generated by another can increase the usefulness of all by accomplishing tasks which are not possible using each individually.

For demonstration purposes, the module has a sample data set built in. While the data set may seem large, its size makes it possible to apply all of the statistical routines.



## STATISTICS

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Peripherals: Cassette recorder or disk drive, disk controller, P-Box,  
Transfer of files: RS232, Printer, Modem

Target Audience: Students, managers, anyone who wants statistical analysis

## HOUSEHOLD BUDGET MANAGEMENT

A step-by-step guide to track money management.

### Features:

- Set budget guidelines
- Track income and expenses
- Spot problem areas
- Keep easily accessible records
- No computer experience required

The H.B.M. module helps manage money by systematically recording, analyzing and storing data. You can:

- Set up a budget system to coordinate income and expenditures for the year: month-by-month or category-by-category
- As the year progresses, compare the actual income and expenses with the dollar figures budgeted
- Identify the greatest expenditures, discover how well the budget is working, if you are underspending or overspending
- You can also modify the budget to reflect changing expenses or income
- Design an individual or family budget
- Track income and expenses on a monthly and yearly basis
- Analyze spending habits and project current expense trends for the remaining year to see the affect it has on the planned budget
- Record and save monthly income and expense figures to establish a personal financial history

To save the information added using the module, an outside storage device is required. A cassette recorder or disk system can be used.

Included in the module is a set of demonstration data. By working with this information, it is possible to get an in-depth preview of what the module is able to do. The demonstration data includes the income, expense

## HOUSEHOLD BUDGET MANAGEMENT

Page -2-  
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and budget amount of a sample household for a nine-month period.

There are a total of 99 possible income and expense categories available in the module. A maximum of 34 may be active. You can select the categories one at a time or for convenience, work with the 34 preselected income and expense categories.

Peripherals: None. If storage is wanted - cassette recorder or disk drive, disk controller, P-Box

Target Audience: Customers who want to track household spending.

PERSONAL FINANCIAL AIDS

Cassette or diskette based (no module)

This software package provides three programs to help make financial decisions.

THE AMORTIZATION SCHEDULE program prepares a loan repayment schedule which calculates the interest and amount paid to principle per payment and annually. This schedule is useful in calculating interest paid for tax purposes and determining the balance due.

THE DEPRECIATION PROGRAM prepares depreciation schedules and graphs based on three methods of depreciation: straight-line, declining balance, and sum-of-the-year's-digits. The program also calculates the most advantageous year to cross over from declining balance or sum-of-the-year's-digits method to straight-line. This program allows selection of the method of depreciation which best suits an individuals tax and business needs.

THE MORTGAGE ANALYSIS PROGRAM evaluates home purchases in terms of potential appreciation and tax savings. The information provided can help determine whether the purchase of the property is financially sound.

A printer can be used to obtain hard copy of the reports.

Packaging: Cassette or diskette - no module

Peripherals: Cassette recorder or disk drive, disk controller, P-Box, (Printer, RS232 for hard copy reports)

Target Audience: Customer who wants more information about personal finance than HFD can provide. Also a customer who wants more in depth financial data than H.F.D.

## TAX/INVESTMENT RECORD KEEPING

This module allows the keeping of tax and investment data in a single, flexible record-keeping system, and generating reports on financial status.

### Features:

- Built-in filing system which can be used as is or modified to suit an individual's personal requirements
- It can be used for simple record keeping to full double-entry bookkeeping.
- It can be used to record both tax and tax-exempt income, track expenses and indicate what portion, if any, is tax deductible
- Since the module allows storage of a wide variety of investment data, it can become an important factor in investment decision making

### You can:

- Organize financial data into categories based on an individual's needs
- Generate a variety of financial reports
- Locate and total specific transactions
- Compare income and expenses
- Assess capital gains or losses
- Determine net worth

In addition, with a printer connected to the RS232, it will print reports, transactions or other information displayed on the screen.

Note: This module requires the disk memory system.

Peripherals: Disk drive, disk controller, P-Box (printer, RS232 card for hard copy report)

Target Audience: Customers who need and want to keep accurate tax records

## TERMINAL EMULATOR II

This module will enable the 99/4A to telecommunicate with other computer systems using the RS-232 and telephone coupler (Modem). If the host computer uses the TE-2 protocols, it can access color graphics, speech, sound and file transfer capabilities. Information concerning this can be received from the service being accessed. More information on one subscriber service see the information on Texnet (Source).

With the TE-2 module, the 99/4A functions like a standard RS-232 terminal, enabling it to communicate with any data base or large remote system operating under the standard RS-232 protocols. Since the data base being accessed must be equipped to take advantage of the module's special features, check with the service to see if these features are available.

With the speech synthesizer attached to the home computer, you will be able to access the text-to-speech capabilities with a TI-Basic program. With this feature, speech can be added to games, educational programs, and many other applications. It is not possible to use the TE-2's text-to-speech with the Extended Basic module.

Peripherals: RS-232, Modem, P-Box, Printer, Disk Drive, Disk Controller for telecommunications.

-Speech synthesizer for text to speech

Target Audience: Customers who want telecommunication capability  
Enhancement of programs with speech synthesizer

1. TEACH YOURSELF BASIC
2. TEACH YOURSELF EXTENDED BASIC
3. BEGINNER'S BASIC TUTOR

These three software programs are sets of instructions to learn how to program the Texas Instruments 99/4 and 4A. They all come in either cassette or diskette versions and are very easy to use but cover a variety of topics enabling anyone to learn to program in basic or extended basic. They are used as a supplement to the two manuals that must be purchased for the console.

1. In TEACH YOURSELF BASIC, the student is guided through the features of TI basic and is able to try the many features as they are presented. The "course" contains ten chapters, each lesson gives hands-on experience with everything from simple commands and procedures to color graphics and sound.
2. TEACH YOURSELF EXTENDED BASIC gives step-by-step instructions for programming in extended basic. Seven on-screen lessons give simple, hands-on experience in positioning input and output on the screen, handling errors, and using sprites, commands and subprograms. It is recommended that a certain amount of TI-Basic be understood before progressing to these lessons.
3. BEGINNER'S BASIC TUTOR is similar to Teach Yourself Basic, but follows the manuals that must be purchased for the computer more and on a less progressed level. This package is suitable for someone that needs more instruction in the fundamentals before advancing to more complicated programming techniques. This "course" contains eight lessons that start from the first steps of immediate mode versus program mode to character definition to string manipulation. Each lesson periodically asks multiple-choice questions to test understanding of the material presented.

Packaging: Cassette or diskette

Peripherals: Cassette recorder or disk drive, disk controller, P-Box

Target Audience: Beginners

## EXTENDED BASIC

A powerful, high-level programming language that expands the capability of the 99/4A Home Computer. It has the features expected from a high level language plus additional features not available in many other languages, including those designed for use with large, expensive computers. For example, most of the basic used on large main frames has the same capabilities found in extended basic. For an experienced programmer, programs will be easily converted. For a student learning basic on a main frame or mini, the assigned programs can be written on the 99/4A with little or no modification.

### Important Features

- More than 40 new or expanded commands, statements, functions and subprograms.
- Multiple-statement lines for speed and efficiency.
- Ability to program 28 sprites (moving graphics).
- Ability to store subprograms on diskette for use as needed.
- Ability to load and run one program from another.
- Program control of errors, warnings and breakpoints.
- Direct screen control of input and output.
- Support for loading and running TMS9900 assembly language programs using memory expansion.
- ~~CALL~~ Peek and call load = Peek and Poke
- Access to text to speech.

The module comes with an extensive manual (224 pages) to provide a concise, but easily understood review of the language. While a first time programmer can use extended basic, it is recommended that they review the basic manual, which must be purchased.

Peripherals: P-Box (Memory Expansion if more than 16K)

Target Audience: People who want to learn other computer languages  
 Programmers  
 Hobbyists - more powerful language, more powerful formulating capabilities.



## TOUCH TYPING TUTOR

This module is designed to help learn basic typing skills for the beginner typist, or polish touch-typing techniques for the experienced typist.

### Features for Practice:

Single keystrokes and letter combinations.

Frequently used word beginnings and endings.

Complete sentences.

500 frequently used words.

The practice material for the drills is randomly generated with each use of the module, so no two practice sessions are the same.

### Organized Into Three Sections:

**Lessons:** For the beginner, teaches the keys of the keyboard. Eight skill levels with two lessons and a review.

**Diagnostic:** This section analyzes typing skills and provides practice in the areas indicated as needing more work. Contains three sections consisting of timing, analysis and practice.

**Game:** Provides enjoyable practice to increase typing speed. Contains eight levels of review of the eight levels from the lessons portion.

Note: This module will work on the 99/4A only.

Peripherals: None

Target Audience: Beginning typists and typists wanting to enhance skills.

TI-WRITER

Peripherals required: P-Box, Memory Expansion, RS232, Disk Drive and Disk Controller Card.

- Module with program diskette included.
- Blank, initialized diskette required for storage.

Description

This program is designed to bring many of the features of large word processors to owners of the 99/4A. It is able to create documents and edit those documents as professionally as documents created on word processing machines costing as much as \$5000. Inserting and deleting text and lines, automatic word wrapping, overstriking, and underlining, moving and copying lines of text, and document reformatting are some of the features of this easy-to-use software package.

Important Features

- Word Wrap
- Right and Left Justification
- Text Centering
- An "Oops" Key for Lost Documents
- Automatic Indentation
- Headers and Footers
- Setting Margins and Tabs
- 23,000-Character Text Buffer
- Overstriking and Underscoring
- Combining Mail List and Multiplan Programs

With no computer or word processing experience, it is able to create professional looking documents at home. The manual that comes with the software has a practice letter using the most popular commands to allow familiarity with the software.

The text editor portion is used for creating and editing the documents. The formatter is used for designing the document to look professional. For example, in the formatter are the special features for justification, setting margins, centering, underscoring, etc.

For DOT matrix output, the TI Impact Printer may be used. For a professional appearance an RS232 compatible letter quality printer will work.

Target Audience: General public with word processing needs. Note: Word processing needs may not be met for manuscripts if a dot matrix printer is used.

## PERSONAL REAL ESTATE

This module performs sophisticated analyses of real estate investments.

### Features:

- Help calculate or analyze cash flows
- Rates of return on an investment
- Depreciation and Loans. Even without a broad background in real estate one can use this module to perform complex real estate calculations, even create depreciation and amortization schedules (Information may be incorrect)
- Lets you change various inputs and repeat a calculation to see the effect on the calculated results (similar to Multiplan).

Each segment of the program performs calculations that are essential to sound investment decision making.

1. The DEFINE INVESTMENT SECTION: enables the entering of key financial data that describes a particular investment to analyze.
2. The LOANS SECTION: allows analyzing of various loans and print amortization schedules.
3. The LEASES SECTION: incorporates lease payments into the analysis.
4. The DEPRECIATION SECTION: enables the exploration of various depreciation options.

All information that is entered using the module may be saved on a diskette or cassette. For printed copies, a printer connected to the RS232 can be used. A printout of an amortization would be the best example of this use.

Peripherals: Cassette recorder or disk drive, disk controller, P-Box, (RS232 card and printer for hard copy)

Target Audience: Customers in real estate ventures

PERSONAL REPORT GENERATOR

This module can allow utilization of files created with the Personal Record Keeping and Statistics modules to produce useful reports designed to an individual's exact specifications. Together, the three modules comprise a complete file management and reporting system.

Divided into two major sections:

1. Report management
2. Data file

Report Management Section - operate on existing data files to:

- Design report formats
- Test formats before printing full reports
- Modify report formats for correction or updating
- Print reports
- Save and load report formats for use with other data files

Data File Management

The options of data file management offer unique file manipulations capabilities not available in the Personal Record Keeping or Statistics module. For example:

- Adding items to previously defined files
- Deleting items from a defined file
- Combining two compatible files to create one large file

Without programming experience or special training, the module can be used to create reports such as:

- Personalized form letters
- Address labels
- Tables of results
- Personal calendar
- Personal telephone directory

Data files or report definitions can be transmitted to another 99/4A via the RS232 and the telephone coupler (modem).

## PERSONAL REPORT GENERATOR

Page-2-  
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Peripherals: Cassette recorder or disk drive, disk controller, P-Box. The Report Management Section requires printer, RS232 card.

Target Audience: Customers experienced with computers  
Customers who need reports  
Customers who use small data files  
Customers using Personal Record Keeping  
and/or Statistics modules

## PERSONAL RECORD KEEPING

The most versatile of the moderately priced software packages, yet it is very easy to use and understand. Used alone, it is a small but powerful data base-type software. The Personal Report Generator module enhances the capabilities of this software. (See Personal Report Generator for more information.)

### Features

- Creating, maintaining and utilizing individually customized files.
- It can be used for applications that range from small library management to household inventory, from stock and bond records to sports statistics, from stamp collections to scientific experiments.
- Actually there is no limit to the capabilities except for size. The total amount of records that can be placed within the program is controlled by the number of categories and the length of each entry.

Without programming experience or special training the module can be used to:

- Organize and set up customized files
- Update and rearrange files
- Display selected lists of file data
- Analyze relationships between items
- Evaluate simple statistics

The module uses prompts to set up a file. Once established, the computer again uses prompts to easily enter information into the file.

File information can be stored on an outside storage device. Either the disk memory system or a cassette can be used. With a printer you can make printed copies of the files. It is also possible to transmit data files to another Texas Instruments 99/4A using the RS-232 and telephone coupler.

The data organizing structures of this module and the statistics module are designed to be compatible. The manual that comes with the P.R.K. module explains this use.

Peripherals: Cassette recorder for memory storage or disk drive, disk controller, P-Box for disk memory storage

Target Audience: Customers with need to keep files  
Home, stock, inventories (small)



HOW TO USE THE

# **Demonstration Guide**

This book has been especially designed to help you demonstrate the many features, applications, and benefits of the TI-99/4A Home Computer. The front pages of this book assist you in getting started, illustrate the use of the *Demonstration Solid State Software™* Command Module, and provide information on TI BASIC. The pages which follow provide a quick, complete, step-by-step demonstration of the many software applications packages available for the TI-99/4A. These software demonstrations are arranged in easy-to-locate tabbed sections by application.

The directions provided for each demonstration are carefully worded so that you can read them directly to your prospective customers, or let them read along with you as they try out the "hands-on" examples.

To demonstrate the TI-99/4A Home Computer, simply follow these steps.

1. Select either the built-in TI BASIC language or the software application of interest to your customer.
2. Find the application in the appropriate page of this guide.
3. Read through and follow the easy, step-by-step instructions. These instructions — and the Home Computer itself — show you and your customer exactly what to do.

Notice that the instructions for inserting and selecting a Command Module, diskette, or cassette are included, when appropriate, on each page of the demonstration section of this book. This format gives you easy access to all of the instructions you'll need to demonstrate each application without turning pages.

### **IMPORTANT NOTES:**

- Hold down the **FCTN** key and press = (QUIT) when you have finished each demonstration. The computer will return to the master title screen, ready for your next demonstration.
- Be sure the **ALPHA LOCK** key is depressed when you are entering a TI BASIC program or using a Command Module. (The only exception to this would be if you are using the Wired Remote Controllers with a game module; in this case, the **ALPHA LOCK** key should be up.)
- If you are demonstrating a Command Module and it is accidentally removed from its slot while the module contents are being used, the computer will behave erratically. To restore the computer to normal operation, turn the console off, wait a few seconds, reinsert the module, and turn the console on again.

**Some things to know...**

If you're just getting started, it may be helpful to review some of the terms used to describe the TI-99/4A, its "pieces and parts," and its uses:

**BASIC** — An easy-to-use popular programming language available on most personal computers. The word BASIC is an acronym for "Beginners All-purpose Symbolic Instruction Code."

**BYTE** — A unit of information, generally meaning the amount of information the computer needs to represent one *character* (letter of the alphabet, number, etc.). The computer's memory capacity is often expressed as the number of bytes available (usually measured in thousand byte units called Kilobytes, K-bytes, or simply "K"). For example, a computer with 16K bytes of memory can store about 16,000 characters of information.

**COMMAND MODULES** — Preprogrammed, solid-state modules which are easily inserted into the computer to extend its capability. (Note that Command Modules contain no tape or moving parts; they are not cassettes.)

**CONSOLE** — The "main unit" of the computer containing the keyboard, the slot for Command Modules, an adapter port for accessories, and the computer's operating system.

**HARDWARE** — The various pieces of equipment which make up a computer system, including the console, the monitor, disk systems, printers, etc.

**MONITOR** — A special "TV" set which can be used to provide a viewing screen for the display of information (text, graphics, color, etc.) from the computer to its user. Note that a monitor does not have a TV tuner, so it cannot receive regular TV broadcasts. The TI Home Computer can be attached directly to a monitor through the cable provided with the monitor, or it can be connected to a regular television set by means of an adapter called the Video Modulator (also provided).

**PERIPHERALS** — Added accessories which extend the utility of a computer, including speech synthesizers, printers, disk systems, etc.

**SOFTWARE** — Information put into the computer to allow it to perform various applications for the user. Software typically includes detailed step-by-step instructions which tell the computer how to perform complete tasks ("programs"), as well as the information it needs to operate on or work with ("data"). Software can be contained in Command Modules, diskettes, cassette tapes, or in the memory of the computer itself.





DEMONSTRATION GUIDE TO THE

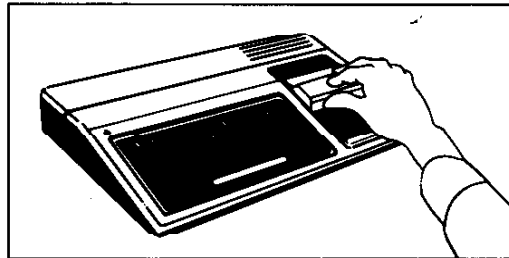
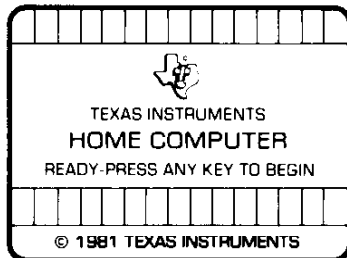
# Demonstration

## COMMAND MODULE

The **Demonstration** Command Module is a fully automatic presentation of the many powerful features of the Texas Instruments Home Computer. Once inserted into the computer, the module presents a continuously enjoyable display. Special features make the module usable in a wide variety of display situations.

### Just snap in the Command Module — and go!

1. Be sure the computer is ON. (The ON/OFF switch is on the right front of the unit.) The master title screen is now displayed (as shown left). Slide the module into the slot on the console (as shown right).



2. Press any key to make the master selection list appear. To select the Demonstration module, press the 2 key.
3. Next, follow the directions for the activity as given below. When you finish the activity, return the computer to the master title screen by holding down the **FCTN** key and pressing the = (**QUIT**) key. Then withdraw the module from the console.

### Now you're ready to see a computer demonstration.

1. After you select the module, a colorful "flying spot" pattern appears on the display, with accompanying sound effects. The introductory sequence continues automatically. Simply follow the directions that appear on the display to see all parts of the module and to enjoy the "hands-on" demonstrations.
2. If at any point you'd like the module to pause for a moment, just press and hold the **S** key. Release the **S** key to continue.

**Additional Information:**

The Demonstration Command Module presentations provide a carefully sequenced overview of the TI Home Computer and the Command Module concept. The module is fully automatic and requires no operator intervention once inserted in the computer.

The module is divided into four segments:

- **Introductory Segment** — Eye- and ear-catching "attention getter" with general information.
- **Information Segment** — In-depth presentation on specific applications of the computer in home finance, education, family health, and entertainment.
- **Demonstration Segment** — Step-by-step demonstrations include:
  - Home Finance: Loan Analysis
  - Education: Beginning Grammar
  - Detailed specifications of the computer.
- **Closing Segment** — Introduces accessories planned and available, lists growing Command Module library.

Each of these four segments can be immediately accessed for review, discussion, etc. by holding down the **FCTN** key and pressing the appropriate character key.

<i>TO SEE:</i>	<i>PRESS</i>
Introductory Segment	<b>FCTN 7</b>
Information Segment	<b>FCTN I</b>
Demonstration Segment	<b>FCTN 4</b>
Closing Segment	<b>FCTN D</b>

The Demonstration module gives an exciting overview of the TI Home Computer. With 16-color animated graphics and more than five full octaves of sound at its disposal, the computer itself serves as its own best spokesperson!

For more information about the DEMONSTRATION Command Module... consult the instruction manual packaged with it.

**Adds 24K bytes of active memory with stored program to your TI Home Computer.**

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## FEATURES OF **TI BASIC**

**BASIC is a computer language designed to be easy for beginners to use, yet powerful enough for a multitude of applications. Here are some of the features of TI BASIC:**

### MODES OF OPERATION

- Command (Immediate) Mode
- Edit Mode
- Execute (RUN) Mode

### SPECIAL FEATURES

- Color
- Sound
- Speech
- Lower-case (displayed as small capitals) and upper-case characters
- Definable characters for graphics

### EDITING/DEBUGGING

- Within-line editing
- Line Replace
- Line Delete
- Execution TRACE
- BREAK points
- CONTINUE
- RESEQUENCE
- Automatic line numbering (NUMBER)
- Auto-repeat for any key held down more than one second
- ALPHA LOCK key to lock alphabetical characters in upper-case mode

- Error messages in plain English

### VARIABLES/FUNCTIONS

- Variable names up to 15 significant characters
- Numeric variables range in value from  $10^{-128}$  to  $10^{127}$
- String length up to 255 characters
- Standard arithmetic operations
- String concatenation, search, and other powerful string functions
- 13-digit single-precision accuracy
- Full range of built-in numeric functions (including SIN, COS, TAN, etc.)

### INPUT/OUTPUT

- INPUT statement with optional prompt message
- PRINT statement with comma, semicolon, and colon separators
- PRINT with tabbing
- PRINT statement with imbedded calculations
- READ and DATA statements
- RESTORE with optional line number

### BRANCHING

- IF-THEN statement with optional ELSE clause
- GOTO statement
- FOR-NEXT statement with optional STEP clause
- GOSUB and RETURN statements
- ON GOTO statement
- ON GOSUB statement

### RANDOM NUMBERS

- Random numbers between 0 and 1
- RANDOMIZE statement

### ARRAYS

- Size of arrays limited only by memory
- Up to 3 dimensions allowed
- Both string and numeric arrays allowed
- Option base statement allows subscripts to begin at 0 or 1

### FILE PROCESSING

- Random and sequential file organization
- INPUT, OUTPUT, UPDATE, and APPEND capabilities
- FIXED or VARIABLE length records
- Device-dependent PRINT and INPUT statements
- File storage on both cassette tape and diskette



DEMONSTRATION GUIDE TO

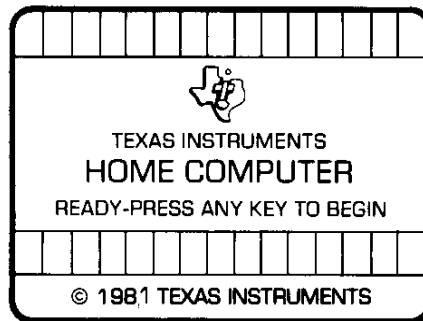
# Programming in TI BASIC

What is computer programming? Nothing mysterious! You just tell the computer — in its own language — what to do and when to do it.

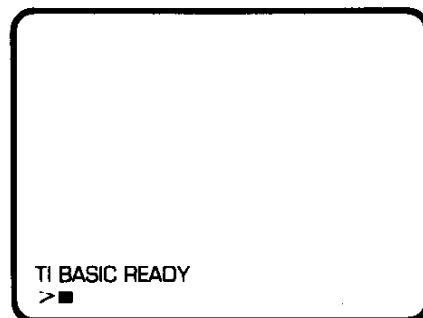
The “language” of the Home Computer is a form of BASIC (short for Beginners All-purpose Symbolic Instruction Code) called TI BASIC. As you try out the examples given in this section, you’ll probably notice that BASIC looks a lot like English. It’s a powerful computer language, yet it’s easy to learn and use.

**Many books of BASIC programs are available.** Since TI BASIC is a “standard” BASIC, many of these prewritten programs can be entered, run on the Home Computer, and stored on cassette tape or diskette with little or no modification. These programs can serve as a source as you develop your own “library” of customized applications. (Note: TI BASIC has special subprograms for graphics and sound, so programs with graphics and sound require more modification.)

First, turn on the computer. The ON/OFF switch is on the right front of the unit. (If it’s already on, hold down the **FCTN** key and press = (**QUIT**) to make the master title screen appear.)



Then, press any key. The master selection list comes on the screen, showing TI BASIC as the first choice. Press the 1 key to select TI BASIC. The screen then indicates that the computer is “ready” to respond to BASIC commands and programs.



Notice the flashing square (cursor) and the "prompting" symbol (>) in the lower-left corner of the screen. These let you know that the computer is waiting for your instructions.

Each of the short programs in this section demonstrates some portion of the computer's capabilities. To enter a program, type the numbered lines, pressing **ENTER** at the end of each line. Notice that some keys have two characters on the keyface. To type the upper character on such keys, hold down the **SHIFT** key and press the key with the appropriate character. Other keys have a symbol on the front surface of the key. For example, find the quotation mark symbol (on the front surface of the P key) and the question mark symbol (on the front surface of the I key). To type these symbols, hold down the **FCTN** key and press the appropriate character key.

If you make a typing error, don't worry! Just hold down the **FCTN** key and press the ← (S) key to correct a single character; to erase the line, hold down the **FCTN** key and press the 3 (ERASE) key. Then retype the character or the whole line (including the line number). To "clear" the whole program and start a new one, type **NEW** and press the **ENTER** key.

When you have entered a program, type **RUN** and press **ENTER** to start the action!

**COUNTING PROGRAM**

```
NEW  
10 CALL CLEAR  
20 PRINT "WATCH ME COUNT"  
30 FOR B = 1 TO 20  
40 PRINT B  
50 NEXT B  
60 END
```

*NEW clears the computer's memory and prepares it for a new program.*

*Press ENTER at the end of every line.*

**ARITHMETIC PROGRAM**

```
NEW  
10 CALL CLEAR  
20 PRINT "I CAN MULTIPLY!"  
30 PRINT  
40 FOR A = 1 TO 12  
50 PRINT "2 TIMES";A;"IS";A*2  
60 NEXT A  
70 END
```

**COLOR PROGRAM #1**

```
NEW  
10 FOR A = 1 TO 16  
20 CALL COLOR(2,A,A)  
30 CALL HCHIAF(1,1,42,768)  
40 CALL CLEAR  
50 FOR DELAY = 1 TO 200  
60 NEXT DELAY  
70 NEXT A  
80 END
```

**COLOR  
PROGRAM #2**

```
NEW  
10 CALL CLEAR  
20 RANDOMIZE  
30 FOR X=1 TO 50  
40 B=INT(RND*24)+1  
50 C=INT(RND*32)+1  
60 CALL COLOR(2,9,9)  
70 CALL HCHAR(B,C,42)  
80 NEXT X  
90 PRINT "PRESS THE ENTER"  
100 INPUT "KEY TO STOP":K$  
110 END
```

Press **ENTER** at the end of every line.

Produces a random row number from 1 to 24.

Produces a random column number from 1 to 32.

**MUSIC  
PROGRAM**

```
NEW  
10 CALL CLEAR  
20 INPUT "NOTE FREQUENCY?":N  
30 K=2^(1/12)  
40 A=N*K^5  
50 B=N*K^8  
60 C=N*K^13  
70 CALL SOUND(100,N,2,A,2,B,2)  
80 CALL SOUND(200,A,2,B,2,C,2)  
90 END
```

Press **ENTER** at the end of every line.

When you RUN the music program, you see NOTE FREQUENCY? Type a number from 110 to 440 and press **ENTER**. The program then repeats two chords based on the note frequency you entered.

If you'd like to try a speech program, see the Terminal Emulator II demonstration for an example.

When you are finished programming in TI BASIC, hold down the **FCTN** key and press = (**QUIT**). The computer then returns to the master title screen.





Texas Instruments Home Computer



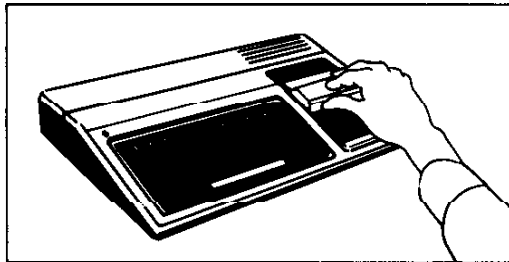
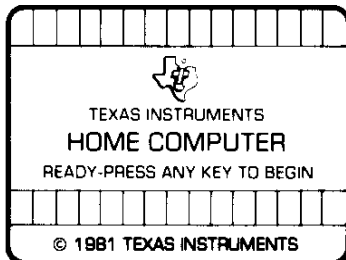
DEMONSTRATION GUIDE TO THE  
**Home Financial  
Decisions**

COMMAND MODULE

The **Home Financial Decisions** module is an easy-to-use tool for evaluating everyday financial questions. It helps you make informed decisions regarding general loans, home and car buying, and personal savings.

**Just snap in the Command Module — and go!**

1. Be sure the computer is ON. (The ON/OFF switch is on the right front of the unit.) The master title screen is now displayed (as shown left). Slide the module into the slot on the console (as shown right).



2. Press any key to make the master selection list appear. To select the Home Financial Decisions module, press the 2 key.
3. Next, follow the directions for the activity as given below. When you finish the activity, return the computer to the master title screen by holding down the FCTN key and pressing the = (QUIT) key. Then withdraw the module from the console.

**Now you're ready to try this sample activity.**

1. After you select the module, a title screen appears, followed automatically by instructions for an "Easy 3 Step Use" of the module.
2. Next, you'll see a list offering the module's four major options. Press the 2 key for RESIDENCE.
3. The next display offers you six types of analysis. Press 1 for BUY A HOUSE.

4. Type in the sample information below as it is asked for by the computer. If you type an incorrect number, hold down the **FCTN** key and press the **4** (CLEAR) key. Then retype the entry. After making each entry, press the **ENTER** key.

INPUT PROMPT	ENTER
Purchase Price	\$100,000
Down Payment	\$20,000
Number of Payments	360
Annual % Interest Rate on Mortgage	17
Expected Annual % Increase in Market Value	7
Annual Property Tax Payments	\$1200
Annual Insurance Payments	\$612
Number of Months Between Closing and End of Year	0
Your Federal Income Tax Bracket in %	30
Number of Years in this Analysis	1

5. After all the figures have been entered, the display shows a breakdown of the total monthly payment for the house. When you finish looking at the breakdown, press **ENTER** to continue.
6. The program now displays a breakdown of the yearly value of the house for the number of years you entered (1).
7. If you'd like to try the analysis again with different figures, hold down the **FCTN** key and press **8** (REDO). The computer returns to the display which asks for the figures. Notice the computer displays the figures you entered earlier. Press **ENTER** to accept that figure, or type the new value and press **ENTER**.

#### **Additional Information:**

Ready to buy a new home, but concerned about the amount of the payments? How much do you need to save per month for the next 10 years to have \$8000 set aside? You're looking at leasing a car — but what are the financial differences between leasing and buying?

The **Home Financial Decisions** module features let you evaluate alternatives in each of these areas:

- **Loans** — Five types of loan analyses are available.
- **Residence** — Six residence analyses are available.
- **Car** — You can use six options to help make decisions on buying or leasing a car.
- **Savings** — Four types of savings analyses are available.

For more information about the **HOME FINANCIAL DECISIONS** Command Module...consult the instruction manual packaged with it.

**Adds 12K bytes of active memory with stored program to your TI Home Computer.**



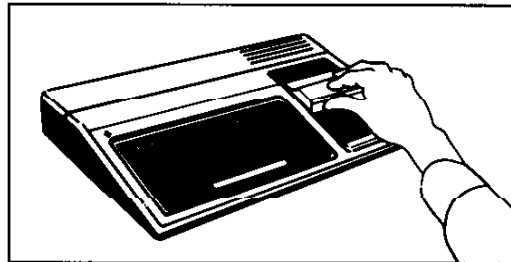
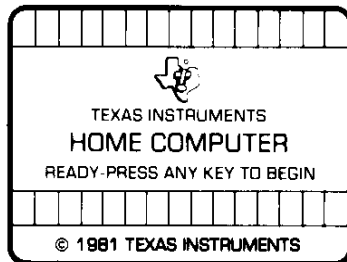
DEMONSTRATION GUIDE TO THE  
**Household Budget  
Management**

COMMAND MODULE

The **Household Budget Management** Command Module is a step-by-step guide to better money management. It helps you set budget guidelines, track income and expenses, spot problem areas, and keep easily accessible records.

**Just snap in the Command Module — and go!**

1. Be sure the computer is ON. (The ON/OFF switch is on the right front of the unit.) The master title screen is now displayed (as shown left). Slide the module into the slot on the console (as shown right).



2. Press any key to make the master selection list appear. To select the Household Budget Management module, press the 2 key.
3. Next, follow the directions for the activity as given below. When you finish the activity, return the computer to the master title screen by holding down the FCTN key and pressing the = (QUIT) key. Then withdraw the module from the console.

**Now follow these simple steps to review a budget.**

1. After you select the module, the title screen appears, followed by a display offering you a choice of four functions. Press the 1 key for DEMONSTRATION DATA.
2. You then see a short discussion of the overall functions of the module, the role of the cassette tape or other storage device (diskette), and the demonstration data you're about to see. (Press the ENTER key after you've read each display.)

3. Next, you see a list offering seven choices. Press the **2** key to select **ANALYZE DATA**.
4. The next display offers you five specific types of analyses. Press the **2** key for **ALL CATEGORIES FOR YEAR-TO-DATE**.
5. A table then appears, showing the amounts budgeted in given income categories compared to the actual amounts spent. To see additional categories, hold down the **FCTN** key and press the **↑ (E)** key. *Note:* Holding down **FCTN** and pressing **↓ (X)** moves you back in the list.
6. Now, press the **G** key and the data is analyzed in bar graph form. Red bars show if you are over budget, and green bars if you're under. The percentage difference is also shown.
7. To explore additional features, follow the displayed instructions. (To use the **BACK** instruction, hold down the **FCTN** key and press the **9** key.)

#### **Additional Information:**

Most of us would like to be able to make our money go farther. We all realize that better control of our finances requires careful and realistic management of our money. The Household Budget Management Command Module includes easy-to-use procedures that help you analyze, record, and control your personal finances. You can set up a monthly budget by expense category, and the computer can spot "problem areas" to help you stay in control!

The **Household Budget Management** module features let you:

- Examine sample data and analyses to familiarize yourself with all module features and operations.
- Set up a budget by category. Over 99 category choices let you be as detailed as you like! You can update your budget or change categories easily at any time.
- Enter your actual income and expense information by category each month.
- See full-color graphic analyses of your progress in each category — by month or year-to-date.
- Project your current spending levels for the rest of the year.
- Keep accurate, permanent, and easily accessible records to track your progress — invaluable at tax time.

For more information about the **HOUSEHOLD BUDGET MANAGEMENT** Command Module...consult the instruction manual packaged with it.

**Adds 12K bytes of active memory with stored program to your TI Home Computer.**

Texas Instruments Home Computer

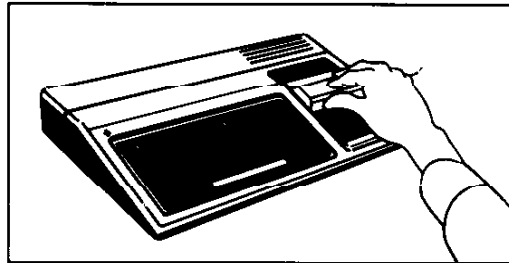
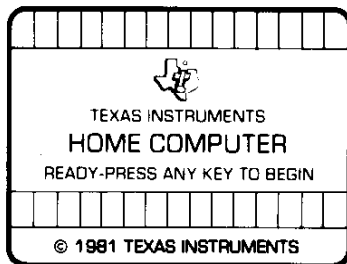


DEMONSTRATION GUIDE TO THE  
**Personal Real Estate**  
COMMAND MODULE

The **Personal Real Estate** Command Module asks you to enter information and then performs complex calculations with speed and accuracy to help you make informed real estate investment decisions.

**Just snap in the Command Module — and go!**

1. Be sure the computer is ON. (The ON/OFF switch is on the right front of the unit.) The master title screen is now displayed (as shown left). Slide the module into the slot on the console (as shown right).



2. Press any key to make the master selection list appear. To select the Personal Real Estate module, press the 2 key.
3. Next, follow the directions for the activity as given below. When you finish the activity, return the computer to the master title screen by holding down the FCTN key and pressing the = (QUIT) key. Then withdraw the module from the console.

**Now you're ready to try this sample activity.**

The LOANS option gives you a quick idea of the module's capabilities. Just follow these directions.

1. After you select the module, the title screen appears, followed by a display asking if you wish to use a printing device. Press **ENTER** for "no."
2. Next, the Personal Real Estate selection list appears. Press 2 to select LOANS.
3. The computer now asks for the loan number. Press **ENTER** since this is loan number 1.

4. Next, enter the information about this sample loan. Type the following inputs as shown. Be sure to press **ENTER** after each one to go on to the next one. (If you make a typing error, hold down the **FCTN** key and press the **4** (**CLEAR**) key. The line clears and you can type the correct information.)

<i>INPUT PROMPT</i>	<i>ENTER</i>
DESCRIPTION?	HOUSE
LOAN AMOUNT?	75000
MONTHS FINANCED?	360
ANNUAL INTEREST RATE %?	17
MONTH LOAN BEGAN?	1
PRESENT YEAR?	1
BALLOON AMT?	0

5. The computer asks if you want to print an amortization schedule. Since we are not interested in one for this example, press **ENTER**. Then hold down the **FCTN** key and press the **6** (**PROC'D**) key, and the computer displays the data for the first year in the life of the loan.

#### **Additional Information:**

Although real estate investments may offer a tremendous profit potential, evaluating the investments can be a difficult and time-consuming process. The Personal Real Estate Command Module simplifies this task by asking you for the necessary information and performing the sophisticated calculations and analyses. One of the most useful features of the module is that it lets you change various inputs and repeat a calculation to see the effect on the calculated results. This ability to ask "What if this value changes?" gives you the flexibility to determine the best alternatives in an investment situation.

The sections in the **Personal Real Estate** module let you:

- Define the investment by entering key financial data that describes a particular investment you want to analyze.
- Analyze a loan, including a review of the amortization schedule.
- Calculate, graph, and print depreciation schedules.
- Evaluate the investment to calculate rates of return or analyze your cash flow or sales.
- Perform a residential property analysis.
- Store all information and results on cassette tape or diskette (sold separately).

The module requires the use of the Texas Instruments Disk Memory System (TI Disk Drive Controller and TI Disk Memory Drive), an audio cassette tape recorder, or other storage accessory (not included). In addition, with an optional printer attached to your computer system you can print copies of any of the information displayed on the screen, as well as amortization schedules printed by month or year or depreciation schedules printed by year.

For more information about the **PERSONAL REAL ESTATE** Command Module...consult the instruction manual packaged with it.

**Adds 24K bytes of active memory with stored program to your TI Home Computer.**



Texas Instruments Home Computer



DEMONSTRATION GUIDE TO THE

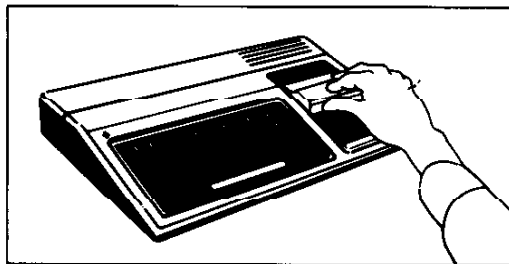
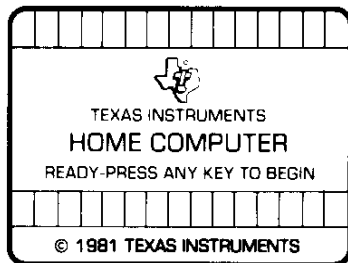
# Munch Man

COMMAND MODULE

Four cunning Hoonos are in hot pursuit of your Munch Man while he races to an energizer to change the attack. Can he make it to safety or does his fate lie in the mouth of the Hoonos?

### Just snap in the Command Module — and go!

1. Be sure the computer is ON. (The ON/OFF switch is on the right front of the unit.) The master title screen is now displayed (as shown left). Slide the module into the slot on the console (as shown right).



2. Press any key to make the master selection list appear. To select the Munch Man module, press the 2 key.
3. Next, follow the directions for the activity as given below. When you finish the activity, return the computer to the master title screen by holding down the FCTN key and pressing the = (QUIT) key. Then withdraw the module from the console.

### Now try it! Munch away!

1. After you select the module, the title screen appears, followed shortly by the "Press any key to begin" message. Press any key.
2. The maze now appears on the display. Looking at the maze, notice the four energizers (flashing symbols) in the far corners, the four Hoonos in their "cells," and your first Munch Man in the center. Note also the two sets of corridors on either side of the maze; if your Munch Man enters one of these corridors, he disappears and reenters on the other side.



3. The object of the game is to connect the passages with one continuous chain without being eaten by a Hoono. When you begin the game, you have three chances to connect the passages. Then, for each 10,000 points you score, you receive another Munch Man.
4. When the maze is displayed with the "ARE YOU READY?" question flashing, press any key to start.
5. To move your Munch Man through the maze, press the arrow keys: ↑ (E) ← (S), → (D), or ↓ (X).\*
6. If a Hoono catches your Munch Man, the maze freezes, returning the Hoonos to their cells, while another Munch Man appears at the center of the maze. However, when the Munch Man eats an energizer, the Hoonos turn black to indicate that the chase is reversed. You win points for each Hoono captured during this time. When the effect of the energizer begins to fade, the Hoonos flash their normal color, and then the maze flashes red. Now the Hoonos chase your Munch Man again.
7. If you completely connect the chain, your Munch Man spins around and then returns to the starting place, ready to begin the next level with a different set of Hoonos.
8. When your last Munch Man is caught by a Hoono, the game is over. Hold down the FCTN key and press the 8 (REDO) key to play another game.

\*Activities in this module are also designed to work with the optional Wired Remote Controllers.

**Additional Information:**

Your Munch Man maneuvers through the maze, connecting the passages with a chain, when suddenly four Hoonos begin to close in around him. Can the Munch Man make it to an energizer in time or will the Hoonos devour him in his tracks? You determine the fate of the Munch Man with the Munch Man Command Module.

The **Munch Man** module tests your skill as you try to:

- Score points by connecting the passages with a chain.
- Score points by capturing Hoonos while your Munch Man is energized.
- Avoid being eaten by the Hoonos.

For more information about the MUNCH MAN Command Module...consult the instruction manual packaged with it.

**Adds 10K bytes of active memory with stored program to your TI Home Computer.**

Texas Instruments Home Computer



DEMONSTRATION GUIDE TO THE

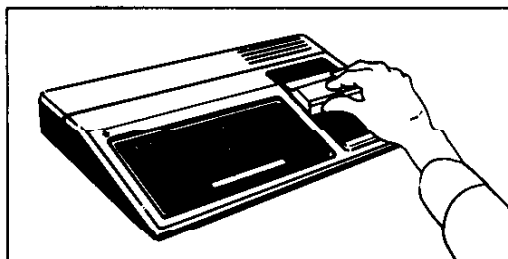
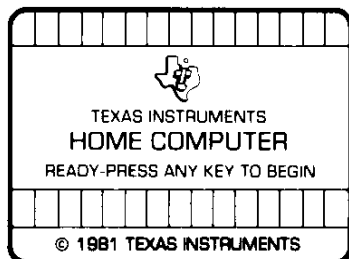
# TI Invaders

COMMAND MODULE

The **TI Invaders** Command Module challenges you to destroy numerous downright nasty space creatures before they demolish your missiles.

### Just snap in the Command Module — and go!

1. Be sure the computer is ON. (The ON/OFF switch is on the right front of the unit.) The master title screen is now displayed (as shown left). Slide the module into the slot on the console (as shown right).



2. Press any key to make the master selection list appear. To select the TI Invaders module, press the **2** key.
3. Next, follow the directions for the activity as given below. When you finish the activity, return the computer to the master title screen by holding down the **FN** key and pressing the **=** (**QUIT**) key. Then withdraw the module from the console.

### Now you're ready to stop the invaders.

1. After you select the module, the title screen appears. It shows you the value of the first three types (or colors) of attackers. You also are given a choice of two skill levels. Press **1** for **MERELY AGGRESSIVE**.
2. Now the game begins with the creatures moving in regimental form to attack your missile.
3. You have three missiles to defend your world. (You obtain an additional missile when you score over 3,000 points. Also, one of your demolished missiles is repaired for you each time you earn 10,000 points.)
4. You must shoot down the invaders one at a time. To move left or right, press the **←** (**S**) and **→** (**D**) keys\* as needed. Then press **Y** to fire your missile.

5. To protect your missile, simply hide behind one of the four white shields. When a shot hits your missile, it is destroyed and is automatically replaced by one of your remaining missiles.
6. Try to score as many points as possible by destroying the invaders before they destroy all your missiles.
7. When all of the creatures have been destroyed, a red spaceship crosses the top of the screen. Try to hit the red ship and keep it on the screen. If the red spaceship slips off the screen, a new group of creatures attacks.
8. The game is over when all of your missiles have been demolished or when the invading creatures reach the level of your missile. To play another game with the same skill level, hold down the **FCTN** key and press the **8** (REDO) key.

\*Activities in this module are also designed to work with the optional TI Wired Remote Controllers.

**Additional Information:**

Your world is under attack by downright nasty creatures from outer space. It's up to you — can you save your world from this hostile horde? Use your wit and skill to destroy the multi-colored creatures with your missiles.

The features of the **TI Invaders** module challenge you to:

- Attack and destroy the invaders.
- Shoot down the yellow control ship.

For more information about the TI INVADERS Command Module...consult the instruction manual packaged with it.

**Adds 6K bytes of active memory with stored program to your TI Home Computer.**

Texas Instruments Home Computer



DEMONSTRATION GUIDE TO THE

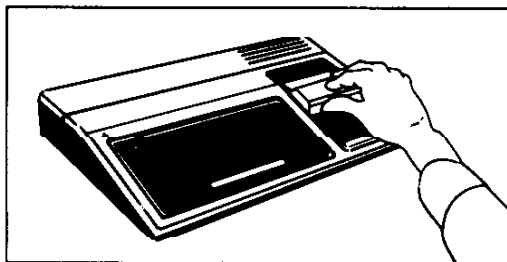
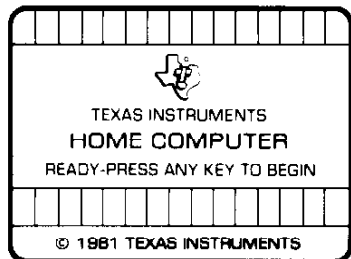
# The Attack\*

COMMAND MODULE

You and your ship have been given a mission: Destroy the aliens before they destroy you!

### Just snap in the Command Module — and go!

1. Be sure the computer is ON. (The ON/OFF switch is on the right front of the unit.) The master title screen is now displayed (as shown left). Slide the module into the slot on the console (as shown right).



2. Press any key to make the master selection list appear. To select The Attack module, press the 2 key.
3. Next, follow the directions for the activity as given below. When you finish the activity, return the computer to the master title screen by holding down the **FCN** key and pressing the = (QUIT) key. Then withdraw the module from the console.

### Now try it! Just follow these simple steps.

1. After you select the module, the title screen is displayed. Press any key to see the skill level options.
2. We'll play on Level 1 for our demonstration, so type 1 and press the **ENTER** key.
3. Outer space immediately forms on the display. Incubators (black boxes) and spores randomly appear. When your blue ship appears in outer space, press the arrow keys, ↑ (E), ← (S), → (D), and ↓ (X),\*\* to begin maneuvering it. To fire on the spores, press the **SHIFT** or **ENTER** key. Music alerts you when an alien forms. Try to destroy the alien before it gets you!

\*trademark of the Milton Bradley Company

4. Each time you hit a spore, you score 50 points. A destroyed alien increases your score by 100 points.
5. At the beginning of a stardate you command 10 ships. Your ship supply decreases by one each time a ship is engulfed by an alien. At the end of a stardate, you score bonus points and one ship is added to your supply.
6. When the aliens deplete your ship supply, the game is over. Your score appears in the upper right corner of the screen. To play another game on the same level, hold down the FCTN key and press the 8 (REDO) key.

\*\*Activities in this module are also designed to work with the optional TI Wired Remote Controllers.

**Additional Information:**

With The Attack Command Module, you command a ship that is cruising the far limits of outer space. The region is infested by spores. Suddenly, an alien emerges! You, as commander, are the only one who can maneuver your ship to avoid the clutches of an alien and fire your missiles.

The features of **The Attack** module challenge your skill on four levels:

- **Novice** — The aliens move at their slowest speed toward your ship.
- **Intermediate** — The speed of the aliens picks up and so must your attack.
- **Master** — Complete control of your ship and missiles is necessary if you want to maintain your present course.
- **Pro** — A well-designed attack is mandatory because the aliens are coming at full force!

For more information about THE ATTACK Command Module...consult the instruction manual packaged with it.

**Adds 6K bytes of active memory with stored program to your TI Home Computer.**

Texas Instruments Home Computer



DEMONSTRATION GUIDE TO THE

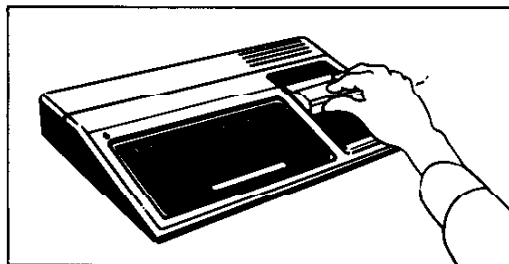
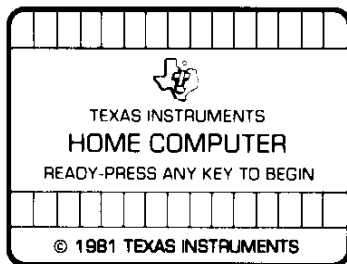
# Car Wars

COMMAND MODULE

The **Car Wars** Command Module lets you pit your car against the computer's in an exciting race. Score points by out-maneuvering the computer's car as it tries to run you off the track!

### Just snap in the Command Module — and go!

1. Be sure the computer is ON. (The ON/OFF switch is on the right front of the unit.) The master title screen is now displayed (as shown left). Slide the module into the slot on the console (as shown right).



2. Press any key to make the master selection list appear. To select the Car Wars module, press the 2 key.
3. Next, follow the directions for the activity as given below. When you finish the activity, return the computer to the master title screen by holding down the **FCTN** key and pressing the = (**QUIT**) key. Then withdraw the module from the console.

### Now you're ready for the race to begin.

1. After you select the module, a demonstration of Car Wars begins. To stop the demonstration, press any key and the option selection list appears.
2. You are given a choice of three speeds for both cars. Press 1 to choose **CREEPIN'**.
3. Next, choose the point in the game when the computer's car speeds up. Press 1 for **LATE**.
4. Now the playing field appears, consisting of dots and solid lines representing car lanes. A red car and a yellow car appear in their starting positions at the bottom of the display. You control the red car; the yellow car is controlled by the computer.

5. To start the game, press any key. Try to maneuver your car through the maze of lanes, without being crashed by the yellow computer car. You get three chances. The number of cars in the pit shows how many chances you have left.
6. To move your car, press the arrow keys, ↑ (E), ← (S), → (D), and ↓ (X). \* To move your car *two lanes* over, instead of one, hold the key down for a moment. To accelerate your car, press Y or . (period). (The yellow car automatically doubles its speed sometime during the game, depending on the "speed up" level you selected.)
7. If you successfully clear all the dots without being crashed, bonus points are added to your score and an extra player car is added to the pit.
8. To begin a second round, press any key. If you succeed in clearing all the dots from the field without crashing, the third round begins with *two* computer cars. The game continues in this way with an additional computer car appearing and more points being awarded after every two rounds.
9. The game is over when the computer car crashes all the player cars off the field. To play another game with the same options, hold down the **FCTN** key and press the **8** (REDO) key.

\*Activities in this module are also designed to work with the optional TI Wired Remote Controllers.

#### **Additional Information:**

Enjoy the excitement of high-speed racing, combined with the challenge of out-maneuvering a canny opponent, as you pit your speed and skill against the computer in this challenging, fast-paced game. In addition, various levels of difficulty allow you to add even more excitement to the Car Wars action as your skills increase.

The features of the **Car Wars** module let you try to:

- Score points by clearing as many dots as possible from the lanes.
- Avoid the computer's yellow car.
- Obtain extra cars by clearing all of the driving lanes on the display.

For more information about the CAR WARS Command Module...consult the instruction manual packaged with it.

**Adds 6K bytes of active memory with stored program to your TI Home Computer.**

Texas Instruments Home Computer



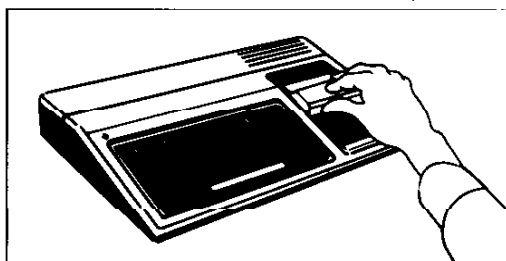
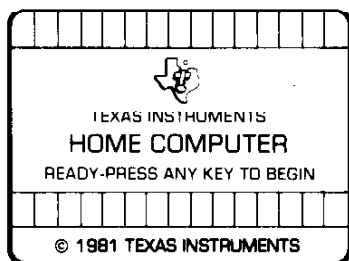
DEMONSTRATION GUIDE TO THE  
**Tombstone City:  
21st Century**

COMMAND MODULE

The **Tombstone City: 21st Century** Command Module challenges your survival instinct immediately as you find yourself in a 21st Century Old West ghost town threatened by an invading hoard of green alien monsters.

**Just snap in the Command Module — and go!**

1. Be sure the computer is ON. (The ON/OFF switch is on the right front of the unit.) The master title screen is now displayed (as shown left). Slide the module into the slot on the console (as shown right).



2. Press any key to make the master selection list appear. To select the Tombstone City module, press the **2** key.
3. Next, follow the directions for the activity as given below. When you finish the activity, return the computer to the master title screen by holding down the **FCTN** key and pressing the **= (QUIT)** key. Then withdraw the module from the console.

**Now you're ready to stop the alien morgs.**

1. After you select the module, the title screen appears. Then you are given a choice of three skill levels. Press **1** to choose **NOVICE**.
2. Now the game begins with a playing field of blue squares surrounded by pairs of saguaro cactuses and tumbleweeds. A "schooner" (blue ship) is in the center of the squares.
3. The schooner moves and fires horizontally and vertically. To move the schooner, press the arrow keys: **↑ (E)**, **← (S)**, **→ (D)**, and **↓ (X)** or **I (UP)**, **J (LEFT)**, **K (RIGHT)**, **M (DOWN)**.\* To fire the schooner's missile, press **Q**, **Y**, or **ENTER**.



4. To score points, fire missiles at the morgs (green aliens) and tumbleweeds. Also, try to destroy adjacent saguaros by hitting a morg next to them. (It's from a pair of adjacent saguaros that a new morg is generated!)
5. You start the game with a supply of 10 schooners. Play continues until the schooner supply is exhausted. A New Day begins when all morgs and all morg generators have been destroyed.
6. Morgs cannot enter the area of the blue squares. However, if a schooner is surrounded by saguaros while in this safe area, the schooner dies and a new schooner (if any are left) is placed randomly outside the safe area.
7. The game is over when there are no schooners left. To play another game with the same skill level, hold down the **FCTN** key and press the **8** (REDO) key.

\*Activities in this module are also designed to work with the optional TI Wired Remote Controllers.

**Additional Information:**

It's the 21st Century and you're faced with stopping green alien monsters before they take over an Old West ghost town and the world! Points are added to your score as you and your security force of "prairie schooners" stop these villainous creatures called morgs.

The features in the **Tombstone City: 21st Century** module let you:

- Destroy alien morgs.
- Eliminate generating pairs of saguaro cactuses.
- Wipe out tumbleweeds.

For more information about the **TOMBSTONE CITY: 21ST CENTURY** Command Module...consult the instruction manual packaged with it.

**Adds 6K bytes of active memory with stored program to your TI Home Computer.**

Texas Instruments Home Computer

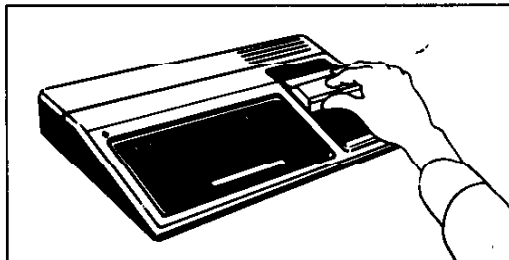
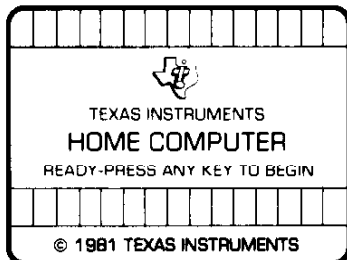


DEMONSTRATION GUIDE TO THE  
**A-MAZE-ING**  
COMMAND MODULE

The **A-MAZE-ING** Command Module is a challenging combination of maze games to test your strategy skills. You race against time through increasingly difficult mazes filled with tempting cheese, maddening obstacles, and devious cats!

**Just snap in the Command Module — and go!**

1. Be sure the computer is ON. (The ON/OFF switch is on the right front of the unit.) The master title screen is now displayed (as shown left). Slide the module into the slot on the console (as shown right).



2. Press any key to make the master selection list appear. To select the A-MAZE-ING module, press the 2 key.
3. Next, follow the directions for the activity as given below. When you finish the activity, return the computer to the master title screen by holding down the **FTN** key and pressing the = (QUIT) key. Then withdraw the module from the console.

**Now you're ready to try this sample activity.**

1. After you select the module, the title screen appears, followed by several option displays. These options let you decide the type of game you want to play by choosing the number of players, type of maze, and number and type of cats you want to use. For this example, press 1 for one player (race against the clock). Then press 2 for Cheese Hunt (a maze containing 10 pieces of cheese).
2. Next, press 1 for a simple maze, 1 for a visible maze, 1 to include mouseholes in the corridors of the maze, and 2 for a slow mouse.

3. Now press 1 to include one cat in your game. Then press 1 to make the cat move at a slow speed, 1 to select a "dumb" cat who blindly follows the walls of the corridors, and 1 to make the cat a "standard" one that doesn't pounce at random intervals.
4. Your maze immediately appears on the screen. Using the arrow keys, ↑ (E), ← (S), → (D), and ↓ (X),\* guide your mouse through the maze, gathering the 10 cheese pieces. Be careful to avoid the cat! If necessary, you can use the mouscholes (openings in the corners of the corridors) to flee from the hungry cat. After you collect all 10 cheese pieces, race for the exit and escape from the maze. An escape counts as one point in one-player games.
5. The game is over when the mouse either eats all the cheese and escapes from the maze or is eaten by the cat. Score boxes appear to the left of the maze. The top box shows how many times the mouse has escaped from the maze since you last chose maze options. It also shows the number of cheese pieces the mouse has eaten in the current maze. The bottom box shows the total number of mice eaten by the cat during the mazes played with the current set of options. To select a new maze, hold down the FCTN key and press the 9 (BACK) key.

\*Activities in this module are also designed to work with the optional TI Wired Remote Controllers.

**Additional Information:**

A maze of corridors looms before you. You play a mouse who must escape from the maze before the dangerous cats pounce on you! But the maze is filled with delicious cheese to tempt you and obstacles to hinder you.

The A-MAZE-ING Command Module has over 5000 possible mazes with varying degrees of difficulty that keep the game constantly fresh and challenging.

The module offers you four types of maze games for one or two players:

- **Escape Maze** — A race through the maze for the exit. You race against the clock or another player as you try to find your way through the maze.
- **Cheese Hunt** — A race against the clock for one player. You move through the maze, eating 10 randomly placed pieces of cheese as you try to reach the exit.
- **Competitive Cheese Hunt** — A race between two players to devour 10 cheese pieces. You compete against another player as you each try to eat five pieces of cheese and race for the exit.
- **Cooperative Cheese Hunt** — A race involving two players who work together to eat 10 pieces of cheese randomly placed in the maze. You both race against the clock as you make your way through the corridors.

For more information about the A-MAZE-ING Command Module...consult the instruction manual packaged with it.

**Adds 6K bytes of active memory with stored program to your TI Home Computer.**



DEMONSTRATION GUIDE TO THE

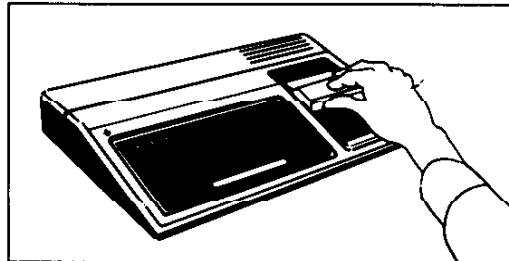
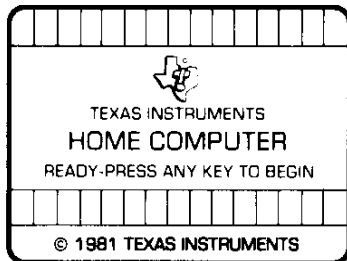
# Hunt the Wumpus

## COMMAND MODULE

With the **Hunt the Wumpus** Command Module, you play a hunter, stalking a monster in a twisting maze. Armed with a single arrow, you search the maze for clues to where the Wumpus is located.

### Just snap in the Command Module — and go!

1. Be sure the computer is ON. (The ON/OFF switch is on the right front of the unit.) The master title screen is now displayed (as shown left). Slide the module into the slot on the console (as shown right).



2. Press any key to make the master selection list appear. To select the Hunt the Wumpus module, press the 2 key.
3. Next, follow the directions for the activity as given below. When you finish the activity, return the computer to the master title screen by holding down the FCTN key and pressing the = (QUIT) key. Then withdraw the module from the console.

### Now it's time to start your hunt.

1. After you select the module, the title sequence begins. Then you are given a choice of three levels of maze difficulty. Press 1 to choose EASY MAZE.
2. Next, a list appears with four playing options. Press 1 for NORMAL.
3. Now the screen turns blank, and the computer constructs a hidden maze. The hunter (a blinking yellow figure) appears in one cavern of the maze.

4. Press the arrow keys ↑ (E), ← (S), → (D), and ↓ (X)\* to move the hunter into different caverns in the maze. If you move the hunter off the edge of the maze, it reappears at the opposite side of the display.
5. You know you're getting near the Wumpus when you enter a cavern with a large red dot. All caverns *within two caverns of the Wumpus* have a red dot. Do not enter the cavern with the Wumpus — or else!
6. Watch out for other dangers in the maze! When you enter a cavern with green walls, you are one cavern away from a slime pit. If you move into a slime pit cavern, the game is over. Also watch out for the bats! The first time you move into a cavern with a bat (small black figure), it leaves you alone. However, if you reenter that cavern, the bat may pick you up and drop you anywhere in the maze — even in a slime pit or the Wumpus' lair!
7. When you think you know where the Wumpus is, it's time to fire your arrow. You should be in a cavern or tunnel that connects to the Wumpus' lair. Press **Q** and then the appropriate arrow key to fire the arrow into the tunnel that you think leads to the Wumpus. If you're right, you win! If you're wrong, the Wumpus wins.
8. The hunt is over when you fire your arrow, fall into a slime pit, or enter the Wumpus' lair. The module displays the score; press ↑ (E) to begin a new game with the same options.

\*Activities in this module are also designed to work with the optional TI Wired Remote Controllers.

**Additional Information:**

Deep in a dark and twisting maze lives a creature called the Wumpus. Hiding in its lair, the Wumpus waits to ambush careless explorers who enter its cavern. As you hunt for the Wumpus, you must also avoid the perils of the maze — slime pits, giant bats, and the Wumpus itself. Play on any of three levels of maze difficulty. Each hunt takes place in a new, randomly generated maze, so you can play again and again without repetition.

The **Hunt the Wumpus** module lets you decide how your exploration is "mapped out" during the hunt:

- **Normal** — Displays a map of all territory you explore as you move through the maze.
- **Blindfold** — Tests your memory by erasing the map behind you.
- **Express** — Instantly transports you to the end of any tunnel you enter.
- **Blindfold and Express** — Combines BLINDFOLD and EXPRESS options for the game's ultimate challenge!

For more information about the HUNT THE WUMPUS Command Module...consult the instruction manual packaged with it.

**Adds 6K bytes of active memory with stored program to your TI Home Computer.**

Texas Instruments Home Computer



DEMONSTRATION GUIDE TO THE

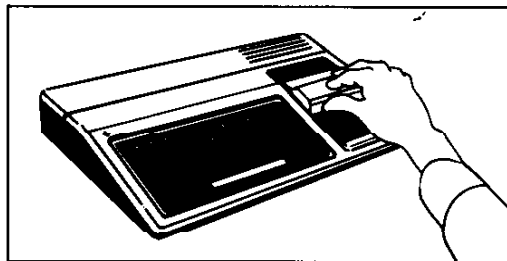
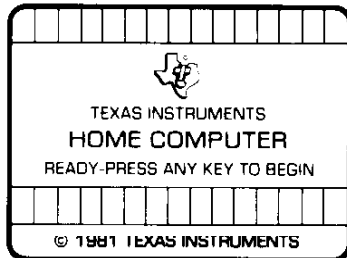
# Video Chess

COMMAND MODULE

With the **Video Chess** Command Module, your Home Computer becomes a tireless opponent whose level of skill and playing style you select. You can play against the computer or against a friend, with the computer making the moves, keeping track of time, noting whose move it is, and keeping a complete record of the game.

## Just snap in the Command Module — and go!

1. Be sure the computer is ON. (The ON/OFF switch is on the right front of the unit.) The master title screen is now displayed (as shown left). Slide the module into the slot on the console (as shown right).



2. Press any key to make the master selection list appear. To select the Video Chess module, press the 2 key.
3. Next, follow the directions for the activity as given below. When you finish the activity, return the computer to the master title screen by holding down the **FCTN** key and pressing the = (**QUIT**) key. Then withdraw the module from the console.

## Now you're ready to try your luck.

1. After you select the module, the title screen appears. Now a selection list offers you six options.
2. Press the 1 key to choose **PLAY BEGINNER GAME**.
3. A chessboard now appears on the display. Notice that each column on the board is designated with a letter (A-H), while each row is designated with a number (1-8).

4. The computer now randomly picks sides — black or white. If the computer chooses black, it waits for your move. If it chooses white, it makes the first move. When it's your turn, the message ENTER MOVE is displayed.
5. To make a move, you first type the present location of the piece you want to move and then the location that you wish to move it to. To enter a location, first press the letter of the column; then press the number of the row. (Example: A typical first move for white would be C2 C4.)
6. When you have indicated your move by typing the square from which your piece moves and the square on which it lands, press the ENTER key.
7. Once you make your move, the computer makes its next move. Notice that the computer keeps track of whose turn it is, how many moves have been made, and the playing time and last move for each side.
8. Continue to take turns with the computer, moving your playing pieces out into the center of the board. Note that the computer does not accept illegal moves. (To review the rules of the game, consult the *Video Chess* owner's manual.)
9. If at any time you feel "stumped" about what move to make, you can hold down the SHIFT key and press the < key. The computer suggests a move for you to enter!

**Additional Information:**

For centuries, chess has been a challenging game enjoyed equally by beginners and masters. The Video Chess Command Module brings a new dimension to the game through your TI Home Computer. Now you'll always have a tireless opponent whose skill level you can set — from beginner through novice to intermediate. And, if you want, you and a friend can play chess with the computer making the moves, keeping track of time, noting whose move it is, and keeping a complete record of the game.

The activities in the **Video Chess** module are:

- **Play Beginner Game** — Play against the computer at the beginning skill level in a normal style of play.
- **Choose Game Type** — Choose the type of game you want to play by selecting the computer's skill level and style of play (from losing to aggressive).
- **Use Chessboard** — Use the Video Chess module's chessboard to play a game against a friend.
- **Set up a Problem** — Set up a special chess position other than the normal starting position.
- **Play Simultaneously** — Play as many as nine simultaneous games with your TI Home Computer.
- **Load Cassette Game** — Use a cassette tape recorder to store and then reenter a favorite game or an unfinished game for later completion.

For more information about the VIDEO CHESS Command Module...consult the instruction manual packaged with it.

**Adds 28K bytes of active memory with stored program to your TI Home Computer.**





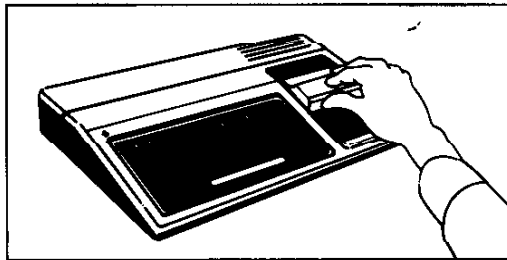
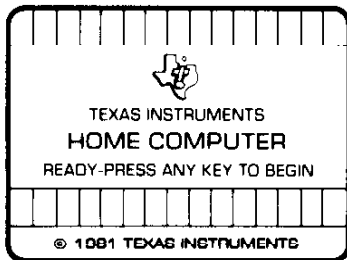


DEMONSTRATION GUIDE TO THE  
**Early Learning Fun**  
COMMAND MODULE

The **Early Learning Fun** Command Module presents eight colorful, easy-to-use, educational activities for preschoolers. This exciting module was developed in cooperation with leading educators to help teach shape and number recognition, counting, sorting, and the alphabet — as well as first computer skills. Fun for children ages 3 through 6!

**Just snap in the Command Module — and go!**

1. Be sure the computer is ON. (The ON/OFF switch is on the right front of the unit.) The master title screen is now displayed (as shown left). Slide the module into the slot on the console (as shown right).



2. Press any key to make the master selection list appear. To select the Early Learning Fun module, press the 2 key.
3. Next, follow the directions for the activity as given below. When you finish the activity, return the computer to the master title screen by holding down the FCTN key and pressing the = (QUIT) key. Then withdraw the module from the console.

**Now you're ready to try it! Just follow these simple steps.**

1. After you select the module, a colorful title screen and tone sequence begin. Then a list of the four activity categories appears.  
*Note:* Any displayed information that should be read to the child by a parent (or older friend) is indicated with a "parent" symbol.
2. Press the 1 key to select NUMBER activities, and you'll see a list of three activities. Press the 2 key for NUMBER PLEASE and read the instructions aloud to your child.

3. To start playing, press any number from 1 to 9. A corresponding number of shapes pops on the display, one at a time, with a musical tone for each one. Your child counts the shapes and then sees the number at the center of the screen.

4. Now choose and press another number key. Keep playing until you've entered 5 numbers.

5. After the fifth number, you see a screen asking "WANT TO PLAY AGAIN?" (If you don't press the **SPACE BAR**, the module automatically moves on to the next activity.)

#### **Additional Information:**

Today, computers are an important part of life for everyone. They're on the scene at home, in business, and more and more as a part of education. The Early Learning Fun Command Module presents bright, colorful, and enjoyable activities which can help teach important preschool skills. With the module, you and your child begin enjoying the activities and learning about the computer together.

**Early Learning Fun** module activities are arranged in four categories designed to teach and reinforce basic skills that prepare your child for study in arithmetic and reading. There are eight activities in all:

- Number activities
  - Counting Up
  - Number Please?
  - How Many Things
- Shape activities
  - Make a Match
  - Shape Hunt
- Sorting activity
  - Odd One Out
- Alphabet activities
  - Letter Line-Up
  - A is for Apple

Each activity begins with specially designed "parent screens." These screens — labeled with a picture of a parent — contain directions for each activity that can be read aloud to your child. Special 16-color computer pictures and graphics, as well as exciting and enjoyable musical tones, are part of the learning fun!

For more information about the EARLY LEARNING FUN Command Module... consult the instruction manual packaged with it.

**Adds 12K bytes of active memory with stored program to your TI Home Computer.**

Texas Instruments Home Computer



DEMONSTRATION GUIDE TO THE

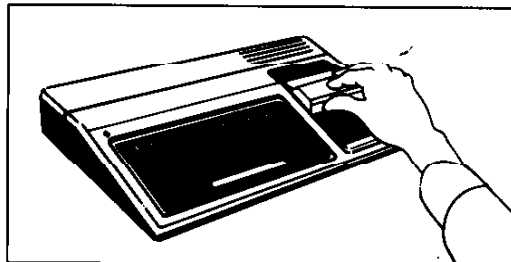
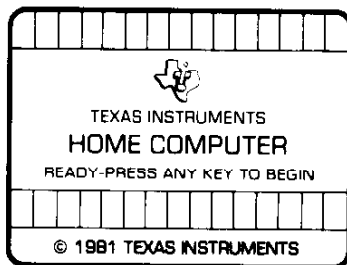
# Beginning Grammar

COMMAND MODULE

The **Beginning Grammar** Command Module contains a variety of engaging and colorful activities that introduce children to the basic parts of speech and how they're used. Developed with the help of leading educators, this module offers valuable practice and hours of fun for children in grades 2 through 5.

### Just snap in the Command Module — and go!

1. Be sure the computer is ON. (The ON/OFF switch is on the right front of the unit.) The master title screen is now displayed (as shown left). Slide the module into the slot on the console (as shown right).



2. Press any key to make the master selection list appear. To select the Beginning Grammar module, press the 2 key.
3. Next, follow the directions for the activity as given below. When you finish the activity, return the computer to the master title screen by holding down the **FCTN** key and pressing the = (**QUIT**) key. Then withdraw the module from the console.

### Now it's time to test your grammar.

1. After you select the module, the title screen appears, followed by a display that allows you to choose from the three module activities. Press the 2 key to select **VERB LIFT**.
2. Next are three displays which tell what verbs are, give examples of how they're used, and explain how the activity is played. Read each display carefully, and press the **ENTER** key when you're ready to go on to the next one.

3. When the activity begins, a sentence appears on the display, with the first word underlined. Each time you press the **SPACE BAR**, the line moves to the next word in the sentence.
4. Use the **SPACE BAR** to move the underline to the verb in the sentence. When the verb is underlined, press **ENTER**. Watch what happens!
5. After the verb is "lifted" to the top of the display, a new sentence appears. Again, use the **SPACE BAR** to move the underline to the verb, and then press **ENTER**.
6. When you've worked 10 sentences, the computer gives you your score. Then you are asked if you want to play again.
7. At this point, you can press **1** to play **VERB LIFT** again, or press **2** to make the list of activities reappear so that you can choose another activity. Feel free to try them all!

**Additional Information:**

The Beginning Grammar Command Module is especially designed to help children in grades 2 and up in the study of grammar. It includes a variety of engaging and colorful activities developed with the help of leading educators. These activities introduce seven of the eight "parts of speech": nouns, verbs, pronouns, adjectives, adverbs, prepositions, and conjunctions.

Beginning Grammar module activities can be enjoyed by the child working alone or together with friends or parents. Rewarding visual action and spectacular audio effects are part of the learning and fun. The activities define the parts of speech, give examples of their use, and provide valuable practice in their identification and application. Children also learn typewriter skills and just how easy it is to use a computer.

The activities in the **Beginning Grammar** module are:

- **Going Places with Nouns**
- **Verb Lift**
- **Pronoun Posters**
- **Adjective's Restaurant**
- **Adverb Attractions**
- **Preposition/Conjunction**

For more information about the **BEGINNING GRAMMAR** Command Module... consult the instruction manual packaged with it.

**Adds 18K bytes of active memory with stored program to your TI Home Computer.**

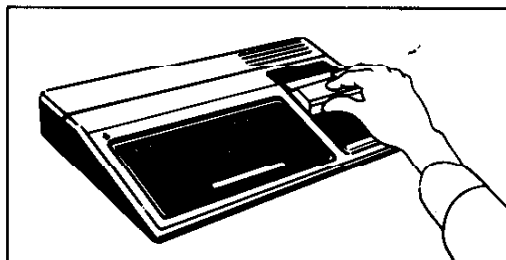
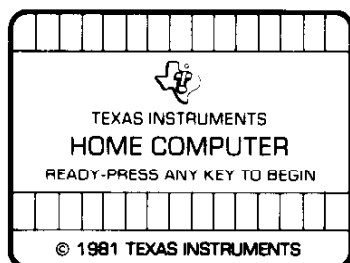


DEMONSTRATION GUIDE TO THE  
**Number Magic**  
COMMAND MODULE

The **Number Magic** Command Module brings a new, exciting dimension to basic drill and practice in mathematics. With full-color graphics, musical sounds, and thousands of preprogrammed exercises, the Number Magic module can provide hours of learning and fun for children ages six and up.

**Just snap in the Command Module — and go!**

1. Be sure the computer is ON. (The ON/OFF switch is on the right front of the unit.) The master title screen is now displayed (as shown left). Slide the module into the slot on the console (as shown right).



2. Press any key to make the master selection list appear. To select the Number Magic module, press the **2** key.
3. Next, follow the directions for the activity as given below. When you finish the activity, return the computer to the master title screen by holding down the **FCTN** key and pressing the **= (QUIT)** key. Then withdraw the module from the console.

**Now you're ready to try your skill with numbers.**

1. After you select the module, the title screen appears, followed by a display that allows you to choose from the three module activities. Press the **1** key to select **QUICK QUIZ**.
2. **QUICK QUIZ** begins with a brief title screen. When you're ready to play, press the **ENTER** key, and **HERE WE GO** is displayed.
3. Next, a problem is displayed along with the Number Magic rabbit, who hops across the display as you progress. Type your answer to each problem using the appropriate number key(s).
4. After 10 problems, you see your score and hear musical sound effects to reward you for your good work.

**Additional Information:**

Number Magic activities can be enjoyed by children alone, with a friend, or in small groups for a "Math Bee." Players can compete at several levels of difficulty and choose to "race the clock" to sharpen their skills. The module automatically keeps score and rewards progress with colorful graphics and sound. Number Magic module activities begin with practice in basic skills and move on to more advanced problems or examples you can enter yourself.

The activities in the **Number Magic** module include:

- **Quick Quiz** — Warm up with simple addition and subtraction problems—Number Magic keeps score.
- **Comp Quiz** — Move on to more advanced problems (+, -, ×, ÷) at a user-selected level of difficulty. The "Race the Clock" option automatically keeps score.
- **Electro Flash** — Brush up on times tables, addition/subtraction, more advanced examples. Electronic flash cards cover all of the "basic parts" of mathematics. Race against the clock for "Math Bees"—Number Magic keeps score.

For more information about the NUMBER MAGIC Command Module...consult the instruction manual packaged with it.

**Adds 6K bytes of active memory with stored program to your TI Home Computer.**



DEMONSTRATION GUIDE TO THE

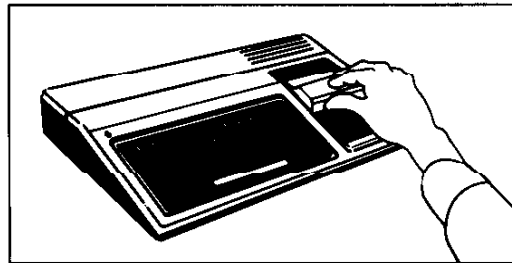
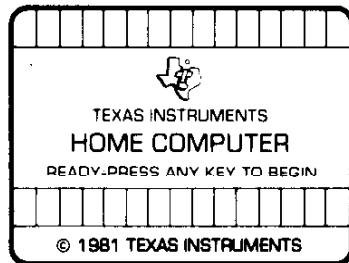
# Reading Fun

## COMMAND MODULE

The **Reading Fun** Command Module involves your child in a variety of reading activities as he or she explores the exciting "world of words." The module was developed by TI in conjunction with Scott, Foresman and Company, a leading educational publisher. The subject matter corresponds to material covered in grades 1 through 3.

### Just snap in the Command Module — and go!

1. Be sure that the *Solid State Speech*<sup>™</sup> Synthesizer is attached to the computer and that the computer is ON. (The ON/OFF switch is on the right front of the unit.) The master title screen is now displayed (as shown left). Slide the module into the slot on the console (as shown right).



2. Press any key to make the **READING SKILLS COURSEWARE SERIES** title screen appear. Next, the Reading Fun title sequence begins.
3. Now follow the directions for the activity as given below. When you finish the activity, return the computer to the master title screen by holding down the **FCTN** key and pressing the **= (QUIT)** key. Then withdraw the module from the console.

### Now you're ready to try this sample activity.

1. After the title sequence ends, a display appears automatically, explaining the purpose of the module.
2. Press **ENTER** to proceed to the next display. Then press **1** to select **ONE SKILL**.
3. When the next display shows the three skills available, press **3** for **HOW CHARACTERS FEEL**.
4. Now press **1** for **STUDY IT** and the computer presents the title screen for **THE LION AND THE MOUSE**.

5. Then the computer automatically introduces your child to three vocabulary words. Press 1 and then press the **SPACE BAR** to underline the word "frightened" in the sentence. After you underline the word correctly, the computer returns to the vocabulary list.
6. Next, press **ENTER** and the program tells your child: If you ever want help reading the story, press **PROC'D**.
7. Now press **ENTER**. A display appears describing **THE LION AND THE MOUSE**.
8. Press **ENTER** again, and the first display of the story appears. (After you finish reading the text on any reading display, press **ENTER** to continue.)
9. The program now asks "How does the lion feel right now?" and displays three choices. Press the appropriate number.
10. Continue reading the story and answering the questions until the story is over.
11. Your child is now asked if he or she wants to read the whole story again. Press 2 for **NO**, and the program asks: Would you like to do the **TRY IT OUT** activity for this skill? Press 1 for **YES**, and the **TRY IT OUT** section begins. To return to the first selection list, hold down the **FCTN** key and press the 5 (**BEGIN**) key.

**Additional Information:**

The Reading Fun Command Module is especially designed with speech capabilities and color graphics to help your child enjoy the fun and challenge of learning to read.

The **Reading Fun** module activities include:

- **"Almost Too Late"** — a story that deals with finding problems in stories.
- **"Why Bats Fly at Night"** — a story that focuses on why things happen.
- **"The Lion and the Mouse"** — a story that concentrates on how characters feel.
- **"Lunchtime"** — a story which combines the skills covered in the other three stories.
- **Try It Out** — reinforcing practice drills.

The optional Texas Instruments *Solid State Speech*<sup>™</sup> Synthesizer (sold separately) adds the feature of speech to the activities, allowing your child to hear, as well as see, the instructions and problems in the module.

For more information about the **READING FUN** Command Module...consult the instruction manual packaged with it.

**Adds 30K bytes of active memory with stored program to your TI Home Computer.**



Texas Instruments Home Computer



DEMONSTRATION GUIDE TO THE

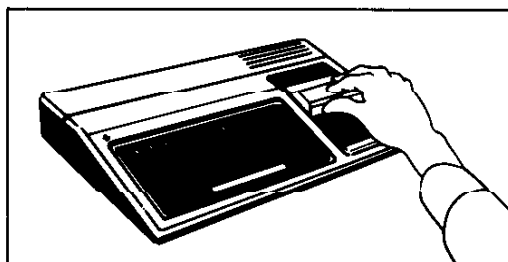
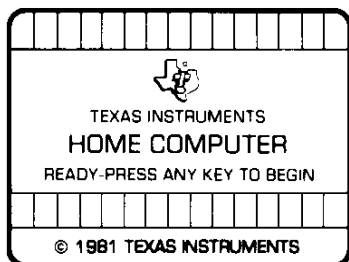
# Addition and Subtraction 1

COMMAND MODULE

The **Addition and Subtraction 1** Command Module makes learning addition and subtraction facts for numbers zero through nine fun and challenging. Developed by Texas Instruments in conjunction with Scott, Foresman and Company, a leading educational publisher, the subject matter in the module is appropriate for grades K-2.

## Just snap in the Command Module — and go!

1. Be sure that the *Solid State Speech*<sup>™</sup> Synthesizer is attached to the computer and that the computer is ON. (The ON/OFF switch is on the right front of the unit.) The master title screen is now displayed (as shown left). Slide the module into the slot on the console (as shown right).



2. Press any key to make the **MATHEMATICS SKILLS COURSEWARE SERIES** title screen appear. Next, the Addition and Subtraction 1 title sequence begins.
3. Now follow the directions for the activity as given below. When you finish the activity, return the computer to the master title screen by holding down the **FCTN** key and pressing the **= (QUIT)** key. Then withdraw the module from the console.

## Now try this sample activity.

The **ADDITION ACTION** activity shows the approach taken by this module in guiding children through their first venture into the world of mathematics.

1. After the title sequence ends, the Addition and Subtraction 1 selection list appears. Press **3** for the **ADDITION ACTION** activity.
2. Next, a tutorial segment explains the activity. When the segment is finished, the computer asks, "Do you want one more?" Press **2** for "no," and the module moves to the drill.

3. Two character-filled boxes with corresponding numerals below appear on the screen. The characters in the box on the right move into the left box. The addition equation forms underneath the box and the cursor flashes, prompting you to answer. Press the correct number key, and the computer speaks the number.

4. Next, the word sentence forms underneath the equation, and the computer reads it aloud.

5. The word sentence disappears, and the commutative addition problem replaces it on the display. The cursor flashes, once again prompting you to answer.

If your answer is correct, the computer plays a short musical tune and a colorful graphic is displayed to reward you. If you answer incorrectly, the computer encourages you to "Try Again." A second incorrect answer prompts the computer to supply the right answer. The drill continues like this for a preset number of problems.

6. At the end of Activity 3, the computer automatically advances to the next activity. You can return to the selection list by holding down the **FCTN** key and pressing the **5 (BEGIN)** key at the end of the drill or whenever the cursor is flashing.

**Additional Information:**

The Addition and Subtraction 1 Command Module provides young children with an exciting introduction to basic mathematical concepts involving the numbers zero through nine. The nine colorful activities begin with counting and move to addition and subtraction, building on the skills learned in previous exercises.

The optional Texas Instruments *Solid State Speech*<sup>TM</sup> Synthesizer (sold separately) can be used with this module. It adds the feature of computer speech to the activities. Children can now hear, as well as see, the instructions and exercises in the module.

The features of the **Addition and Subtraction 1** module provide children with:

- Activities to introduce the counting numbers zero through nine.
- Horizontal and vertical problems to supply in-depth drills.
- Colorful word sentences to reinforce fundamental concepts.
- Practice exercises to review the skills presented throughout the module.

For more information about the **ADDITION AND SUBTRACTION 1** Command Module...consult the instruction manual packaged with it.

**Adds 18K bytes of active memory with stored program to your TI Home Computer.**



DEMONSTRATION GUIDE TO THE

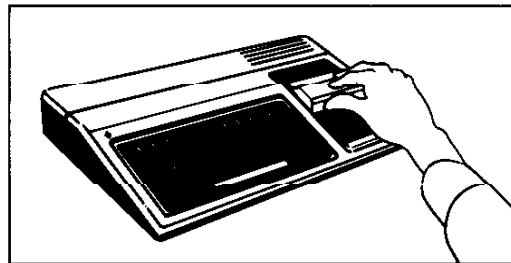
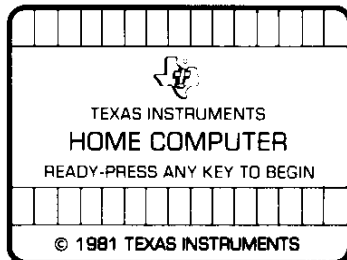
# Addition and Subtraction 2

## COMMAND MODULE

The **Addition and Subtraction 2** Command Module guides your child through the addition and subtraction skills for numbers up to 18 with colorful tutorial routines and reinforcing drills. Developed by Texas Instruments in conjunction with Scott, Foresman and Company, a leading educational publisher, the subject matter in the module is appropriate for grades 1-3.

### Just snap in the Command Module — and go!

1. Be sure that the *Solid State Speech*<sup>™</sup> Synthesizer is attached to the computer and that the computer is ON. (The ON/OFF switch is on the right front of the unit.) The master title screen is now displayed (as shown left). Slide the module into the slot on the console (as shown right).



2. Press any key to make the MATHEMATICS COURSEWARE SERIES title screen appear. Next, the Addition and Subtraction 2 title sequence begins.
3. Now follow the directions for the activity as given below. When you finish the activity, return the computer to the master title screen by holding down the **FCTN** key and pressing the **= (QUIT)** key. Then withdraw the module from the console.

### Now try this sample activity by following these steps.

The **ADD IN A COLUMN** activity is an example of the enjoyable educational approach of this module.

1. After the title sequence ends, the Addition and Subtraction 2 selection list appears. Press **6** to select **ADD IN A COLUMN**.
2. The activity begins with a tutorial segment. When it's completed, the computer asks, "Do you want one more?" Press **2** for "no," and the module advances to the drill.

3. An addition problem now appears on the display. A white box with a red flashing cursor prompts you to enter the answer to the problem. Type the answer. If your answer is correct, the computer rewards you with a short melody and a colorful graphic. If an incorrect answer is given, the computer encourages you to "Try Again." A second incorrect answer prompts the computer to supply the answer. The drill continues in this manner for a preset number of problems.

4. At the completion of Activity 6, the computer automatically advances to the next activity. You can return to the selection list by holding down the **FCTN** key and pressing the **5 (BEGIN)** key at the end of the drill or whenever the cursor is flashing.

**Additional Information:**

The Addition and Subtraction 2 Command Module extends the fundamentals of these two skills to include numbers up to 18. The activities are designed not only to challenge your child, but also to present the concepts in a dynamic, exciting way.

With Addition and Subtraction 2, Texas Instruments is continuing its tradition of applying innovative *Solid State Speech*<sup>™</sup> technology to educational activities. The optional *Solid State Speech*<sup>™</sup> Synthesizer (sold separately) adds the feature of computer speech to the color graphics and musical sounds of your computer. Your child can now hear, as well as see, the instructions and problems in the module.

The features of the **Addition and Subtraction 2** module give your child the opportunity to:

- Review the counting numbers zero to 10.
- Learn the concept of counting with numbers 10 to 18.
- Understand horizontal and vertical addition and subtraction problems.
- Practice the addition of three numbers in the horizontal and vertical formats.

For more information about the **ADDITION AND SUBTRACTION 2** Command Module...consult the instruction manual packaged with it.

**Adds 18K bytes of active memory with stored program to your TI Home Computer.**

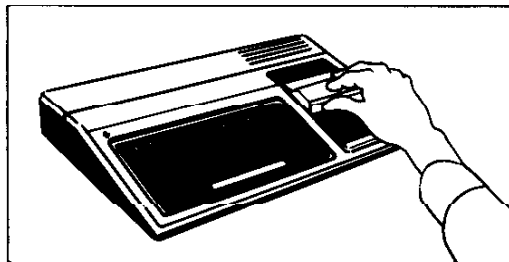
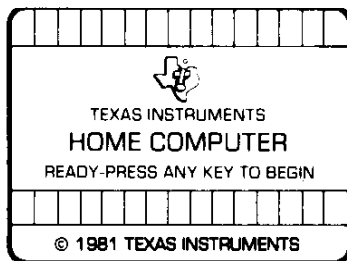


DEMONSTRATION GUIDE TO THE  
**Multiplication 1**  
COMMAND MODULE

The **Multiplication 1** Command Module makes the learning of basic multiplication facts an exciting experience. Developed by Texas Instruments in conjunction with Scott, Foresman and Company, a leading educational publisher, the subject matter in the module is appropriate for grades 2-5.

**Just snap in the Command Module — and go!**

1. Be sure that the *Solid State Speech*<sup>™</sup> Synthesizer is attached to the computer and that the computer is ON. (The ON/OFF switch is on the right front of the unit.) The master title screen is now displayed (as shown left). Slide the module into the slot on the console (as shown right).



2. Press any key to make the MATHEMATICS COURSEWARE SERIES title screen appear. Next, the Multiplication 1 title sequence begins.
3. Now follow the directions for the activity as given below. When you finish the activity, return the computer to the master title screen by holding down the FCTN key and pressing the = (QUIT) key. Then withdraw the module from the console.

**Now it's time to try the sample activity.**

The HOW MANY IN ALL? activity introduces your child to the "magic of multiplication" and helps provide a strong foundation in the basic concepts.

1. After the title sequence ends, the Multiplication 1 selection list appears. Press 6 for HOW MANY IN ALL?
2. Next, a tutorial segment explains the activity. When the segment is completed, the computer asks, "Do you want one more?" Press 2 for "no," and the module moves to the drill.

3. The display shows a random number of magician's hats "sprouting" a random number of flowers. The computer counts the hats and moves that number to an empty hat at the bottom of the display. The computer then counts the number of flowers in each hat and also displays that number.
4. Answer the question, "How many flowers in all?" by typing the answer to the multiplication sentence. If your response is correct, the computer displays a visual reward and plays a short melody. If your response is incorrect, the computer encourages you to "Try Again." A second incorrect answer prompts the computer to supply the answer. The drill continues in this manner for a preset number of problems.
5. At the end of Activity 6, the computer automatically advances to the next activity. You can return to the selection list by holding down the **FCTN** key and pressing the **5 (BEGIN)** key at the end of the drill or whenever the cursor is flashing.

**Additional Information:**

The Multiplication 1 module provides practice in the fundamentals of multiplication skills. The activities present the basic facts in an interesting and challenging manner.

With Multiplication 1, Texas Instruments is continuing its tradition of applying innovative *Solid State Speech*<sup>™</sup> technology to educational activities. The optional *Solid State Speech*<sup>™</sup> Synthesizer (sold separately) adds the feature of computer speech to the colorful graphics and musical sounds of your computer. Your child can now hear, as well as see, the instructions and problems in the module.

The features of the **Multiplication 1** module help your child:

- Discover how an addition problem is changed into a multiplication problem.
- Learn how to multiply with the factors zero through nine.
- Understand both horizontal- and vertical-format multiplication problems.
- Practice with drills that reinforce the skills presented in the module.

For more information about the MULTIPLICATION 1 Command Module... consult the instruction manual packaged with it.

**Adds 18K bytes of active memory with stored program to your TI Home Computer.**



Texas Instruments Home Computer

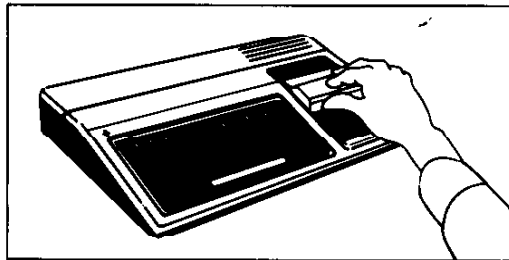
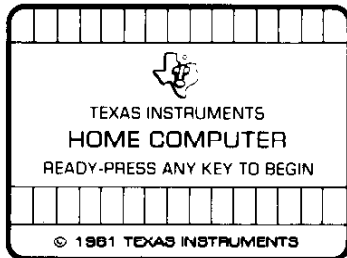


DEMONSTRATION GUIDE TO THE  
**Terminal Emulator II**  
COMMAND MODULE

The **Terminal Emulator II** Command Module lets you instruct the computer to read any displayed text aloud, and enables your Home Computer to telecommunicate with other computer systems.

**Just snap in the Command Module — and go!**

1. Be sure that the *Solid State Speech*<sup>™</sup> Synthesizer is attached to the computer and that the computer is ON. (The ON/OFF switch is on the right front of the unit.) The master title screen is now displayed (as shown left). Slide the module into the slot on the console (as shown right).



2. Press any key to make the master selection list appear. To use the module's text-to-speech capability, press the 1 key for TI BASIC.
3. Next, follow the directions for the activity as given below. When you finish the activity, return the computer to the master title screen by holding down the **FCTN** key and pressing the = (**QUIT**) key. Then withdraw the module from the console.

**Now it's time to make the computer speak.**

1. After you select TI BASIC, you see the message "TI BASIC READY" and the prompting symbol (>) followed by a flashing box (the cursor). Enter the following short program by typing the numbered lines as shown and pressing **ENTER** at the end of each line.

```
100 OPEN #1:"SPEECH",OUTPUT
110 INPUT "PHRASE -> ":AS$
120 PRINT #1:AS$
130 GOTO 110
```
2. Now type **RUN** and press **ENTER**. The display turns green and the computer asks you to enter your phrase. At this point, you can enter any phrase you want and the Home Computer says it aloud. However, for a demonstration, type **SUPERB** and press **ENTER**. The computer speaks the word.



3. You can add inflection symbols to a phrase to change the inflection or shift the stress points. To see how this works, enter the following.

```
^ SUPERB
^ > SUPERB
```

4. As you listen to the computer speak, you may want to specify a certain pitch (higher or lower) and slope (rate at which the pitch changes). To hear the computer speak in a high-pitched voice, enter the following.

```
//20 200
THIS IS A TEST
```

To hear a low-pitched voice, try this:

```
//50 60
THIS IS A TEST
```

For a whisper, the inputs would be:

```
//0 150
THIS IS A TEST
```

Now change the voice back to its normal (default) pitch and slope by entering the following.

```
//43 128
```

5. Continue to experiment with various phrases, including inflection, pitch, and slope, as you desire.

#### **Additional Information:**

The world of telecommunications offers something for everyone...stock market quotes, tax advice, computer games, program swapping. The Terminal Emulator II Command Module lets you link your Home Computer to this world with new dimensions in graphics and sound, including text-to-speech capabilities! *Note:* Although the module can exchange textual data with a subscription data-base service, not all data-base services are capable of utilizing the the module's graphics, sound, speech, and file transfer features. Before attempting to access these features, check with the data-base service.

The **Terminal Emulator II** module features provide:

- **Text and Graphics Modes** — You can receive text or color graphics.
- **Text-to-Speech Capability** — You can instruct the computer to read any displayed text aloud. This feature can also be accessed in TI BASIC! (*Note:* The Texas Instruments *Solid State Speech*<sup>™</sup> Synthesizer\* must be connected to the computer to utilize the speech capability.)
- **And much more** — A wide variety of functions makes it easy for you to work with your data.

*Note:* To activate the Terminal Emulator II module for telecommunications, a TI RS232 Interface\* must be attached to the computer. If you are contacting a remote computer via telephone, a TI Telephone Coupler (Modem)\* is required in addition to the RS232 Interface. The RS232 Interface is not required for utilizing text-to-speech in TI BASIC.

\*sold separately

For more information about the TERMINAL EMULATOR II Command Module...consult the instruction manual packaged with it.

**Adds 28K bytes of active memory with stored program to your TI Home Computer.**

Service / Warranty

### **Service and Warranty Information**

When returning your computer for repair or replacement, return the computer console, power cord, and any Command Modules which were involved when the difficulty occurred. For your protection, the computer should be sent insured; Texas Instruments cannot assume any responsibility for loss or damage to the computer during shipment. It is recommended that the computer be shipped in its original container to minimize the possibility of shipping damage. Otherwise, the computer should be carefully packaged and adequately protected against shock and rough handling. Send shipments to the appropriate Texas Instruments Service Facility listed in the warranty.

If the computer is in warranty, it will be repaired or replaced under the terms of the Limited Warranty. Out-of-Warranty units in need of service will be repaired or replaced with reconditioned units (at TI's option), and service rates in effect at the time of return will be charged. Because our Service Facility serves the entire United States, it is not feasible to hold units while providing service estimates. For advance information concerning our flat-rate service charges, please call our toll-free number given in "For General Information."

### **EXCHANGE CENTERS**

If your computer requires service, instead of returning the unit to your dealer or to a service facility for repair or replacement, you may elect to exchange the unit for a factory-reconditioned computer of the same model (or equivalent model specified by TI) by bringing it in person to one of the exchange centers which have been established across the United States. A handling fee will be charged by the exchange center for in-warranty exchanges of the computer console and/or TI Color Monitor/Video Modulator. Out-of-warranty exchanges will be charged at the rates in effect at the time of exchange.

To determine if there is an exchange center in your area, look for Texas Instruments Exchange Center in the white pages of your telephone directory, or look under the Calculator and Adding Machine heading in the yellow pages. Please call the exchange center for availability and exchange fee information. Write the Consumer Relations Department for further details and the location of the nearest exchange center.

### **FOR GENERAL INFORMATION**

If you have questions concerning repair, or peripheral, accessory, or software purchase, please call our Customer Relations Department at 800-858-4565 (toll-free within the contiguous United States except Texas) or 800-692-4279 within Texas. The operators at these numbers cannot provide technical assistance.

**FOR TECHNICAL ASSISTANCE**

For technical questions about programming, specific computer applications, etc., call 806-741-2663. Please note that this is not a toll-free number, and we cannot accept collect calls.

As an alternative, you can write to:

Consumer Relations Department  
Texas Instruments Incorporated  
P.O. Box 53  
Lubbock, Texas 79408

**LIMITED WARRANTY**

The Texas Instruments TI-99/4A Home Computer is covered by a 90-day limited warranty against defects in materials and workmanship. This warranty covers only the hardware portion of the TI Home Computer. See the *User's Reference Guide* for complete warranty text. TI cannot and does not warrant that the TI Home Computer programs and book materials will be free from error or will meet the specific requirements of the user. The user assumes complete responsibility for any decisions made or actions taken based on information obtained using these programs and book materials, which are made available solely on an "as-is" basis (see owner's manual).



## TEXAS INSTRUMENTS INCORPORATED

### SERVICE INFORMATION FOR TEXAS INSTRUMENTS HOME COMPUTER OWNERS

#### EXCHANGE SERVICE

If your Texas Instruments Home Computer console, Color Monitor, or accessory requires service, instead of sending the unit to the TI Service Facility for repair or replacement, you may elect to exchange it for a factory-reconditioned unit of the same model (or equivalent model specified by TI) by bringing the unit **IN PERSON** to the nearest Texas Instruments exchange facility listed on this sheet. **PLEASE CALL THE FACILITY FOR AVAILABILITY OF REPLACEMENT UNITS.**

**The following terms and conditions apply for in-warranty units:**

1. Exchange service is offered to the original purchaser or end user and is not available to retailers or dealers.
2. Exchange is offered for repairable, defective Texas Instruments brand name Home Computer products **ONLY**. Units damaged by accident or misuse beyond economical repair will not be exchanged.
3. The replacement unit will be warranted for a period of three months. **A handling fee will be charged by the exchange center for in-warranty exchange of the unit.**
4. Exchanges must be made in person and cannot be made by mail.

**Out-of-warranty units** will be exchanged for a flat fee based on the latest repair rates, and the replacement unit will be in warranty for three months. For additional information, please call the Texas Instruments Consumer Relations office.

#### MAIL-IN SERVICE

If you are unable to exchange your unit **IN PERSON** at one of the exchange offices, you may elect to mail your unit to one of the Mail-In Service Facilities listed on the reverse side of this sheet. Out-of-warranty units will be repaired or replaced (at TI's option) with the same or equivalent reconditioned model for a flat fee based on the latest repair rates. The following terms and conditions apply for in-warranty units:

1. The unit should be mailed postage prepaid to one of the Mail-In Service Facilities listed on the reverse side of this sheet.
2. The unit will be repaired or replaced (at TI's option) with the same or equivalent reconditioned model.
3. In the event of replacement with a reconditioned model the replacement unit will be warranted for three months.
4. Other than the postage requirement, no charge will be made for such repair, adjustment, and/or replacement for in-warranty units.

#### MAILING HINTS

Texas Instruments strongly recommends that you package the unit properly to protect against damage and also insure the product for value prior to mailing.

## EXCHANGE SERVICE CENTERS

**NOTE:** Do not mail units to these addresses, except those marked with a ■ which handle both in-person and mail-in exchanges. Before going to the Exchange Center, it is advisable to telephone the exchange office for information regarding office hours and availability of specific models.

### Arizona

Texas Instruments Exchange Center  
8102 North 23rd Avenue  
Phoenix, AZ 85017  
Telephone: (602) 249-1503

### California

Texas Instruments Exchange Center  
3186 Airway Drive, Bldg. K  
Costa Mesa, CA 92626  
Telephone: (714) 540-7190

- Texas Instruments Consumer Service  
831 South Douglas Street  
El Segundo, CA 90245  
Telephone: (213) 973-1803

Texas Instruments Exchange Center  
4333 View Ridge Avenue, Suite B  
San Diego, CA 92123  
Telephone: (714) 279-2622

Texas Instruments Exchange Center  
100 California Street, Suite 480  
San Francisco, CA 94111  
Telephone: (415) 392-6840

Texas Instruments Exchange Center  
776 Palomar Avenue  
Sunnyvale, CA 94086  
Telephone: (408) 732-1840

### Colorado

Texas Instruments Exchange Center  
9725 East Hampden Avenue  
Denver, CO 80231  
Telephone: (303) 751-2266

### Florida

Texas Instruments Exchange Center  
4600 West Commercial Blvd., Suite 3  
Fort Lauderdale, FL 33319  
Telephone: (305) 733-1530

Texas Instruments Exchange Center  
1850 Lee Road, Suite 115  
Winter Park, FL 32789  
Telephone: (905) 647-4125

### Georgia

Texas Instruments Exchange Center  
3300 N.E. Expressway, Bldg. #9  
Atlanta, GA 30341  
Telephone: (404) 451-8558

### Hawaii

- Texas Instruments Consumer Service  
1600 Kapiolani Blvd.  
Pan Am Bldg., Suite 1420  
Honolulu, Hawaii 96814  
Telephone: (808) 955-6808

### Illinois

Texas Instruments Exchange Center  
515 West Algonquin Road  
Arlington Heights, IL 60005  
Telephone: (312) 437-5660

### Massachusetts

Texas Instruments Exchange Center  
504 Totten Pond Road  
Waltham, MA 02154  
Telephone: (617) 890-1106

### Michigan

Texas Instruments Exchange Center  
26211 Central Park Blvd., Suite 215  
Southfield, MI 48076  
Telephone: (313) 353-5343

### Minnesota

Texas Instruments Exchange Center  
7625 Parklawn Avenue  
Edina, MN 55435  
Telephone: (612) 830-1616

### Missouri

Texas Instruments Incorporated  
2368 Schuetz Road  
St. Louis, MO 63141  
Telephone: (314) 569-0801

### New Jersey

Texas Instruments Exchange Center  
1255 Westfield Avenue  
Clark, NJ 07066  
Telephone: (201) 574-9800

### New York

Texas Instruments Exchange Center  
#1 Huntington Quadrangle, Suite 1C01  
Melville, LI., NY 11747  
Telephone: (516) 249-2415

Texas Instruments Exchange Center  
1210 Jefferson Road  
Rochester, NY 14623  
Telephone: (716) 275-9750

### North Carolina

Texas Instruments Exchange Center  
One Woodlawn Green, Suite 160  
Charlotte, NC 28210  
Telephone: (704) 527-1068

### Ohio

Texas Instruments Exchange Center  
23412 Commerce Park Rd.  
Beechwood, OH 44122  
Telephone: (216) 464-5288

Texas Instruments Exchange Center  
4124 Linden Avenue  
Dayton, OH 45432  
Telephone: (513) 258-3163

### Oklahoma

Texas Instruments Exchange Center  
3105 East Skelly Drive  
Tulsa, OK 74105  
Telephone: (918) 749-5724

### Oregon

- Texas Instruments Consumer Service  
10700 Southwest Beaverton Hwy.  
Park Plaza West  
Beaverton, OR 97005  
Telephone: (503) 643-6758

### Pennsylvania

Texas Instruments Exchange Center  
420 Rouser Road  
Coraopolis, PA 15108  
Telephone: (412) 771 8112

Texas Instruments Incorporated  
275 Commerce Drive, Suite 116  
Ft. Washington, PA 19304  
Telephone: (215) 628-3434

### Texas

Texas Instruments Exchange Center  
1106 Clayton Lane  
Twin Towers West Bldg. Suite 305  
Austin, TX 78723  
Telephone: (512) 458-5408

Texas Instruments Exchange Center  
13531 N. Central Expressway  
Keystone South, Suite 2700  
Dallas, TX 75243  
Telephone: (214) 238-6551

Texas Instruments Exchange Center  
8585 Commerce Park, Suite 518  
Houston, TX 77036  
Telephone: (713) 777-4450

### Virginia

Texas Instruments Exchange Center  
1745 Jefferson Davis Hwy.  
Crystal Square 4, Suite 600  
Arlington, VA 22202  
Telephone: (703) 553-2232

### Washington

Texas Instruments Exchange Center  
700 112th Avenue N.E.  
Bellevue, WA 98004  
Telephone: (206) 455-0157

### Canada\*

Geophysical Services Incorporated  
640-12th Ave. South West  
Calgary, Alberta T2R0H5  
Telephone: (403) 264-0900

Geophysical Services Incorporated  
90-10451 Shellbridge Way  
Richmond, British Columbia V6X 2W8  
Telephone: (604) 278-4871

- Geophysical Services Incorporated  
41 Shelley Road  
Richmond Hill, Ontario L4C5G4  
Telephone: (416) 884-9181

Geophysical Services Incorporated  
945 McCaffrey Street  
St. Laurent, Quebec H4T1N3  
Telephone: (514) 341-5225

\*Canadian Residents Only

## MAIL-IN SERVICE ONLY

### Texas

Texas Instruments Repair Service  
2303 N. University Drive  
Lubbock, TX 79415





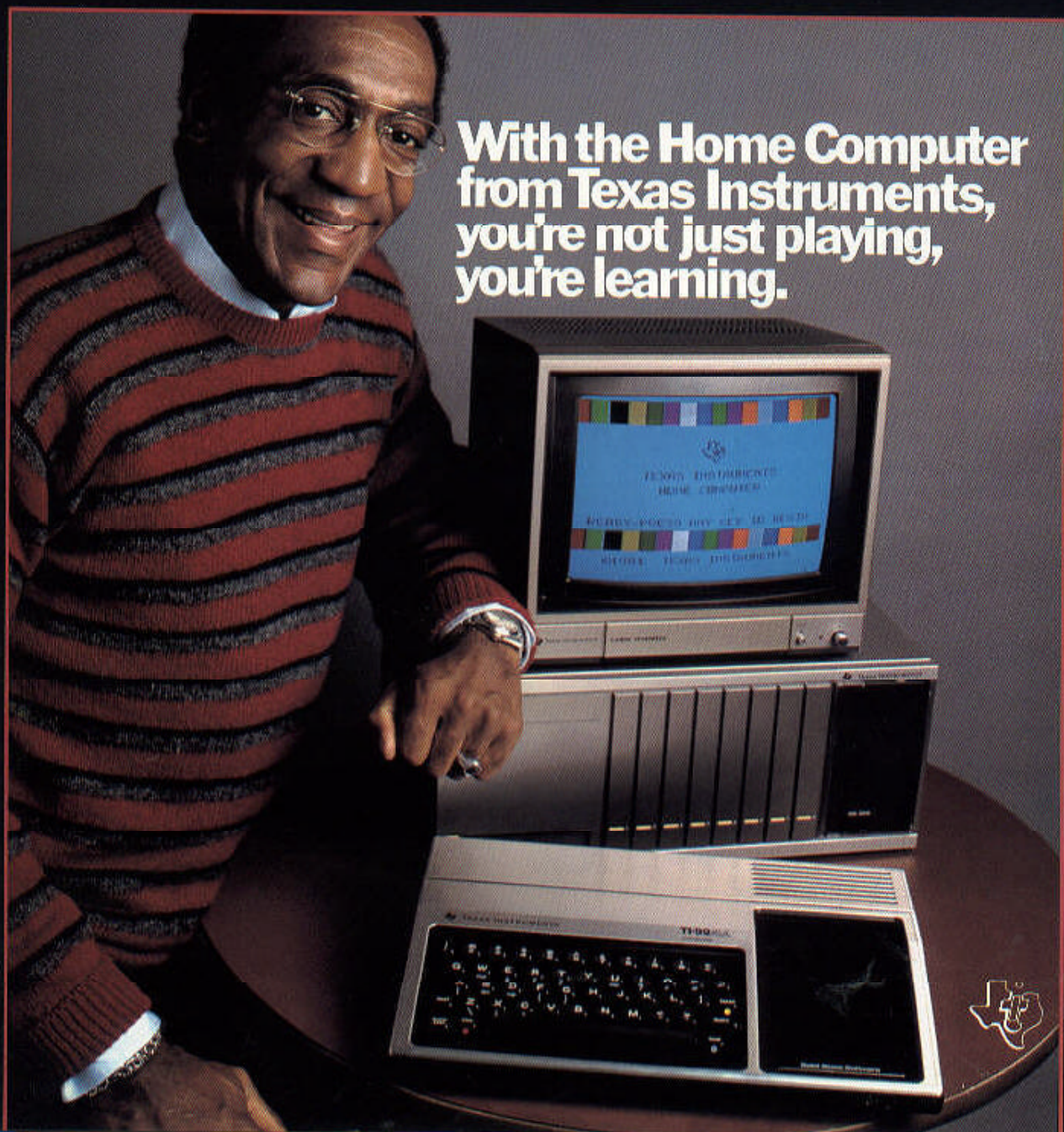
# TEXAS INSTRUMENTS TI-99/4A HOME COMPUTER

1

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8

2



**With the Home Computer from Texas Instruments, you're not just playing, you're learning.**

TEXAS INSTRUMENTS  
HOME COMPUTER  
MERRY CHRISTMAS TO YOU  
MERRY CHRISTMAS TO YOU





**"The age of  
the Home Computer  
has arrived!"**



Texas Instruments is proud to announce a computer designed for the family. The Texas Instruments Home Computer... as easy to get used to as your home stereo.

From opening the box to running your first program, you'll soon realize why it's called the "Home Computer". Setting up the system is one of the easiest tasks you'll ever undertake. And anyone in your family can use it, learn from it.

All you need to get started is your TV set, our computer console, and the RF modulator (which connects the console to your TV). If you don't want to use your TV set, you can use our Video Monitor, designed specifically for the Home Computer. Then, you simply follow our easy-to-understand instructions, plug in a Command Module... and you're computing.

In minutes, you have a "feel" for it. It teaches. It entertains. It's the most fascinating thing to ever happen to leisure time at home. The easy-to-use Texas Instruments Home Computer.



### **Easy-to-understand instructions**

Getting started is easy—these books make operating and programming the home computer simple.



### **The Video Monitor**

Our 10" color monitor gives you excellent color resolution (192 x 256 dot density) and a display format for 24 lines of 32 characters.



### **The TI Home Computer**

This compact, lightweight console contains the brain of the TI-99/4 Home Computer—a powerful TI 9900 microprocessor.



### **The RF modulator**

The RF modulator lets you use your color or black and white family TV set as the computer's monitor.



### How to make your Home Computer more computer—with optional accessories.

There's more than one way to expand your Home Computer—you can use our newest accessory, the TI Peripheral Expansion System, which encloses several useful pieces of hardware in one box. Or, you can buy hardware individually.



#### The Speech Synthesizer

Reproduces human speech electronically—and accurately. Plugs directly into the Home Computer's built-in connectors without external cables. Lets it communicate verbally, ideal for children too young to read the screen. Requires Speech Editor, Terminal Emulator II or other customized command modules that use speech (sold separately.) The Terminal Emulator II package provides text-to-speech capability whereby you can listen to data base information or have the computer say anything within your own program.



#### Telephone Coupler

Allows you to send and receive messages, data, and entire programs through a standard telephone. Lets you communicate with similarly equipped computers at remote locations, and access data bases and software services. Uses the RS232 Interface and Terminal Emulator II packages.

#### The Disk Memory System

Stores additional information that you wish to keep and refer to at a later time. It consists of the TI Disk Drive Controller and from 1 to 3 Disk Memory Drives. Handles variable length records, as well as sequential and relative files. Free disk space is automatically reassigned for file allocation.

Comes with a pre-programmed Command Module that supplies disk utilities and file maintenance commands. Up to 90K bytes of information may be stored on each diskette.



#### The Peripheral Expansion System

Lets you start simple, then gradually build up a sophisticated system by plugging in additional hardware cards. It centralizes most of your hardware in one place, eliminating extra cables and clutter. Accommodates the disk memory system, RS232 Interface, memory expansion option, and more.



The RS232 Interface Card, with up to two serial ports, lets you hook up to a wide range of serially formatted accessories. It also has one parallel port to utilize a printer. The Memory Expansion Unit increases the Home Computer's random access memory from 16K bytes to 48K bytes.



#### Wired Remote Controllers

Let you move objects on screen. Each unit includes an eight-position remote control with side-mounted action button. An important accessory every serious game-player should have.



**"You can reach  
outer space...or  
the inner mind."**



You don't have to know how to program to use the Home Computer. By choosing from a large library of pre-programmed cassettes, disks, and TI's exclusive Solid State Software™ modules, your whole family can enjoy computing: either learning, keeping household records, or challenging the Home Computer to stimulating games.



When you insert a Command Module into the Home Computer, you activate the subjects, activities and instructions permanently stored in the module's circuitry. There are over 40 modules available. Some of our most popular ones are shown here.

**Home Management/  
Personal Finance**



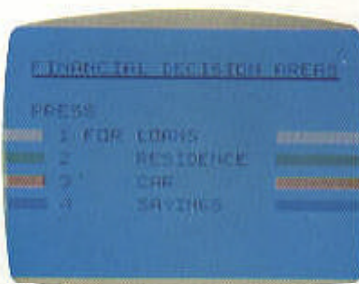
**Household Budget Management**  
A great program for home budgeting—set guidelines, track income and expenses, spot problem areas and keep easily accessible records.



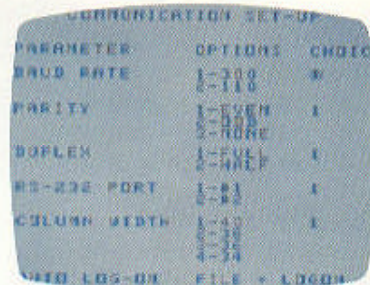
**Tax Investment Record Keeping**  
Create and maintain a computer-based filing system for all your financial records.



**Personal Real Estate**  
Follows techniques of the Realtors National Marketing Institute. Shows many personal real estate alternatives. A great teacher.

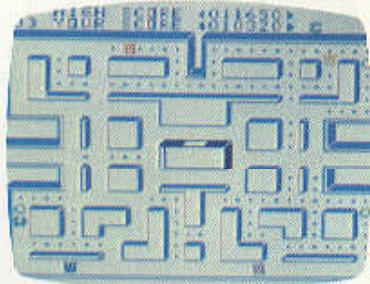


**Home Financial Decisions**  
Helps you make informed decisions regarding general loans, home and car buying and personal savings—and cost comparisons.

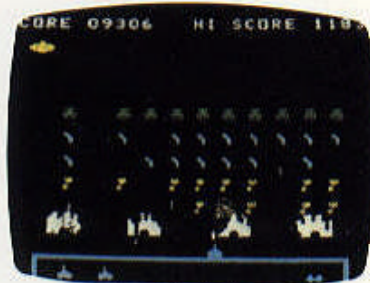


**Terminal Emulator II**  
Puts you in contact with the growing number of remote data bases, and with computers in distant locations.

**Home Entertainment**

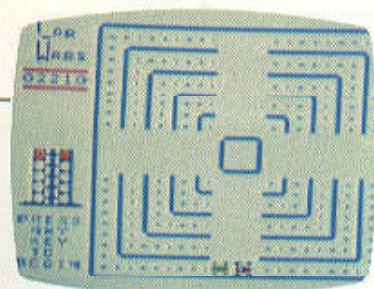


**Munchman**  
Four hungry hoonos chase you (Munchman) through a maze. Will you make it?



**TI Invaders**  
Your world is being attacked by a hostile horde. You have to destroy them with your missiles...if you're fast enough.





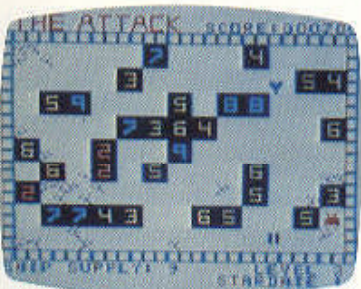
### Car Wars

Enjoy the excitement of high-speed racing, while trying to out-maneuver a canny opponent. It's you against the computer.



### Tomestone City: 21st Century

The villainous Morgs (who have an appetite for you, and for 21st-century tumbleweed) are attacking your ghost town. Try to thwart the invasion.



### The Attack\*

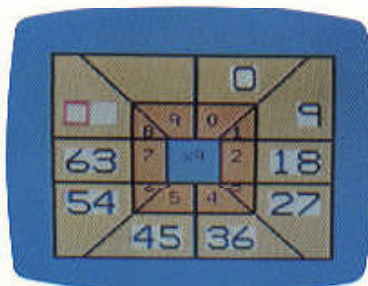
As the commander of a space fleet, you try to outsmart spores that band together to become aliens... hungry aliens. And you're on the menu.

### Children's Education



### Addition/Subtraction II\*\*

An excellent learning aid for grade levels 1 and 2. Helps learn concepts of addition and subtraction.



### Multiplication I\*\*

For grade levels 3 and 4. A step-by-step tutor that teaches the basics of multiplication.



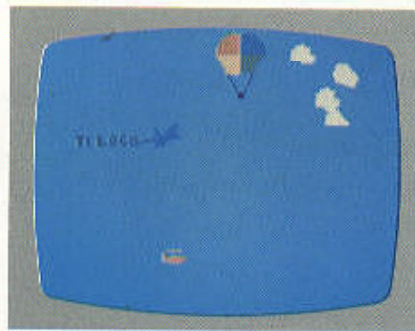
### Early Reading\*\*

Uses colorful pictures, stories and sounds to help your child experience the enjoyment of reading. Progressively builds knowledge.



### Beginning Grammar

Valuable practice in learning the basic parts of speech, for children from grades 2 through 5.



### TI LOGO

A very special, child-appropriate computer language that creates a limitless learning environment for children as young as 4. With the help of special graphics and simple procedures, children learn at a completely individual pace. Developed at the Massachusetts Institute of Technology.

The programs shown here are a small sampling of our most popular programs—and there are over 80 TI programs to choose from.

Additionally, hundreds of compatible programs are available through other software manufacturers, on disks or cassettes.

\* Trademark of Milton Bradley Company

\*\* Developed by Scott, Foresman and Company



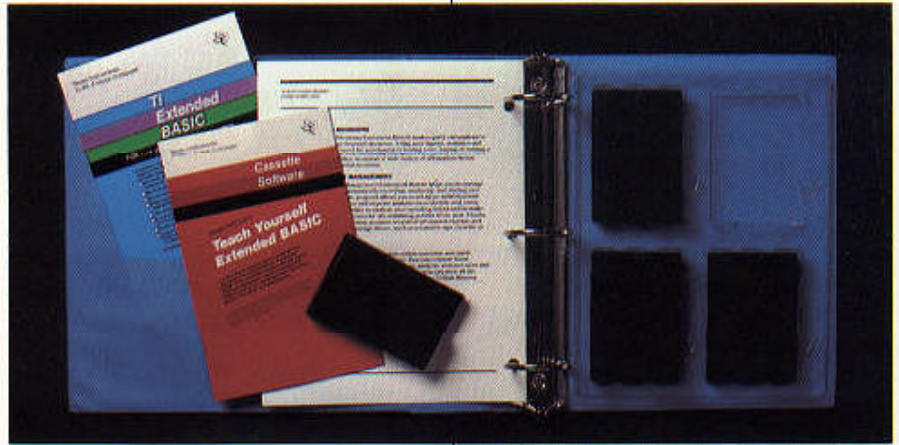
**"Buying by the album  
is like getting TI's  
greatest hits... for the  
Home Computer."**



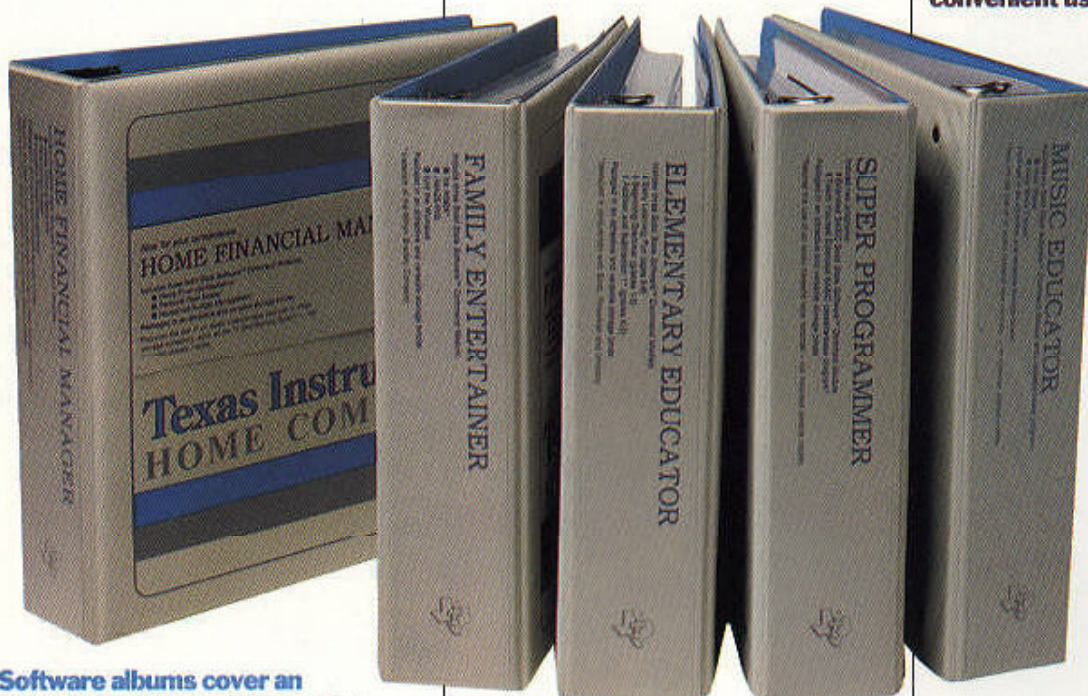
### **Software Albums**

Software albums are a great idea: Two or three Command Modules dealing with similar subjects, packaged together. Buy an album, and you've got instant computer expertise in an entire field—and it costs less than buying modules separately. The modules come in a specially designed binder for easy storage.

Choose from a wide range of albums that cover home money matters, entertainment, early learning, music theory, programming languages and much more.



**Each Software album organizes  
a group of related programs for  
convenient use.**



**Software albums cover an  
expanding variety of interesting  
subjects.**



**TI BASIC is built into the Home Computer.**

With other systems, it's not. You'll pay extra for it, and have to load it into the machine each time you need it. So, the Home Computer saves you time, and money.

TI BASIC is a rich and versatile programming language designed to make programming easy for you. You can apply it to the most demanding problems because it's powerful and accurate, yet it's one of the easiest program languages to learn.

**The Texas Instruments Home Computer also uses UCSD Pascal, version IV.0.**

This lets you write more efficient programs, and run many existing UCSD Pascal programs with little, if any, modification.

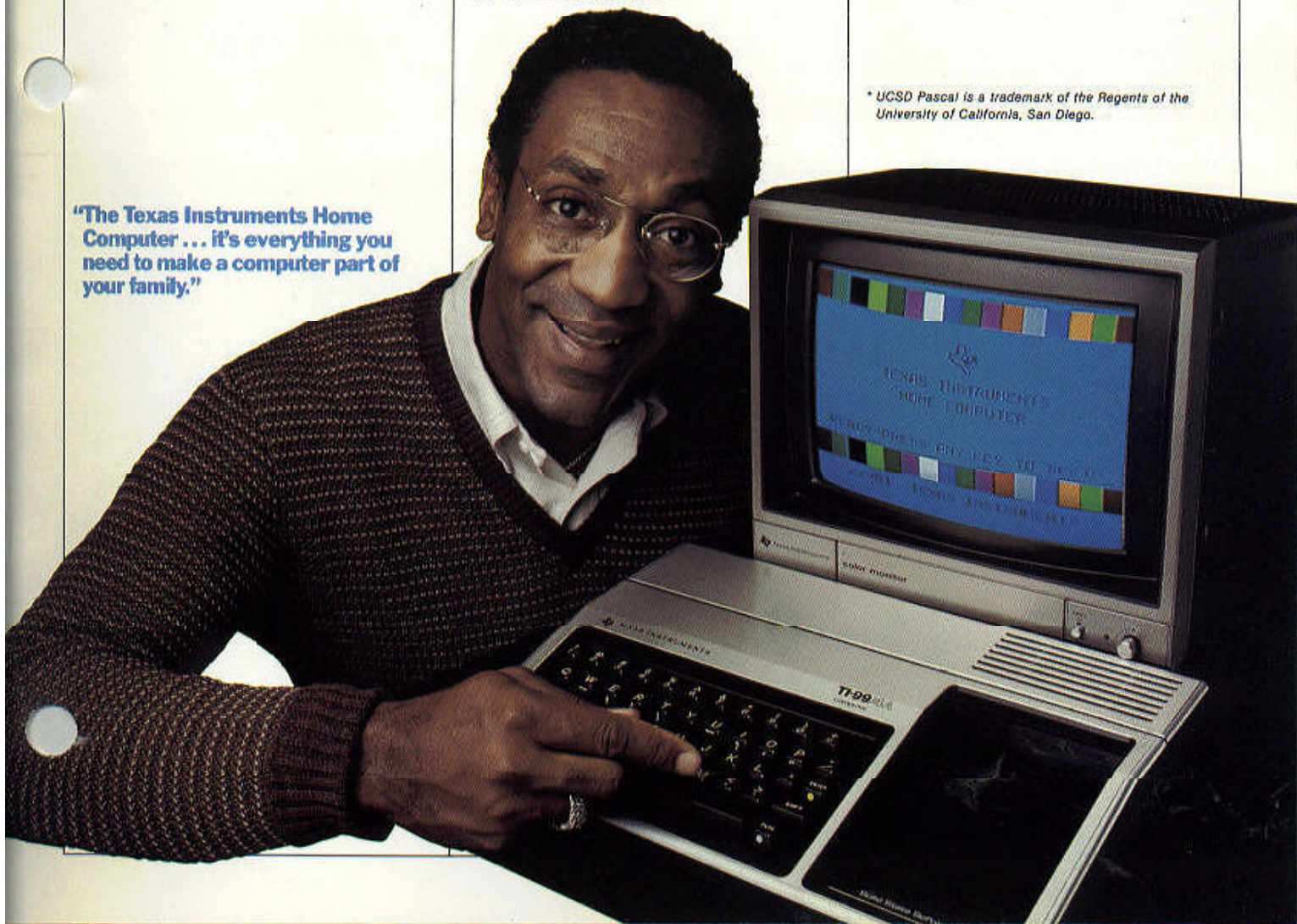
UCSD Pascal is a highly structured, efficient programming language that's faster, more logical and substantially more powerful than BASIC. Where BASIC programs are developed as a series of sequential lines, Pascal programs are block-structured so that logical elements of a program are developed one entire unit at a time.

**Program with the new TMS 9990 Microprocessor Assembly Language.**

It's the fastest, most efficient language you can write in, because it "speaks" directly to the Home Computer, giving you complete control. You can develop your own TMS 9900 Microprocessor Assembly Language with the new stand-alone Editor/Assembler. It also lets you write subroutines for use in TI BASIC and Extended BASIC. (UCSD Pascal has its own Editor/Assembler).

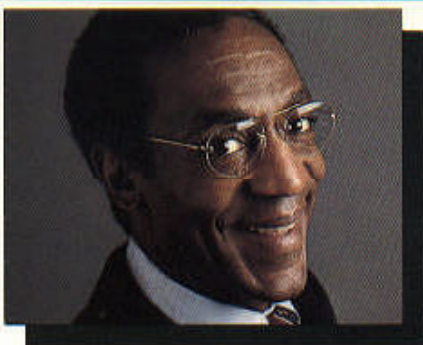
\* UCSD Pascal is a trademark of the Regents of the University of California, San Diego.

**"The Texas Instruments Home Computer ... it's everything you need to make a computer part of your family."**





**"The Home Computer  
is just one part of  
TI's amazing family of  
electronic products."**



**Anything you do with numbers,  
Texas Instruments  
can help you do better.**

There's a Texas Instruments calculator for almost every situation numbers can get you into ... for doing simple calculations at home, in the office, or at the store ... for doing the home budget or breezing through tax returns ... for solving complex mathematical and scientific formulas ... even for keeping track of your day, or the fuel efficiency of your car.

In fact, no one offers a wider line of calculators than we do. For all the numbers in your life, there's a TI calculator ready with an answer.

**Texas Instruments educational  
products make learning  
what it should be... Fun!**

These are the products that began a revolution in education for children—learning aids that make learning and practicing the basics an experience to look forward to. An experience that will last for a lifetime.

TI talking learning aids speak with a warm, synthesized voice, rewarding, prompting and encouraging children to learn. They teach spelling, reading, math, and even subjects for preschoolers.

Our learning aids provide the kind of excitement and motivation that keep children intrigued and challenged — with drills, quizzes and learning games that are educational... and fun.



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**TEXAS INSTRUMENTS**  
INCORPORATED

*Texas Instruments invented the integrated circuit, the microprocessor and the microcomputer which have made TI synonymous with reliability, affordability and compactness. TI Consumer Products carry on this tradition of technology leadership.*

Printed in USA 221196 G1182



CL709

Texas Instruments  
Home Computer



## TI-99/4A Home Computer Console Model PHC 004A



- Home enrichment for the whole family, from pre-schooler to senior citizen.
- Easy to use. Over 50 plug-in *Solid State Software*™ Command Modules available now — covering *Education to Home Financial Management to Computer Literacy to Entertainment*.
- 1000-plus cassette and diskette programs available from TI and independent sources.
- Superior color, sound, music, graphics — and with the optional *Solid State Speech*™ Synthesizer, *it even talks!*
- With built-in TI BASIC; available languages include Extended BASIC, Assembler, Pilot, Pascal, and TI LOGO.
- Excellent expandability with the space-saving, convenient peripheral expansion system and a wide selection of accessories, including data base access.



The TI-99/4A Home Computer System developed by Texas Instruments offers all members of the family a unique home enrichment tool.

It is an advanced home computer designed to adapt to the needs of the family that has little or no knowledge of computers or programming. Indeed, a family can obtain full benefit from the system without ever having to learn about computer hardware, software, or programming, though these options are built into the system.

The initial TI-99/4A Home Computer system consists of the *console* and *TV adapter* — which connects the console to your TV set. The programming language "BASIC" is contained within the console, and manuals are provided, so nothing additional needs to be purchased to start using the computer and learning about programming.

In minutes, you have a "feel" for it. It teaches. It entertains. *It makes learning fun.* It's the most fascinating thing to ever happen to leisure time at home. The easy-to-use Texas Instruments Home Computer.

### **You don't have to know how to program to use the TI Home Computer.**

The heart of the system is a library of Texas Instruments *Solid State Software™* Command Modules and a growing list of programs developed by independent sources. Command Modules are rugged, permanent, plug-in computer programs which provide a wide array of capabilities and activities for any member of the family. Over 1000 additional programs are available in diskette and cassette formats. (These programs require the use of additional devices — a Disk Drive and Controller for diskette programs and a cassette recorder and cable for cassette programs.)

### **If you do want to program — or want to learn — TI BASIC is built into the TI Home Computer.**

With other systems, it's not. You'll pay extra for it, and have to load it into the machines each time you need it. So, the TI Home Computer saves you time, and money.

TI BASIC is a rich and versatile programming language designed to make programming easy for you. You can apply it to the most demanding problems because it's powerful and accurate, yet it's one of the easiest program languages to learn.

TI LOGO, developed by Texas Instruments and the Massachusetts Institute of Technology, is available for children in kindergarten through grade 6.

For the advanced programmer, Extended BASIC, Assembler, Pilot, and Pascal are available.

## **Specifications**

CPU: 9900 Family, 16-bit microprocessor, plus 256-byte scratchpad RAM.

Memory: Initial system combined memory: 42K bytes.

Internal ROM memory supplied: 26K bytes. External ROM memory: (*Solid State Software™* Command Modules) Up to 36K bytes each. RAM memory supplied: 16K bytes.

Keyboard: 48-key staggered Qwerty, full travel  
Sound: 5 octaves, 3 simultaneous tones plus noise generator. From 110 Hz to beyond 40,000 Hz.

Power: 110 V, 60 Hz, 20 W. Wall mounted console transformer, UL listed 8' power cord.

I/O: Composite video and audio output for monitor. Interface for up to 2 audio cassettes. 44-pin peripheral connector. System memory and address signals available at peripheral connector. Remote control interface.

Built-in Software: 14K byte BASIC interpreter. Internal Graphics Language interpreter, not user accessible.

Internal 4.4K byte monitor, not user accessible.

Size: 25.9 x 28.1 x 7.1 cm (10.2 x 15.0 x 2.5 in.)

Weight: Less than 2.3 kg (5 lbs)

## **Technology**

CPU Chip (NMOS): TMS9900 16-bit microprocessor. Minicomputer instruction set including hardware multiply and divide. Architecture with 16 general registers. Can address up to 64K bytes of memory. 4 interrupt lines. Video Display Processor

Chip (NMOS): Controls display memory and generates composite video signal. 24 lines of 32 characters with 8 x 8 dot resolution. Provides sixteen colors; white, gray, magenta, light yellow, yellow, light red, medium red, dark red, cyan, light blue, blue, light green, medium green, dark green, black, transparent. Provides 32 sets of 8 characters each with different foreground/background colors.

Addresses up to 16K bytes of RAM for CPU or display.

Sound Controller Chip (I<sup>2</sup>L): 3 voices with 5 octave musical resolution. 15 bit programmable noise source. 100 mW audio drive with 30 db control in 2 db steps. *Solid State Software™* Command Modules. Up to 30K bytes PMOS ROM. Up to 8K bytes NMOS ROM. Simple plug-in module.

## Accessories

### Peripheral Expansion System

Lets you start simple, then gradually build up a sophisticated system by plugging in additional hardware cards. It centralizes most of your hardware in one place, eliminating extra cables and clutter. Accommodates the disk memory system, RS-232 Interface, memory expansion option, and more.

**Disk Memory System:** Stores additional information that you wish to keep and refer to at a later time. It consists of the TI Disk Drive Controller and from 1 to 3 Disk Memory Drives. Handles variable length records, as well as sequential and relative files. Free disk space is automatically reassigned for file allocation.

Comes with a pre-programmed Command Module that supplies disk utilities and file maintenance commands. Up to 90K bytes of information may be stored on each single-sided diskette - double sided drives allow 180K bytes per disk.

**RS-232 Card:** The RS-232 Interface Card, with up to two serial ports, lets you hook up to a wide range of serially formatted accessories. It also has one parallel port to utilize a printer.

**Memory Expansion Card:** Increases the Home Computer's random access memory (RAM) from 16K bytes to 48K bytes. It allows you to run more complicated programs and solve complex problems faster.

**P-Code Card:** Allows the computer to access the UCSD p-System\* and a variety of programming languages, including UCSD Pascal\*, BASIC, and Pilot. High-level languages are compiled to an intermediate language called pseudo-code or p-code. The P-Code Card interprets the p-code instructions, which are then executed by the computer. Solid state implementation of operating system software allows a single drive system to execute Pascal programs and a dual drive system to develop programs.

### Telephone Coupler (Modem)

Allows you to send and receive messages, data, and entire programs through a standard telephone. Lets you communicate with similarly equipped computers at remote locations, and access data bases and software services. Uses the RS-232 Interface and Terminal Emulator II packages.

### Solid State Speech™ Synthesizer

Reproduces human speech electronically — and accurately. Plugs directly into the Home Computer's built-in connectors without external cables. Lets it communicate verbally, ideal for children too young to read the screen. Requires Speech Editor, Terminal Emulator II or other customized command modules that use speech (sold separately). The Terminal Emulator II Command Module provides text-to-speech capability whereby you can listen to data base information or have the computer say anything within your own program.

### Wired Remote Controllers

Let you move objects on screen. Each unit includes an eight-position remote control with top-mounted action button. An important accessory every serious game-player should have.

### 10" Color Monitor

Gives you excellent color resolution (192 x 256 dot density) and a display format for 24 lines of 32 characters. Because our Home Computer connects directly to the video input on the Color Monitor, it eliminates any interference and tuner distortion. You get a picture quality that is far superior to that of normal TV reception.

\*Trademark of the Regents of the University of California, San Diego.

### Limited Warranty

The Texas Instruments TI-99/4A Home Computer Model PHC 004A is covered by a 90-day limited warranty against defects in materials and workmanship. This warranty covers only the hardware portion of the Home Computer. See *User's Reference Guide* for complete warranty text. TI cannot and does not warrant that the TI Home Computer

programs and book materials will be free from error or will meet the specific requirements of the user. The user assumes complete responsibility for any decisions made or actions taken based on information obtained using these programs and book materials, which are made available solely on an "as-is" basis (see owner's manual).

*Texas Instruments invented the integrated circuit, microprocessor and microcomputer. Being first is our tradition.*

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Printed in U.S.A.

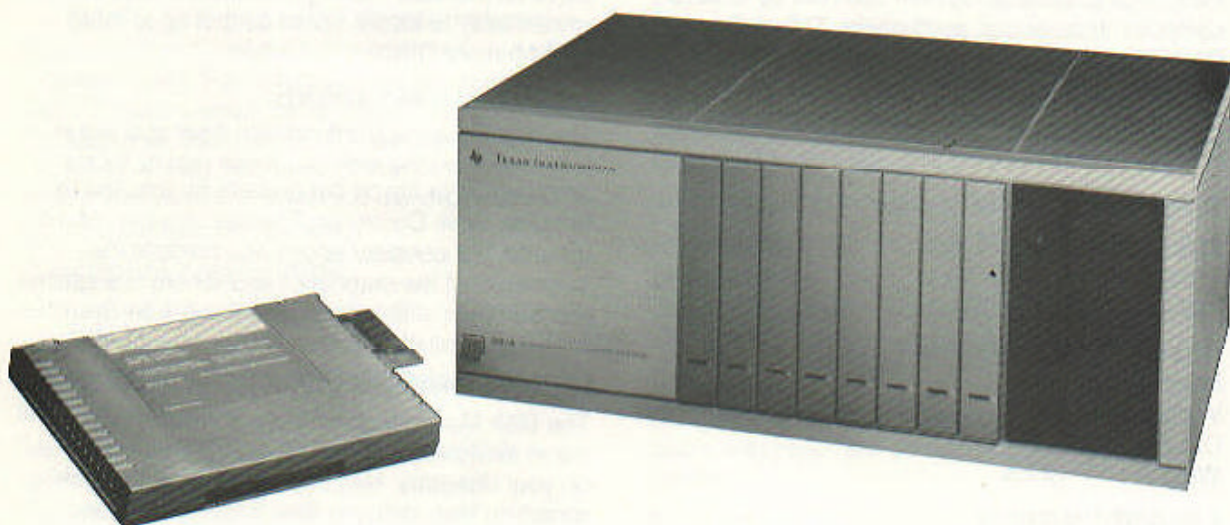
103440

Texas Instruments  
Home Computer Accessory



## Peripheral Expansion System and Accessory Cards

*Peripheral Expansion System, Model PHP 1200. RS-232 Card, Model PHP 1220. Disk Controller Card, Model PHP 1240. Expansion Box Disk Drive, Model PHP 1250. Memory Expansion Card, Model PHP 1260. P-Code Card, Model PHP 1270.*



- Simplified, space-saving system expansion.
- Centralized convenience.
- Eliminates "cable-clutter."
- Makes It easy to customize your system with a selection of plug-in accessory cards.
- Choose now from RS-232 Interface, Disk Memory System, Memory Expansion (RAM), P-Code language access — with room for more as they become available.

The TI Peripheral Expansion System allows you to add accessories to your computer system in a single, convenient location by inserting them in the peripheral system itself. The package includes the

Peripheral Expansion System and the Peripheral Expansion Card with a connecting cable, which combine to serve as an interface between the computer console and the accessories in the unit.

With the Peripheral Expansion System attached to your TI Home Computer, you can:

1. Increase the capabilities of your computer system with a variety of accessories in the form of slide-in cards (sold separately).
2. Install a TI Disk Memory Drive (sold separately) in the compartment designed for this purpose.
3. Connect the unit to the computer via cable to provide flexibility in the placement of your equipment.

The result is a simplified method for expanding your computer system, which centralizes most of your equipment in one place and reduces the space requirements necessary for setting up the system.

By simply removing the top of the unit and sliding the accessory cards into the slots provided, the Peripheral Expansion System can hold up to seven computer accessories, such as the TI Disk Drive Controller Card, the TI RS-232 Interface Card, the TI Memory Expansion Card, and the TI P-Code Peripheral Card, in addition to the Peripheral Expansion Card.

### Power Requirements

Voltage: 115 VAC  
Frequency: 60 Hz  
Power: 150 Watts

### Physical Characteristics

Height: 7.0"  
Width: 17.5"  
Depth: 11.0"  
Weight: 18 lbs

### Limited Warranty

The Texas Instruments Peripheral Expansion System Model PHP 1200 is covered by a 90-day limited warranty against defects in materials and workmanship. See owner's manual for complete warranty text.

## Disk Memory System

The Texas Instruments Disk Memory System is a powerful combination of computer hardware and software that allows you to store and retrieve data quickly and accurately on 5¼ inch single-sided or double-sided diskettes (sold separately). The most important use of the disk system is storage and retrieval of information via TI BASIC programs.

**SAVE PROGRAMS:** Each single-sided diskette holds over 737,000 bits of information while a dou-

ble-sided diskette holds over 1,474,000 bits of information. As an example, you can store about 100 BASIC programs, each 50 lines long, on a single-sided diskette.

**STORE AND RETRIEVE DATA:** You can store data that is accumulated when your programs are run. One single-sided diskette can hold about 90,000 characters and a double-sided diskette can hold twice as many characters.

**UPDATE DATA:** You can, through a BASIC program, update the information in your files so that they contain the latest, most accurate data.

### DISK CONTROLLER CARD

The Disk Controller Card tells a disk drive where to position the magnetic head in order to read or write information properly. The controller also puts an index on the disk, making the data that has been written easy to locate. It can control up to three Disk Memory Drives.

### DISK MEMORY DRIVE

The disk drive reads information from and writes information on the diskette. It can rapidly locate any position or file on the diskette as directed by the Disk Drive Controller. The disk drive spins the diskette at a constant speed and controls the movement of the magnetic head. There is a special compartment in the Peripheral Expansion System for easy installation of one TI Disk Memory Drive.

### DISK MANAGER COMMAND MODULE

The Disk Manager *Solid State Software*™ Command Module helps you maintain the information on your diskettes. Naming and renaming diskettes, renaming files, deleting files, copying files, and copying diskettes all can easily be performed with the Disk Manager Module plugged into the computer console.

The Texas Instruments disk system represents a major advance over other systems. Because the control software needed for the disk system is in permanent ROM, in the Disk Manager Command Module, and in the controller, the disk system uses a relatively small amount of working space in the computer's available memory (RAM).

### Limited Warranty

The Texas Instruments Disk Controller Card Model PHP 1240 and Disk Memory Drive Models PHP 1850 and 1250 (Include Disk Manager Command Module) are covered by a 90-day limited warranty against defects in materials and workmanship. See owner's manual for complete warranty text.



## RS-232 Card

The Texas Instruments RS-232 Interface Card is a communications adapter that enables you to connect a wide range of accessory devices to your TI Home Computer. You can list programs on a printer, send and receive data from a terminal, exchange TI BASIC programs directly between TI Home Computers, and much more. By adding the Telephone Coupler (Modem) and the Terminal Emulator II *Solid State Software*™ Command Module, your Home Computer can communicate with other computers and terminals over ordinary telephone lines. With an optional cable, two RS 232 ports are available for independent usage. You can access an office computer or time-sharing network from your own home, using your TI Home Computer as a remote terminal to send and receive data. And you can write TI BASIC language programs which use EIA RS-232C compatible devices, including printers, plotters, video display terminals, and other computers. The RS-232 Interface Card has a parallel I/O feature which handles both input and output data in an 8-bit format. The parallel I/O port interfaces directly with printers that accept data in a parallel format which saves you the expense of an RS-232 Interface on the printer.

### Functional capabilities.

All functions are programmable from a BASIC program.

### Software programmable hardware functions.

Baud rates: 110, 300, 600, 1200, 2400, 4800, or 9600.

Number of data bits: 7 or 8.

Parity: none, odd, or even.

Number of stop bits: 1 or 2.

### Software programmable software functions.

Carriage return: Automatically added to the end of all output records unless disabled. If disabled forces Nulls and Linefeed below to be disabled also.

Nulls: Normally disabled but if enabled will automatically add 6 null characters between the carriage return and the linefeed characters.

Linefeed: Automatically added at end of record for D/V.

Echo: Automatically echoes all received data on a particular port back to the device connected to that port. Also enables the remote terminal device to edit the data record before the console receives it.

Parity: Normally disabled but if enabled will check

for parity errors and generate an error code if any are found.

Data bits: 7 or 8

### BASIC language interface.

The RS-232 Interface contains all the software necessary to interface with the TI Home Computer File Management System and is controlled from TI BASIC. The OPEN, CLOSE, INPUT, PRINT, OLD, and SAVE statements can be used to input and output data through the two ports of the RS-232. The INPUT and PRINT statements can input and output data to a terminal.

The LIST command can produce a printed copy of a TI BASIC program. The OLD and SAVE commands can transfer a copy of a TI BASIC program from one TI Home Computer to another.

### Peripheral connection.

One serial port and one parallel port (Electronic Industries Association RS-232C standard). Connection is by means of cables using EIA RS-232C standard 25-pin male connectors.

Seven signals are used:

SERIAL DATA IN	DATA CARRIER DETECT
SERIAL DATA OUT	DATA TERMINAL READY
CLEAR TO SEND	SIGNAL GROUND
DATA SET READY	

### EIA data.

Data is serialized and shifted to EIA (RS-232C) levels with baud rate selectable under program control.

### Protocol.

ASCII.

### Power requirements.

Voltage: 115 vac.

Frequency: 60 Hz

Power: 20W

### Physical characteristics.

Length: 25.9 cm (10.2 inches)

Width: 17.0 cm (6.7 inches)

Height: 7.1 cm (2.8 inches)

Weight: 1.0 kg (2.2 lbs)

### Limited warranty.

The Texas Instruments RS-232 Interface Card Model PHP 1220 is covered by a 90-day limited warranty against defects in materials and workmanship. See Owners' Manual for complete warranty text.

## Memory Expansion Card

The Texas Instruments Memory Expansion Card increases the memory capabilities of the TI Home Computer. The card adds 32K bytes of Random Access Memory (RAM) to the 16K bytes of RAM available with the computer. This expanded memory is designed for use with TI Extended BASIC, Editor/Assembler, TI LOGO, or any other *Solid State Software*™ Command Module designed to utilize the additional memory, as well as the UCSD p-System\*. (For information on whether or not the memory card can be used with a module, refer to the module owner's manual.)

To utilize the Memory Expansion Card, the TI Extended BASIC Command Module or another specialized Command Module MUST be inserted in the computer console. The TI BASIC computer language which is built into the computer and most software packages cannot make use of the memory card.

### Limited Warranty

The Texas Instruments Memory Expansion Card Model 1260 is covered by a 90-day limited warranty against defects in materials and workmanship. See owner's manual for complete warranty text.

## P-Code Card

The Texas Instruments P-Code Card allows the computer to access the UCSD p-System\* and a variety of programming languages, including UCSD Pascal\*, BASIC, and Pilot. The P-Code Card is designed to work with the TI Home Computer, a TI Color Monitor (or the TV Adapter attached to a television set), the TI Peripheral Expansion System, the TI Memory Expansion Card, the TI Disk Memory System with up to three disk drives, and a diskette or cassette tape that contains source programs, object programs, raw data, and/or document text. A printer can also be attached to your system to increase its capabilities and applicability.

The P-Code Card allows your computer to execute programs written in several high-level languages. With the P-Code Card, the UCSD p-System's high-level languages such as Pascal and BASIC, are compiled to an intermediate language called pseudo-code or p-code. The P-Code Card interprets the p-code instructions, which are then executed by the computer.

The simplest configuration for running the UCSD p-System requires the TI Home Computer, TV Adapter attached to a television set, the TI Peripheral Expansion System, the Memory Expansion Card, the P-Code Card, and either a cassette recorder or the Disk Drive Controller Card with a Disk Memory Drive. With this equipment you can either develop programs of your own or run existing programs.

Editor, Filer, Compiler, Assembler, Linker, and Utilities capabilities are available on TI Diskettes (sold separately).

### Limited Warranty

The Texas Instruments P-Code Card Model 1270 is covered by a 90-day limited warranty against defects in materials and workmanship. See owner's manual for complete warranty text.

\*UCSD p-System is a trademark of the Regents of the University of California.

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**TEXAS INSTRUMENTS**  
INCORPORATED

Texas Instruments  
Home Computer Accessory



## 10-inch Color Monitor

### Model PHA 4100



- **Excellent color resolution**
- **Superior picture quality**
- **Compact, space-saving design**

The Texas Instruments Color Monitor is a high quality unit specially matched for use with the TI Home Computer. The display format is 24 lines of 32 characters. The monitor provides excellent color resolution (192 x 256 dot density) and picture quality. The Home Computer connects via cable directly to the video input on the Color Monitor

which eliminates the chance for interference and distortion from a tuner. Therefore, the picture quality will be superior to pictures acquired using a normal home TV set as a monitor. Built-in TEST switch allows quick functional verification of video circuits in the monitor.



## Specifications

**Screen Size:** 25.4 cm (10 inches) diagonal (Min.).

**Video Input:** 1 Vp-p Nominal NTSC Composite Video through standard miniature phone (RCA type) jack (75 ohm impedance)

**Audio Input:** 1 to 2 Vp-p signal level through standard miniature phone jack

**Horizontal Frequency:** 15.750 Hz

**Vertical Frequency:** 60 Hz

**Controls** OFF ON switch and volume control  
SHARPNESS control  
TINT control  
COLOR LEVEL control  
HEIGHT control  
CONTRAST control  
BRIGHTNESS control  
V-HOLD control  
H-HOLD control  
TEST switch

**Power Requirements:** Voltage: 120 Vac  
Frequency: 60 Hz  
Power: 63W

## Physical Characteristics

**Height:** 27.5 cm (10.75 inches)  
**Width:** 29.7 cm (11.75 inches)  
**Depth:** 32.3 cm (12.75 inches)  
**Weight:** 10.0 kg (22 lbs)

This Color Monitor does not receive normal television channels.

## Limited Warranty

All parts of this Color Monitor except the color picture tube are warranted from the date of the original purchase by the consumer for a period of three (3) months. The color picture tube is warranted for a period of two (2) years from the date of the original purchase by the consumer. See Color Monitor Operating Guide for complete warranty text. THIS TEXAS INSTRUMENTS COLOR MONITOR WARRANTY EXTENDS TO THE ORIGINAL PURCHASER OF THE PRODUCT.

*Texas Instruments invented the integrated circuit, microprocessor and microcomputer. Being first is our tradition.*

**TEXAS INSTRUMENTS**  
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***A Comparison of the  
TI-99/4A Home  
Computer to other  
Personal Computers***

## A Comparison of Personal Computers

	<b>TI-99/4A</b>	<b>TRS-80 COLOR</b>	<b>ATARI 400</b>	<b>ATARI 800</b>
<b>Retail Price</b>	\$300-\$350	\$399	\$330-\$400	\$700-\$750
<b>Read Only Memory (ROM)</b>	26K	8K	10K	10K
<b>Random Access Memory (RAM)</b>	16K	4K	16K	16K
<b>Maximum RAM</b>	52K	32K	16K	48K
<b>Keyboard</b>	48-Key Typewriter	53-Key Calculator- style buttons	61-Key Touch- sensitive	61-Key Typewriter
<b>Languages</b>	BASIC, Extended BASIC, Assembler, Pilot, Pascal, TI LOGO	BASIC, Extended BASIC	BASIC, Pilot, Pascal, Assembler	BASIC, Pilot, Pascal, Assembler
<b>Color</b>	Yes (16)	Yes (8)	Yes (16)	Yes (16)
<b>Sound</b>	3 Voices, 5 Octaves	1 Voice	4 Voices, 4 Octaves	4 Voices, 4 Octaves
<b>Screen Display</b>	32x24	32x16	40x24	40x24
<b>Graphic Resolution</b>	256x192	64x32 up to 256x192	280x192	280x192
<b>CPU/MPU</b>	TMS-9900 16-bit	6809-2 8-bit	6502 8-bit	6502 8-bit

## A Comparison of Personal Computers

	<b>COMMODORE VIC-20</b>	<b>SINCLAIR ZX80</b>	<b>APPLE II PLUS</b>	<b>IBM</b>
<b>Retail Price</b>	\$260-\$300	\$150	\$1200-\$1250	\$1900-\$2200
<b>Read Only Memory (ROM)</b>	16K	4K	16K	40K
<b>Random Access Memory (RAM)</b>	5K	1K	16K	48K
<b>Maximum RAM</b>	32K	16K	48K	192K
<b>Keyboard</b>	66-Key Typewriter	40-Key Touch- sensitive	52-Key Typewriter	83-Key Typewriter
<b>Languages</b>	BASIC, Assembler	BASIC	BASIC, Pascal, FORTRAN, CP/M, Pilot, Assembler, APPLE-LOGO, COBOL	BASIC, Pascal, FORTRAN
<b>Color</b>	Yes (16)	No	Yes (16)	Yes (16)
<b>Sound</b>	4 Voices	No	1 Voice	1 Voice
<b>Screen Display</b>	23x22	32x23	40x24	40x24 or 80x24
<b>Graphic Resolution</b>	184x176	64x46	280x192	320x200 or 640x200
<b>CPU/MPU</b>	6502A 8-bit	Z80A 8-bit	6502 8-bit	8086 16-bit

## **Key Points in Selling TI-99/4A**

1. TI Reputation
  - a. Quality
  - b. Innovation
2. Ease of Use—over 50 *Solid State Software*™ Command Modules
3. Most *Solid State Software*™ programs available
4. Synthesized Speech Capability—not available on any other personal computer
5. Color, Sound, Music, and Graphics
6. Incorporates color, sound, music, and speech in same program
7. Unmatched Expandability
8. Wide Selection of Programming Languages
  - a. Novice: BASIC
  - b. Children: LOGO
  - c. Advanced: Pascal, Extended BASIC, Assembler
9. Information Access Capabilities
  - a. TEXNET
  - b. Interface with larger computer systems
10. Best Value for Your Computing Dollar
  - a. Most memory for the money
  - b. Best color, sound, music, and graphics resolution for the money
  - c. Most languages for the money
  - d. Best screen display for the money
  - e. Most expandability for the money
11. Comprehensive Product Support
  - a. In-store demonstrations
  - b. Exchange Centers
  - c. 99/4A Newsletter
  - d. Toll-free Hotline
  - e. 99'ER Magazine
  - f. Numerous users groups
  - g. 1000+ software programs from independent sources

## **Tips for Retail Sales Personnel**

1. TI-99/4A Display
  - a. Set up in high traffic area
  - b. Keep operational at all times
  - c. Keep a stock of all software/peripherals
2. Use Bill Cosby VCR Tape
  - a. Draws a crowd
  - b. Demonstrates briefly most everything about system
3. Literature
  - a. Have enough Slim-Jim's available
  - b. Know how to explain Software Directory
  - c. Know how to use retail Demonstration Guide
4. TI Support
  - a. Toll-free Hotline: Have number available (800-858-4565) or (800-692-4279) within Texas
  - b. TI Exchange Center: Have address available of nearest one
5. TI-99/4A vs. Competition: Know TI strengths
  - a. vs. Commodore VIC-20
  - b. vs. Atari 400/800
  - c. vs. Apple II
  - d. vs. Radio Shack TRS-80 Color Computer

## ***Product Comparisons***

TI-99/4A VERSUS

RADIO SHACK TRS-80  
COLOR COMPUTER

COMMODORE VIC  
COMPUTER

ATARI 400

ATARI 800

APPLE II PLUS

# TI-99/4A VS. RADIO SHACK TRS-80 COLOR COMPUTER

## TI-99/4A STRENGTHS

- 48 key typewriter-style keyboard (53 key calculator-styled buttons on TRS-80)
- \$300-\$350 retail price for 16K RAM (TRS-80 selling at \$399 comes with 4K RAM; 16K RAM costs \$200 extra — \$599 total)
- Excellent Expandability
  - 52K maximum RAM memory (32K on TRS-80)
  - Able to use up to 3 disk drives (TRS-80 can handle only 1)
  - Extended BASIC, Assembler, Pilot, Pascal, and LOGO available (only Extended BASIC available on TRS-80)
- Speech capability (not available on TRS-80)
- 16 colors (8 on TRS-80)
- Sound/music capability of 3 voices, each having 5 octaves (only 1 voice on TRS-80)
- Over 50 *Solid State Software*™ Command Modules (27 available for TRS-80)
- 1000+ software applications available now from TI and independent sources
- Unmatched Product Support Program
  - 1000+ teacher demonstrators
  - Nationwide network of users' groups
  - Users' Newsletter
  - 99'ER Magazine
  - Toll-free assistance phone number
  - 42 TI Exchange Centers

# TI-99/4A VS. APPLE II PLUS

## TI-99/4A STRENGTHS

- \$300-\$350 retail price for 16K RAM (APPLE II PLUS sells at \$1200-\$1250 for 16K RAM)
- Speech capability (None available on APPLE II PLUS)
- Sound/music capability of 3 voices, each having 5 octaves (Only 1 voice on APPLE II PLUS; music capability optional at extra cost)
- Over 50 *Solid State Software*™ Command Modules (None available for APPLE II PLUS)
- Unmatched Product Support Program
  - 1000+ teacher demonstrators
  - Nationwide network of users' groups
  - Users' Newsletter
  - 99'ER Magazine
  - Toll-free assistance phone number
  - 42 TI Exchange Centers
- 16-bit microprocessor (8-bit in APPLE II PLUS)

# TI-99/4A VS. COMMODORE VIC-20

## TI-99/4A STRENGTHS

- \$300-\$350 retail price for 16K RAM (VIC-20 unit selling at \$250-\$300 comes with 5K RAM; 16K RAM costs \$100 extra — \$360-\$400 total)
- Excellent Expandability
  - 32K maximum RAM memory (32K on VIC-20)
  - Extended BASIC, Assembler, Pilot, Pascal, and LOGO available (only Assembler available on VIC-20)
- Speech Capability (not available on VIC-20)
- Screen display size of 32 characters x 24 rows (only 23 x 22 on VIC-20)
- Graphic resolution of 256 dots across by 192 dots down (184 x 176 on VIC-20)
- Over 50 *Solid State Software*™ Command Modules (15 available for VIC-20)
- 1000+ software applications available now from TI and independent sources
- Unmatched Product Support Program
  - 1000+ teacher demonstrators
  - Nationwide network of users' groups
  - Users' Newsletter
  - 99'ER Magazine
  - Toll-free assistance phone number
  - 42 TI Exchange Centers

# TI-99/4A VS. ATARI 800

## TI-99/4A STRENGTHS

- \$300-\$350 retail price for 16K RAM (ATARI 800 sells at \$700-\$750 for 16K RAM)
- Speech capability (none available on ATARI 800)
- Over 50 *Solid State Software*™ Command Modules
- 1000+ software applications available now from TI and independent sources
- TI LOGO
- Unmatched Product Support Program
  - 1000+ teacher demonstrators
  - Nationwide network of users' groups
  - Users' Newsletter
  - 99'ER Magazine
  - Toll-free assistance phone number
  - 42 TI Exchange Centers
- 16-bit microprocessor (8-bit in ATARI 800)



# TI-99/4A VS. ATARI 400

## TI-99/4A STRENGTHS

- 48-key typewriter-styled keyboard (flat touch-sensitive keyboard on ATARI 400)
- BASIC programming language built into console (\$60 extra on ATARI 400)
- Excellent Expandability
  - 52K maximum RAM memory (16K on ATARI 400)
  - Able to use up to 3 disk drives (no disk system available on ATARI 400)
- Speech capability (not available on ATARI 400)
- Over 50 *Solid State Software*™ Command Modules (15 available for ATARI 400)
- 1000+ software applications available now from TI and independent sources
- Unmatched Product Support Program
  - 1000+ teacher demonstrators
  - Nationwide network of users' groups
  - Users' Newsletter
  - 99'ER Magazine
  - Toll-free assistance phone number
  - 42 TI Exchange Centers

## 20 Most Commonly Asked Home Computer Questions

**1. Question: Will it drive a large printer?**

**Answer:** Yes. The 99/4A working with the RS232 Interface unit will drive any printer that can be driven via the RS-232 standard. This includes most current line printers, such as the OMNI 810, which is made by TI, and other printers which are on the market. In addition, the RS232 Interface Card features a parallel interface for those printers which do not use RS-232.

**2. Question: Can you print the contents of any screen?**

**Answer:** The answer to this is no. However, a TI BASIC program can be written that will print the contents of a screen. It is now possible also to print the contents of some screens generated by Command Modules.

**3. Question: Can I do fine line graphics?**

**Answer:** Yes. The resolution of the screen is 32 characters by 24 characters. We can break that down a step further in that each character consists of an eight-by-eight dot matrix. So that comes out to a final resolution of 32 times 8, which is 256, by 24 times 8 — 192. Any character that can be defined in an eight-by-eight dot matrix can be put on the screen and called by a character number, which allows for the generation of all sorts of graphic elements. The 99/4A can do dot-addressable (bit-map) graphics with specialized software.

**4. Question: Will the cost come down like the calculator did?**

**Answer:** The cost will conceivably reduce slightly. As we are able to make more and more units, we do naturally come down a cost learning curve. However, the large amount of hardware (including circuit board and plastic tooling) contained in the Home Computer will keep it from following the same behavior as calculator pricing. The price should come down a little, but not nearly like that on calculators. The important thing to remember is: *If you wait around for the cost to come down drastically, you may be waiting forever*, and in the meantime, you are not able to capitalize on the powerful benefits of owning a Home Computer.

**5. Question: Will it be obsolete next month?**

**Answer:** An emphatic no. The 99/4A is designed to support a wide variety of peripheral devices which add to its function and usefulness. Therefore, when a new peripheral comes out, you simply plug it into the 99/4A and it performs the function of that new peripheral.

**6. Question: What is the warranty like?**

**Answer:** If the computer fails within the first ninety days because of defective materials or workmanship, it will be replaced free of charge. If a failure occurs after the ninety-day period, the computer will be repaired for a small fee, depending on the severity of the problem. There are also 42 Exchange Centers located around the United States where, for a small fee, you can exchange your computer for a working computer. These are the same repair and exchange centers that currently handle our calculator products.

For specific information about repair charges, call 800-858-4565 (toll free within the contiguous United States except Texas) or 800-692-4279 within Texas.

**7. Question: Can I edit or change Solid State Software™ Command Modules?**

**Answer:** No. The *Solid State Software™* modules are programs locked in integrated circuit chips. The user cannot alter them at this time. However, the Mini Memory module is designed so that it can be altered.

**8. Question: Why are there no programs for businesses?**

**Answer:** The TI-99/4A was designed from the very outset to be a true *home-use* computer. This does not rule out its application in many *small* business situations. In fact, independent sources have written *many* small business applications (see Applications Directory). However, your major software thrust will continue to be geared for the home.

**9. Question: Why should I buy this computer instead of the competition (Apple, TRS80, Atari, etc.)?**

**Answer:** There are several reasons. First of all we have, without a doubt, the *easiest* computer to use that's available on the market today. The use of *Solid State Software™* Command Modules allows a novice to use the computer with a minimum of effort and experimentation. Second, we believe we offer an unparalleled *record of service to consumers*. Texas Instruments has for years been in the business of bringing high-powered technology into the home (much longer than anyone else). Thus, it's natural to expect TI to bring out the Home Computer. We stand behind our products after the sale by providing things like *quality service, user newsletters, and continuing software support*. Third, we are a solid, well-established, well-capitalized company. Incidentally, as this was being written, we announced our first *billion dollar sales* quarter. We *will* be around next year to support buyers of the Home Computer.

**10. Question: What microprocessor do you use, and what are its advantages?**

**Answer:** We use the *9900 series microprocessors*. It allows us to operate and do some very sophisticated things as far as signal processing is concerned, especially when using peripheral devices. Why did we use that particular microprocessor? The 9900 series microprocessor is a 16-bit microprocessor and currently the state of the art. The 16-bit TMS9900 microprocessor makes the computer more accurate, allows two computer words to be processed at a time, has more memory storage, allows use of disk drive with 16K RAM, and is exponentially more powerful than an 8-bit microprocessor.

**11. Question: Is system documentation (schematics) available?**

**Answer:** Yes. Documentation can be obtained by writing to:

Texas Instruments  
c/o The Dealer Parts Department  
P.O. Box 53  
Lubbock, TX 79408

**12. Question: What is the power consumption of the Home Computer and the monitor?**  
**Answer:** The power consumption of the Home Computer plus the monitor is about the same as a 150-watt light bulb.

**13. Question: Why is your BASIC so slow?**  
**Answer:** TI BASIC is not so slow. We've run benchmark tests using the Kilobaud Magazine benchmarks and several others. The results show our BASIC to be neither the fastest nor slowest available.

**14. Question: Why so much "bad press" lately?**  
**Answer:** Many recent articles have appeared that contrast the TI-99/4A to computers intended primarily for hobbyists or business use. The claim is that currently the market is for computers that serve *these* markets, and that by building a computer for the *home* we've missed the boat. In fact, we didn't miss anything. We know that the home market for computers will be much slower to mature than the currently active hobbyist and business markets, and it also will be much larger. The home market is one we know well, and we have dealt with it for years with our calculators and learning aids. (Incidentally, many members of the press were once skeptical that *calculators* would ever sell into the home — they would be used only by accountants and businessmen in offices.) We will continue building products for the home market, and the TI-99/4A is our personal computer for that market. For a while we can certainly understand some of the short-term skepticism of the press. In the long run, we expect they'll see things differently.

**15. Question: Can you connect it to large computer data bases?**  
**Answer:** Yes. With the use of the telephone modem, Terminal Emulator II Command Module, and the RS232 Interface, our computer can be connected to large computer data bases such as MICRONET, THE SOURCE, COMPUSERVE, DOW JONES, etc. Information about these data bases can be obtained at your local computer store.

**16. Question: What cassette recorders can be used to store data on the 99/4A?**

**Answer:** G.E. Model 3-5154A (Silhouette-2)  
Cost: \$40-50  
Features: Tape counter  
G.E. Models 510F & G  
Cost: \$30-50  
Features: No counter  
Panasonic Model 2309A  
Cost: \$40-50  
Features: Tape counter  
Realistic model CTR-21A  
Cost: \$50-70  
Features: Tape counter, cue review, record meter

**17. Question: Can the computer do things for my home — turn on lights, regulate the temperature, control burglar alarms, etc.?**

**Answer:** At the present time the only things standing between these sorts of functions and our current computer are simple peripheral devices that will plug into the computer.

**18. Question: Is it durable? Will it withstand electrical shock via static electricity, keyboard abuse, etc.?**

**Answer:** We have produced what is probably the most durable computer that's ever been made. We applied all we have learned from our years of experience in building handheld calculators to the 99/4A. For example, the computer has been designed to withstand a static electricity shock in excess of 50,000 volts with no physical damage to the computer. The only change occurring at that particular point is that some data in RAM may be changed or lost. As far as physical abuse to the keyboard, it's probably one of the most rugged keyboards that's ever been put into any computer. The key mechanism itself was designed to be used in a desk top commercial calculator. These calculators receive thousands of keystrokes per day. We have a very durable, very hard-to-hurt computer. It's been designed to operate under conditions far in excess of those you would ever encounter in your home.

**19. Question: How much information can I store on a diskette?**

**Answer:** Our current disk system will store 87K bytes of data, which is about the same as 87,000 keystrokes of information (per diskette, per drive).

**20. Question: Is the new Peripheral Expansion System compatible with the old "train" peripherals?**

**Answer:** Yes, the new peripheral system will plug into the 99/4A console or into the old-style peripherals.