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Whenever words in this booklet are in italics, their definitions will be found in the Glossary.

Using this booklet

To help you (1) decide how much help a home computer can be to you, and (2) choose the computer and accessories that best meet your needs, this booklet is full of check-off lists and questions. As you go through it, check off and underline those that will help as you shop. Your computer dealer can use the results to recommend a system for you.

You will find technical terms and computer industry jargon in italics. These words are defined in the Glossary at the end of the booklet.

When you finish reading you will know generally what types of *hardware* and *software* are right for you. But there are a lot of brands available today, so you'll still have to look carefully. As you would when buying a stereo or a car, spend time with your dealer, ask questions, and get free demonstrations.

In addition to this booklet and your computer dealer, there are many other sources of information. Try some of these:

- Visit a user's group (a computer information-sharing club of people who own the brand and model computer.) Computer retailers have lists of them.
- Read newspaper columns, books and magazines devoted to personal computers.
- Libraries, newsstands and bookstores are good sources.
- Take a course offered by a computer retailer or a local school
- Attend a computer show. Check computer retailers or newspaper for date, place and time.
- Ask at the school your child attends.
- Check with your friends or business associates who use computers.
- Write to computer manufacturers for information.
- Read directions and reviews of *software* and look over *software* publisher's catalogs available from your computer dealer.

HINT: Before you buy or subscribe, look for computer magazines and books written in language you don't have to puzzle over. And make sure those you select are up to date. New products and new models of older products are coming out all the time.

Q. How do I identify my needs?

A. By deciding what you want a computer to do for you.

You don't need a full-sized, multi-function computer just to balance your checkbook; a calculator will do that nicely. And a stand-alone *word processor*, which is a single-function computer, will do the trick if you need more than a typewriter but less than a personal computer.

Q. What can I do with a multi-function computer?

A. The possibilities are endless. To get an idea how you and your family might make use of one, match your potential uses with those on the checklist on the following page.

Desktop Computer



Business

- Bringing work home from the office
- Personalizing form letters
- Financial planning
- Accounting or statistical analysis
- Keeping client and other business list for quick sorting into categories or for mailing
- Creating charts, graphs, presentations
- Managing projects
- Making a business plan
- Keeping an inventory
- Projecting future expenses and earnings

Educational

- Accessing encyclopedias and other research data
- Searching remote data bank
- Drilling basics like math, reading
- Learning foreign languages, touch typing and other subjects
- Preparing college entrance

Home Management

- Budgeting and checkbook balancing
- Tax return preparation
- Storing and sorting the family calendar, Christmas card list, favorite recipes
- Keeping a household inventory

Personal

- Writing letters and resumes
- Writing a book, a short story, or a poem
- Personal financial management
- Tracking the stock market
- Shopping
- Accessing your bank account to transfer funds, pay bills, or check your balance
- Finding the cheapest airfare and booking your ticket
- Keeping in touch with other computer owners
- Automating your home

Entertainment

- Playing arcade-type games
- Playing adventure games

Playing strategy games
Composing music
Drawing and painting
Simulating flight

Specialties

Making signs and labels
Preparing presentation graphics
Designing bridges, buildings etc.
Telecommunication for the deaf (TDD)
Working in Braille
Publishing books, pamphlets, and newsletters (Desktop Publishing)

**Q. O.K. I have checked off my main uses (and a couple of future interests too).
What next?**

A. Keep referring to that list as you go through this booklet. Once you know your own main use or function, it will be easier to decide.

- Which computer will work best with the *software* you need
- How much *memory* your computer should have
- Which *operating system* is best for you
- Whether you want a full-sized personal computer, a *laptop*, or an even smaller computer

Q. I need a computer so that I can bring work home from the office. I also plan to use it for personal accounting and to help the kids with their school work. Where should I begin?

A. Look first at your main use. You need to be sure that the computer you buy will be *compatible* with the one you use at your office.

Compatibility is important as you make each choice for your computer system. Any *software* or *peripheral hardware* you buy needs to be *compatible* with your computer before it will work properly.

Q. How will I know which products are *compatible* with the computer I choose?

A. Nothing beats trying them out. Check to see if the product you want is labeled for use with your computer—not only the brand, but also the model and *operating system*. If your brand is not listed on the package label, but the retailer assures you the product is *compatible* with your computer anyway, ask for a demonstration and/or a written guarantee that you can return it if you find it doesn't work when you get it home.

HINT: Many manufacturers of computer *peripherals* and accessories publish compatibility booklets that show, for example, which brands of *disks* or *printers* work with which brand of computer. Ask a retail store clerk to look this up if you are not sure or contact the manufacturer (look for an '800' telephone number) for information

Q. Then when I hear someone say two computer products are *compatible*, does that mean they will work together?

A. Maybe. When computer people talk about compatibility they mean, just like everybody else, that *software* and a computer, or a *printer* and a computer, will work together. But there's an exception. Sometimes, in computer jargon, two brands of computers are called *compatible* (or *clones*) when they work the same way, and can use the same kind of *operating system* and *software*.

HINT: Although *clones* are advertised as 100 percent *compatible*, some may not be. *Compatible software* may work, but not *hardware*. Check carefully before you buy.

Q. What is an *operating system*?

A. The *operating system* manages what happens inside your computer.

It lets your *software* program, *CPU*, *disk drive*, *printer* and other *peripherals* all “talk” among themselves. Not all computer brands run on the same *operating systems*.

Q. What do I need to know to choose among the *operating systems* available to me?

A. It gets back to your needs again. Find out two things:

- € Some *operating systems* produce great *graphics*, others are known to work especially well with specific *word processing* or other *software*. Some *operating systems* are easier to learn than others. Your Question: Which *operating system* best meets my basic needs?
- € There are several *operating systems* in use, but some are more popular than others. Most *software* is written to go with popular *operating systems*. Your question: How large a variety of *software* is written for this *operating system*? If you want to share information with other computers, what brands will be able to read the data I produce?

Q. What is the advantage of choosing my *software* before I choose my computer?

A. There are three major advantages.

- € As we discussed above, your choice of *software* may help determine which *operating system* you need. Knowing which *operating system* you want can narrow down the number of computer brands from which you can choose.
- € Your choice of *software* will help determine how much computer storage and *memory* you need.
- € You can more easily determine the best *printer* for your needs.

Q. What is *software*? Is it really soft?

A. No it is not soft. *Software* is so called to set it apart from computer *hardware* (the actual computing equipment). *Software* activates computer *hardware* to make it perform. By changing *software* you can transform your computer from a *word processor* to a financial planner and then to an educational tool.

A *software* program (sometimes called application *software*)—which usually comes on a *floppy disk*—is a set of directions, instructions or processes which tell your computer what to do. It acts with your computer *hardware* like gasoline acts with an engine or electricity with a light.

Q. Are there many kinds of *software*?

A. Yes. Begin by checking off which of the basic kinds you will be using.

- € *Word processing* software used for writing letters, reports, and other printed materials.
- € *Database management* software used for filing such things as names, and addresses of clients or friends, recipes, schedules and so on and sorting them by zip code, major ingredient or date.
- € *Spreadsheet planning* software used for calculating, bookkeeping and other math-related tasks using grid-type paper with columns and rows.
- € *Communications software* used to transfer data from one computer to another, along telephone lines using a *modem*, or with a *null modem cable*.
- € *Graphics* software used to draw pictures, designs, and create slides and transparencies.
- € Games software used, of course, to play games.
- € Utilities software used to make ass copies, speed up processing, transfer data from one computer to another, back up data (make an extra copy in case of data loss), and do many other housekeeping chores quickly and easily.

HINT: Good computer program (*software*) take time to learn. Enrolling in a class will help speed up the process. Your retailer may offer a class or help you find one at a local high school or university.

Q. Are there other kinds of *software*?

A. Yes. Listed are the basic kinds of *software* most commonly used in personal computers. Other *software* programs will help you with tasks ranging from checking your spelling to calculating your income tax.

HINT: Unless copying is prohibited by the manufacturer, make a copy of any new *software* you buy right away. Use the copy as your working tool. Keep the original safe in case of damage to the copy.

Q. Do I need several different pieces of *software* if I want to keep personal and household records as well as write letters and term papers on my computer?

A. Not necessarily. Look for *software* packages which combine functions.



Popular *software* for a small home office or a household combines *word processing* (writing), *database management* (filing), and *spreadsheet* planning (calculating).

Q. Suppose I don't want all three of those functions?

A. Many combinations, known as *integrated software packages*, are available. For example: *graphics* software can be used to add pictures and designs to text written with *word processing* software. You can buy a package with both *word processing* and *graphics* to the text. First though, be sure your computer *supports* this function, and then be careful to select *software* programs that will work together.

Q. Where can I find out more about the different kinds of *software* available to me?

A. Check the list of information sources on page 8. Also, watch for reviews of *software* programs in computer magazines and newspaper computer columns. Ask your retailer for *software* company catalogs.

Q. What else, besides the way I will use it, do I need to consider before buying a *software* program?

A. Here's a checklist of questions to ask:

Hardware needs.

- € Will this *software* run on a computer which is within my budget?
- € Or can a larger, more powerful computer?

Speed.

- € How fast does the *software* respond when I give a command?

Support needs.

- € How easy is the *software* to use?
- € Can I understand the written instructions?
- € Is this a program I can learn on my own or do I need a special class?

- € Is there an “800” number I can call if I need help with the *software* while I am learning to use it?

Compatibility.

- € Which *operating system* does it work with?
- € Will it work with other *software* I might want to use with it?
- € Does it come on *disks* (3 ½” or 5 ¼”) to work with the computer I am considering?

HINT: Software is available in a variety of formats. Two of the most popular, 5 ¼ or 3 ½ inch. Check with the *software* manufacturers, if the software you select is not in the format required by your computer.

Cost vs. benefit.

- € Does the more expensive *software* program have features which I will never use?
- € Can I get free *public domain software* or *shareware* to do the job?
- € What’s the warranty? Can it be returned for a replacement?

Memory requirements.

- € How much of my computer’s *memory* will the *software* use?

HINT: When you are shopping for *software*, bring along a task you expect to do frequently. Ask the salesperson to demonstrate using the task or try doing it yourself before you buy.

Q. Are you saying that a computer with 512K of *memory*, may not be able to handle some *software*?

A. Yes. *Word processing* software may only use 256K, but *desktop publishing* software may use as much as 640K. A 512K computer will handle most basic *software* nicely, but some ‘improved’

Software, with many added features, uses up a great deal of *memory*. We'll discuss *memory* requirements more in Section 6, page 28.

Q. When I buy a computer, what *hardware* is included?

A. Be sure you ask the salesperson that question before you jump at a computer bargain.

Often, a computer comes with a *keyboard*, and a *monitor*. But an advertised bargain, if you do not read the fine print, may include just the *central processing unit (CPU)* where the actual computing is done. A *keyboard* (or a *mouse*), a *monitor*, and a *printer* are basic *hardware* you will probably need with your first computer. These pieces of *hardware* are often call '*peripherals*', for short.

HINT: *Peripherals* are hardware accessories that can be connected to your computer electronically to extend its power, usefulness or your pleasure in using it.

Q. How can I tell whether the *peripheral* I want will work with my computer.

A. If you choose a *peripheral* made by the same manufacturer as your computer, it will usually be labeled so you know whether it will work with your model. Only a few products made for computers (such as *disks*, *data tapes* and *drives*, and some *printers*) are standardized so that they will work with computers made by many different manufacturers. Until you are comfortable about deciding which *peripheral* is *compatible* with your computer, shop where knowledgeable salesperson are available to help you.

HINT: Save cartons and packing materials your computer and *peripherals* come in. You will need them if you move, or if you need to return a *peripheral* to the factory for service.

Q. I see ads for *laptop* and smaller computers. Would one of these make a good home computer?

A. For many a desktop is the best choice for their first computer. But you may be an exception.

Laptops are generally regarded as companion computers to desktops. But as *laptops*, and even smaller-sized computers are being made with larger and larger memories, hard drives, and *expansion slots*, the chances grow greater that home computer users will find *laptops* that meet all their needs. Computers designed to be moved from one place to place now come in sizes and styles ranging from less than five pounds, for the user whose primary requirement is easy portability, to *laptops* which can be detached from desktop computers, for the user who wants portability for traveling and desktop power at home.

HINT: Because you will be unplugging the phone to hook up your *laptop* in a hotel room, you should request a room with *modular phone jacks*. And, so that your *laptop* will work, be sure the hotel phones are not operated through a *digital PBX* system.

Q. What if I want two computers, one for home and one for travel?

A. Keep these criteria in mind when selecting a second computer:

- € *Compatibility* with your desktop computer is critically important when you are selecting a *laptop* computer so you can send information home or retrieve it when you are away.
- € *Weight* should be carefully considered. *Laptops* weigh anywhere from five pounds to more than 15 pounds. Some small computers are less powerful or have less capacity than most desktops. Be sure you know what features you are giving up.

€ Function is critical. If ready availability of information is most important when you are traveling plus the ability to communicate with your home computer but you don't need to input or manipulate data., investigate the smallest computers. They can come preloaded with personal calendars, address and phone selections and space for business or other information you want to have handy addition to providing a link with home base.

Q. What about those small computers I see advertised that hold the whole Bible or an encyclopedia? Can they be linked to a desktop computer?

A. Yes. Some models of these tiny computers come with a cable so that they can be hooked up to a personal computer. Then information can be transferred so that you can, for example, transfer data to a worksheet or a research paper.

Q. How do I go about choosing the right *printer* for my needs?

A. The *printer* (and equipment to use with it) you choose depends on whether you need typewriter quality business letters, or camera-ready copy of *graphics*, and just how much printing you need.

HINT: It is usually better to choose the *software* packages you want and then buy a *printer* that *supports* them.

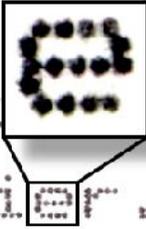
Q. How many kinds of *printers* do I have to choose among?

A. There are four basic kinds.

1. The *dot matrix* printer forms letters with tiny pins that punch a ribbon to create a matrix (pattern or dots). The more pins you have (24 is tops), the better the quality of print. Most *dot matrix* printers will produce *graphics* as well as print. This is the

least expensive and most versatile *printer*, and ribbons for it are relatively inexpensive. These *printers* are noisy in operation. For spreadsheet *software* users, there are a number of wide-carriage models available.

2. *Impact* printers use *daisywheels* (named for their shape) or typewriter style print balls. They produce typewriter-quality business letters or form letters, but not *graphics* *Daisywheel* printers apt to require frequent maintenance.
3. Inkjet printers use a stream of ink sprayed on paper to produce both *graphics* and good quality print. They are usually more expensive, and speedier than *dot matrix* printers and slower and less expensive than *laser printers*. Ink cartridges are quite a bit more expensive than ribbons for *dot matrix* printers.

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mercial supplier.

Letter created by a Dot Matrix Printer



Daisy Wheel

4. The *laser printer* uses a laser beam of light to reproduce images. *Laser printers* are expensive, but they produce very high quality print as well as *graphics*, and they print multiple copies quickly. The toner/developer cartridges which are required are relatively expensive. Lasers are the quickest of the *printers*.

Q. I have heard people talking about *serial* and *parallel* printers. What is the difference between them?

A. It is actually the *printer ports* (where the cable plugs into the *printer*) that are either *serial* or *parallel*. Some *printers* have both kinds of *ports*. The *serial printer port* receives *bits* (one-eighth of a letter) in series from the computer. *Parallel ports*, which accept eight bits or once character at a time, have become *standardized*. You can expect most all *parallel ports* to be the same size and work the same way.

Q. Does it make a difference whether I buy a *serial* or *parallel* printer?

A. Just be sure that you have *parallel interfaces* (plugs that match and work) if you have *parallel ports*. Otherwise, you will need to purchase an *adapter* to make the *interface* work. A knowledgeable retailer can help you select the right *adapter*.



Back of Printer

HINT: Some *serial printers* may be installed only with the *printer* cable made specifically for them. If a cable is not packaged with the *printer* you choose, try out the cable you intend to purchase with the *printer* before you leave the computer store or get a written moneyback guarantee that the equipment you have purchased will work with your computer.

Q. Do I need to buy printing *software* when I buy my *printer*?

A. Printing *software* is needed to send your instructions to the *printer*. This *software*, often called a *printer driver* comes with some computers and is included in most *word processing* or other major software. Your question: Do I need printing *software* to make the computer, basic *software*, and *printer* I have selected work together?

If the answer is yes, make these checks:

- € Be sure the *software* you buy is meant to work with the brand, type, and model *printer* you choose. Seek help in installing it if you are not sure how to do it.
- € Be sure to ask whether the *software* will need to be modified to get the *printer* and the computer working together.

Q. Are there any other features I should look for when I buy a *printer*?

A. Here are some:

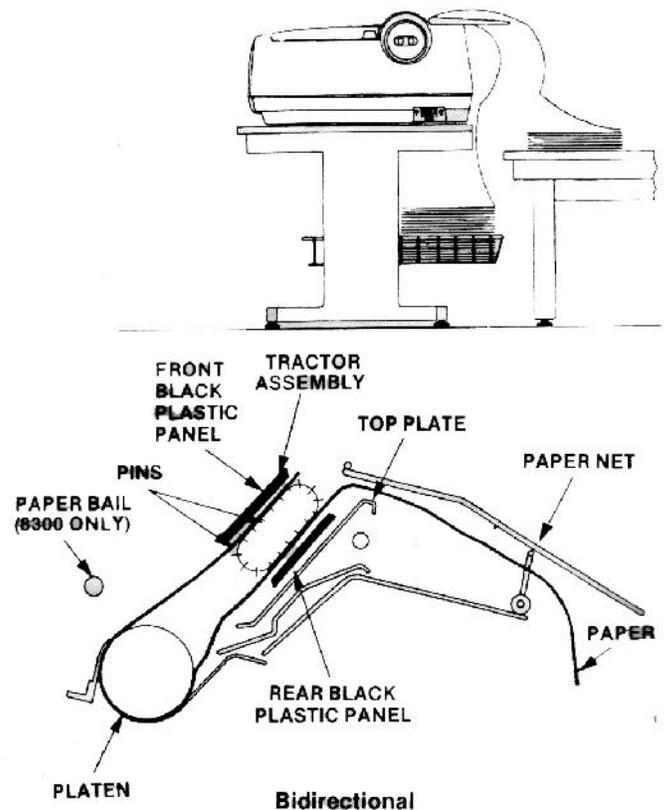
- € The paper feed mechanism

To feed the paper through the *printer* continuously, using standard computer paper with holes on the sides, you will want to pin or *tractor feed*. Both pin and *tractor feeds* have a series of bumps onto which continuous-feed computer paper holes fit, to move it along. A *tractor feed* can also be adjusted to the width

of continuous-feed envelopes, labels and so on. If you will be printing single pages, be sure you can adjust the paper feed to *friction feed*. And if you will be printing on heavier papers like manila envelopes or cards, try running one through the printer's paper feed before you buy.

HINT: If you will be running large numbers of copies, be sure the *printer* you choose has a tray that will hold sufficient continuous-feed paper, or has two trays if you want to print on letterhead and second sheets.

€ **Special letters and symbols.** If you will be using musical notes, mathematical symbols—or other special symbols, be sure the *printer* you select can print them.



Printer with Feed Mechanism

Print sizes. If you want to make flyers or posters with large letters and *graphics*, be sure the *printer* you select will print them.

Emulation modes. Many *printers* have the ability to imitate (or emulate) other popular *printers*. If a *software* package does not list your *printer* as one it works with, but does say it works with another brand of *printer* that your *printer* emulates, then that *software* package will most likely work with your *printer*. When in doubt check with your retailer or the software manufacturer.

Type styles and fonts. Some *printers* can print in a variety of type styles, bold face or italic, underline and create borders and other special effects important in some *word processing* and *desktop publishing* jobs.

HINT: Your *graphics software* must have a *driver* for your *printer* or its *emulation modes* or it probably will not work.

Q. How do I choose a *monitor*?

A. Consider four things: size, quality (or *resolution*), glare, power consumption and heat generation.

Size

The available sizes are 15", 17", 19" and 21" and bigger. Widescreen LCD monitors are also available. In general, 15" and 17" are good for basic document processing and internet surfing. For graphics work and computer aided design job, a 19" or 21" monitor is a better choice.

Quality

There are 2 types of colored monitor in the market. One is the CRT class and the other one is the LCD class. For basic computer use and low cost computing, a CRT monitor is recommended. For detailed and high resolution display, which is also comfortable to the eyes, plus low power consumption, an LCD monitor is advised.

Glare

CRT monitors has more glare than LCD monitors.

Power Consumption

CRT monitors consumes about 80W to 200W from 15" to 21" variety. LCD monitors consume about 1/3 of a CRT monitor.

Heat Generation

Due to the nature of a CRT monitor, it produces more heat because of higher power consumption. In an air conditioned room, the heat generated by the CRT monitor has to be taken into consideration when sizing the capacity of the air conditioner. LCD monitors, by nature, has lower power consumption, therefore the heat generated is also lower.



15" CRT COLOR MONITOR



17" LCD COLOR MONITOR



19" WIDE SCREEN LCD COLOR MONITOR

Q. How large should my *monitor* screen be?

A. Like TV screens, computer *monitors* are measured diagonally. The most uses, is 12 to 14 inches diagonally from corner to corner. But if you frequently use your computer for fancy *graphics*, like engineering drawings, or blueprints (known as *computer-aided design or CAD*) or to prepare text for publication (known as *desktop publishing or DTP*), you should have a *monitor* screen large enough to display a full page of text or *graphics* (16 inches or larger)

Q. What do you mean by ‘*resolution*’?

A. A *high resolution* screen has clear, sharp-edged characters and *graphics*. On a low *resolution* screen, lines and character edges appear jagged. The *resolution* of a *monitor* screen is measured by the number of *pixels* (or picture cells) in the display. The range of screen *resolution pixels* from high to low is:

Low resolution=640 x 200

Good (most common) resolution=640 x 480

High resolution=1024 x 768

Q. Do I need a *high resolution* screen?

A. Yes, if:

- € *Graphics* are a specialty for you. *High resolution* lets you see more detail.
- € You will be doing a lot of *desktop publishing (DTP)*
- € You use your computer for several hours at a time and you need to lessen eyestrain.

HINT: If you will be producing *graphics*, ask if you need to buy a *graphics board* for the *monitor* you choose.

Q. Are there other eyestrain-reducing features in *monitors*?

A. Yes.

- € A treated glass or mesh screen reduces glare.
- € A *monitor* on a tilt/swivel base can be adjusted to eliminate glare.

€ Staring into a dusty, dirty screen several hours a day tires the eyes. A clean screen is a feature you can add yourself! See section 11, page 44 for tips on keeping your screen clean.

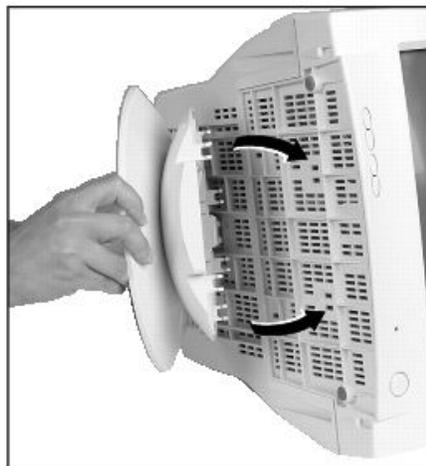
HINT: To reduce glare, try turning off overhead lights and using a desk lamp which does not shine directly on the screen.

Q. Is a computer keyboard different from a typewriter *keyboard*?

A. Computer and typewriter *keyboards* are similar, but an expanded computer *keyboard* can have these other features:



Glass Screen



Tilt-swivel Base w/ Monitor

- € A numeric keypad on the right hand side of the *keyboard*. This arrangement speeds up inputting numbers and the plus (+), minus (-) and other standard computing symbols. Be sure to look for this if you will use your computer mostly for bookkeeping or statistical work. For some computers you can buy a separate *numeric keypad*.
- € Function keys which allow you to give commands like “save”, “print”, “copy” and “delete”.
- € Control keys which allow you, for example, to move the *cursor* where you want it.

Q. Did you say I might use a ‘*mouse*’ instead of a *keyboard*?

A. Yes. For some functions you might use a *mouse* exclusively. Usually though, a *mouse* and *keyboard* are used together. A *mouse* can replace the function and control keys we just discussed.

A *mouse* is usually a small round or box-shaped object which fits in the user’s hand and is moved around on a table or a pad to control the *cursor* on the *monitor* screen and to point to commands, such as selecting print type and size, and formatting documents.



Mouse

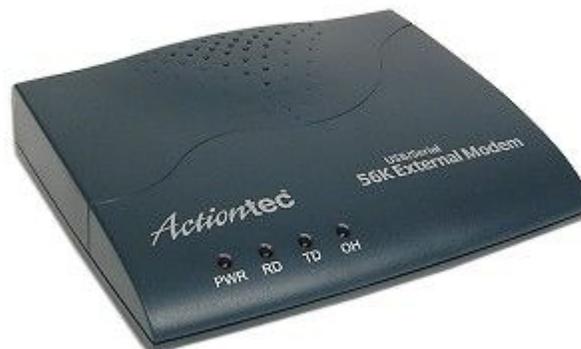
Q. Are there other ways to put information or *graphics* into a computer?

A. Yes. There are many *input devices*:

- € *Monitors with touch screens* allow you to use your computer without a *keyboard*. *Touch screens* are useful for children too young to read, at home shopping and games.
- € An ‘eye-gaze’ computer package utilizes a small *infra red* light on a headset to relay your instructions to the computer.
- € Computer *light pens*, when pointed directly at the screen, give commands in the same way that some VCRs can be programmed by a light pen.
- € You draw on a *digitizer* (or *graphics tablet*) and your work appears on the *monitor* screen.
- € A *reverse mouse*, a *mouse pad*, or a *high resolution mouse* all shorten the distance you must move a mouse to direct a *cursor* where you want it on your *monitor* screen.
- € When you play computer games, a *paddle*, *joystick*, or *trackball* lets you control the movement of objects on the *monitor* screen.

Q. I would like to communicate with other computers. What *peripherals* do I need?

A. A *modem* will connect your computer to a telephone line so it can “talk” to other computers.



Modem

Many computers have either a built-in (internal) *modem* or an *expansion slot* where you can add one. External *modems* can be connected to a *serial port* using a *modem cable*.

Using a *modem* you can access news, shopping services, stock market data, airline schedules and other at home services. You can also send messages to other computer users and dial into thousands of free *bulletin boards* across the country.

HINT: You will pay a fee for information services, sometimes a flat fee, sometimes one based on the amount of time you are *logged on* to the service. Remember too, you will pay for use of long distance telephone lines to and from distant computers.

Q. What will I find on those free *bulletin boards*?

A. You will find messages, announcements of meetings and notices of available *shareware*.

Q. What is *shareware*?

A. *Shareware* is *software*, usually written by freelance computer programmers. You can try it free of charge and only pay for it if you like it. You won't find *shareware* in stores. Computer users who have *modems* can call up *bulletin boards* where *shareware* is offered, choose it and *download* it into their computers over the telephone.

Q. I have been reading about computer *viruses* lately. Would using *shareware* be a way to catch one?

A. Yes, an unscrupulous programmer could pass along a *virus* which would damage your *software* or wipe out your data. A *virus* can be programmed to wait until a certain date or time to invade your data, or until you perform a certain function or task.

Q. Is there any defense against *virus* in *shareware*?

A. There is probably no way to be completely safe, but here are some precautions:

Don't put *shareware* on a *hard disk* where you have data stored. Keep it in a *floppy disk*.

Contact the author of any *shareware* you want to make a permanent part of your *software* library. Ask for original (*virus* free) copy.

Deal with a mail order company which collects and test *shareware*, then offers it to a nominal fee. User groups and publications for computer users can help you find a *shareware* company.

Q. What do I need to know when I select a *modem*?

A. You have a choice of *baud* rates, which control the speed that you can send or receive information over phone lines.

The most commonly used *baud* rates are 300, 1200, and 2400. Even faster *modems* are now on the market.

Q. Is faster better?

A. Faster *modems* cost more. But when you *log on* to information services (like stock market information), if your *modem* has a high *baud* rate, your telephone bill may be lower because your transaction takes less time. A 300 *baud* only *modem* will keep you from tapping into *bulletin boards* that communicate only at high speeds.

HINT: If you decide on a faster *modem*, be sure it also receives information sent at a lower *baud* rate so you can receive information sent only at that speed.

Q. Anything else I should know before selecting a *modem*?

A. Here are some things to think about:

Communications software may come with the *modem* you select. If not, be sure the

separate communications *software* you buy will work with your *modem*.
Modems and *software programs* can let you dial up and *log on* to information services automatically. Those services can also answer automatically, so that your computer can receive *electronic mail* and hold it until you look in your electronic mailbox.

Q. Can a portable *cellular* phone be attached to a *modem* to send and receive data?

A. Yes, *adapters* are available to connect your *modem* to a cellular phone. Ask your car telephone company how this is done.

Q. I have heard that *interference* is sometimes a problem when sending and receiving data over phone lines. How can I prevent it?

A. Check for *interference* protection features before buying either the *modem* or the phone to which you will connect it. Sometime a line filter will help an after-purchase *interference* problem; but your best bet is to contact your computer manufacturer, who can recommend *shielded* or filtered interconnecting cables that will probably help.

Also, be sure your *communications software* has an error-checking feature to assure that information which is corrupted in transmission will be sent again.

Q. How will a *modem* fit into my home office?

A. A *FAX modem* can make your computer into a facsimile machine.

Using it, you can prepare a document on your computer and send it to one or several other computers if they also have a *FAX* equipment. Your computer can also use the *FAX modem* to receive and store messages (while you are using it for another purpose) until you are ready for them.

HINT: A FAX *modem* cost much less than a free standing FAX-machine.

Q. How do I know how much *memory* and storage capacity I need?

A. Start by reading the labels on the *software* you choose.

The label or the instructions that come with your *software* should tell you its size in *kilobytes*. “K” stands for *kilobyte*—which is 1000 *bytes*. This tells you the number of *characters* (letters, numbers, punctuation marks and symbols) included in each *software* program.

HINT: *Software programs* vary widely in the amount of *memory* they use.

Q. How does knowing the size of my *software program* help me?

A. Knowing that the first step in figuring out whether you will have enough *workspace*. To use *software*, you load it into your computer’s *memory*, which is also measured in *kilobytes*.

(Remember, you will have selected a *software program* on the right size *disk* to fit into your computer’s *disk drive*). Subtract the number of *kilobytes* used by your *software program* and the computer’s *operating system* from the *kilobytes*



Fax Machine

of *memory* available in the computer you are considering and you will know how much space you have for the data you will be working on and adding to.

Q. How do I judge my *workspace* needs?

A. Here are some examples:

64K of *memory* will hold about 200 recipes, using about 325 letters and numbers in each one.

Most personal computers being produced today have 640K or more *memory*. This allows ample *workspace* using most basic *software programs*. But if you want to publish your own book, or put out a fancy newsletter with graphics, using *desktop publishing* software, you may need extra *memory* and storage space.

If you are using a computer to keep your financial personal accounts, 32K may be enough *workspace* to keep a year's record on a *floppy disk*. If you are running a small business, your *spreadsheets* may be much larger and you will need more *memory* to give enough *workspace*. For example:

If you have 512K of
Memory

Minus 80K *operating*
System

Minus 300K *spreadsheet*
Software

You have 132K available
Workspace

If you have 1000K
(1 megabytes) of memory

minus 80K *operating*
system

minus 300K *spreadsheet*
software

620K available
workspace

Q. Can I buy a computer with, say 512K of *memory* and then add more *memory* later?

A. Yes. Just be sure the computer you select has *expansion slots* into which extra *memory boards* or *chips* can be plugged. Check with your retailer.

Q. Are there other ways to increase computer capacity?

A. The newest computers which have a *compact disk*—or *CD-ROM*—drive built into them greatly increase available *read-only memory (ROM)*. With one of these computers, you can slip in a CD which holds an encyclopedia, a thesaurus, a dictionary or other research and information sources. Remember though, you can look up information in ROM, but you cannot add to, change, or delete it as you can with *random access memory (RAM)*.

HINT: The technology exists to produce CDs for computers which will allow the users to add to and delete information. When these are available, a too-small *memory* should be a thing of the past.

Q. How can I store *software* and data I want to keep?

A. You can store it outside your computer on *floppy disks* or inside on a *hard disk*.

Q. What is the advantage of storing data and *software* inside my computer?

A. Using a *hard disk*, which comes with many computers nowadays, you eliminate the need to eject the *floppy disk* you are working on from the computer's *disk drive* and insert another each time you want to work on a different project *software*.



RAM Chip

A 20 *megabytes hard disk* (20 million characters of information) will save you time if you frequently switch back and forth between *software programs*. Once these *programs* are on your *hard disk* you can move them quickly in and out of *memory*.

A home office which maintains a large *data base*, does *desktop publishing*, or has more than one computer may need 50-300 *megabytes* of *hard disk* storage space.

Q. If I use basic *software* and work on simple projects one at a time, is a computer's *floppy disk drive* enough for me?

A. Probably. But if you think more space might be handy, consider buying a second *disk drive*, of be sure the computer you select has a *port* or *expansion slot* so an *internal* or *external disk drive* can be added.

Q. Are you saying I can add storage space later if I need it?

A. Usually. Your question: Can a *hard disk drive* be added to this computer? Are there slots or *ports* for *internal* or *external disk drives*?

Most computer manufacturers offer *disk drives compatible* with their computers. Your retail store may also have *disk drives* made to work with more than one brand of computer. The *peripheral disk drive* you select will also depend on which storage units you want to use.

Q. Which *disks*, cassettes, or cartridges should I choose?

A. That depends on the computer you decide to buy.

HINT: If you install a *hard disk drive* in your computer, check to see if you already have a hard drive *controller card* (a *PC board*) in your computer. If not, you need to purchase one to insert into an *expansion slot* to make the *hard disk drive* work.

Floppy disks (also called *diskettes*) are by far the most widely-used storage units. They come in two sizes: 5 ¼ inch and 3 ½ inch. Select the size that fits your computer's *disk drive*, making sure that the label lists your brand and model as *compatible*.

Disk drives read more information on a *floppy disk* somewhat the same way a tape deck reads and plays recorded music from cassettes. The *floppy disk* spins around in the drive and *head* moves across it to locate the data you choose. *Disk drives* also 'write' or record information on *floppy disks*.



Floppy Disk Drive

HINT: The term '*floppy disk*' (or *diskette*) is used for all *disks* made to insert into a computer *disk drive*. If you wonder why a so-called *floppy disk* is sometimes a hard piece of plastic, it is because the flexible part is attached to a metal plate inside the plastic.

Q. You mentioned *cassette tapes* as storage units too. What's the difference?

A. The information on a cassette or *data cartridge* can only be read in sequence. You must begin at the beginning and go along until you reach the portion you want to see. *Cassette tape* drives are less expensive than *floppy disk drives*.

HINT: If you are working, day-by-day, on a long document, be sure to make a back up copy at the end of each work session in case you inadvertently delete your working copy.

Cartridge tape systems are most valuable for back up storage of information because they have greater capacity than *disk* systems, but they require more time to use because they must be read in sequence.

Sometimes game *software* comes on a *data cartridge*. Make sure you can use it with your computer before buying it.

HINT: Exciting new computer games are expected to be developed for the *CD-ROMs* discussed in Section 6, *Memory* and workspace, page 30.

Q. Do I need any *peripherals* beside a *keyboard*, a *monitor*, and a *printer*?

A. You may if you are trying to cope with a disability, write music, publish a book, or run a small business.

Q. What kind of *peripherals* help the disabled?

A. Here are a few examples, several of which also have general use applications.

Touch screen monitors are equipped with an electric current or a low-level radiation beam which is broken when the screen is touched, sending a signal to the computer.

An 'eye-gaze' package uses a small *infra red* light on a head set to send instructions to the computer.

A one-handed *keyboard*

A computer *light pen*, when pointed directly at the computer screen, is used to give command, in the same way that some VCRs can be programmed with a *light pen*.

Braille *keyboards* and *printers*.

Speech synthesizers open up the use of computers to the blind and young children.

Reading machines can scan pages of printed text and read them aloud.

TDD's (telecommunications device for the deaf) which have long been used by hearing impaired persons for telephone communication may now be connected to many computers using a special *modem* and *software*.

Q. What special devices are made for musicians and artist?

A. These *peripherals*, usually used with special *software*, are a boon to creativity:

A *digitizer* (or *graphics tablet*). As you draw upon it, your work appears on the *monitor* screen.

Music devices which let you compose music and play it, either through a built-in speaker or through your stereo system. For some computers a piano style *keyboard* can replace the regular *keyboard*.

And for the budding musician there is good, inexpensive *software* which allows youngsters to learn about and have fun with music.

Q. What about help with my home office?

A. The list is long, and growing. Here are some examples.

A *data transfer switch* allows two computers to share one *peripheral*, such as a *printer*. A flip of the switch makes the *printer* available to one computer or the other.

A special *external disk drive* enables computers with 5 ¼ inch drives to read and write 3 ½ inch *disks* or vice versa. A special cable connects the external drive to the computer. The *hardware* will not work unless your computer has an *external drive connector*.

Presentation *graphics* packages contain *word processing*, *spreadsheets*, and *graphics software* allowing you to create 35 mm slides, overhead transparencies, or other business presentations.

A *plotter* has special pens which print precise drawings, such as blue prints or presentation *graphics*, that you create on your computer screen, using graphics software or *computer aided design (CAD) software*.

HINT: Coming soon is equipment to allow the creation of video presentations. The computer will combine with a video camera and a VCR to help you create a unified presentation.

A *desktop publishing* package will help you publish a book, newsletter, or brochure. To do this you will need at least 640K or *memory* (the more the better and faster), a *hard disk*, *desktop publishing software*, and a *monitor* which allows you to see, and work on a full page at a time, and a *laser printer*. (You also need special skills to write copy and create *graphics* and page layouts.)

HINT: a full-page *monitor* is sometimes referred to in computer jargon as WYSIWYG (it is pronounced wizzy-wig and stands for “What you see is what you get.”)

Q. I would like to have some games available on my computer when I want to relax. What do I need?

A. It depends on the type of game.

For brain teaser or board type games you need a little more than a *disk* with some simple *software*. Some computer manufacturers supply these free, and they are available from *shareware* sources.

For arcade-style games you may need a *game controller*: *Game paddles* lets you control the movement of objects on the display screen in two directions. *Joysticks* are more expensive but you can control objects on the screen more easily and quickly. *Trackballs* let you move objects by spinning a ball.



Game Paddle



Joystick



Trackball

HINT: Make sure the *game controller* you select works with your computer and *software*.

An *RGB color monitor*. Black and white simply may not look like the games in real arcade.

A collection of games *software*.

Q. What would I better off buying a separate game system than investing in the *software* and *peripherals* to put games on my computer?

A. You can make this decision only after you compare the prices of games *hardware* and *software* available for your computer with the price of a separate system. Be sure to take into account:

What you will be spending afterwards for game *software* for each alternative.
The time your family may want to spend playing games on your computer when you want it for other uses.

Q. Will I find ways my computer can make my life easier?

A. One great way is home control *software*. For example:

Home control *software* lets you turn on lights of a coffee pot automatically at a time you choose; and, if you are going out of town, you can set the lights and the lawn sprinkler to turn on and off, and the draperies to open and close.

Using a *modem* with home control *software*, you can telephone your computer from anywhere in the world to check in with your home security, turn the thermostat up or down, or record a TV program on your VCR.

Q. Do I want a *program*?

A. Prepackaged *software* is convenient, but many personal computer owners enjoy creating their own *software* ... in other words, “programming”.

Q. What reasons might I find for doing my own programming?

A.

You may not find packaged *software* that meets your exact needs.
You may be able to make money selling *programs* you've written.
You or your children may take courses which require that you write or change programs
For just plain fun.

Q. How do I start?

A. First you'll need to select a *language* in which to write your *program*. Here are some of the most popular personal computer *languages*.

Basic. Personal computers may come with the popular *Basic* language permanently stored in a *ROM circuit* inside the computer. Ask if it is stored in the computer you are interested in. If not, you'll have to load it from a *disk* each time you want to write or run a *program*. Some computers display error messages (to tell you've made a mistake) immediately after you enter a *program* line, which makes it easy to correct your mistakes.

There are several versions of *Basic*, so *programs* you write may not run on a different type of computer. There's also a version of *Basic* called "extended *Basic*" that allows you to do more things.

A Simple *Basic* Program

To program in *Basic*, you simply type your program into the computer, followed by the word "run". To give you an idea of how *Basic* works, here's a simple two-line program you can try on most computers. Type this into the computer (press the *enter* or *return* key after each line:

```
1 PRINT "HELLO"  
2 GOTO1  
RUN
```

Here's how this program works: Line 1 tells the computer to print the word "HELLO" on the screen.

The second line in the program tells the computer to go back to line 1 again. Result: when you type “RUN” the word “HELLO” is constantly displayed on the screen (forever, or until you put in another *program* or turn off the computer.)

Logo is another language available on some personal computers. *Logo* is easy for children to learn and allows you to create interesting drawings, using an object that moves around the screen.

Pascal and *C* are languages for expert programmers. Programs written in *Pascal* or *C* can run on a variety of computers (with some changes).

Assembler (assembly language) is also an expert programmer’s language.

Programs written in *assembler* runs much faster than those written in other languages and don’t require as much *memory*. Each computer has it’s own special *assembler*.

Prolog let’s you create “artificial intelligence” *programs* that can imitate the way people think or control robots.

Program generators lets you create sophisticated *programs*, such as computer games or business *programs* without having to be a full-fledged programmer.

They ask you a series of questions and, based on your answer or menu selections, automatically produce finished *programs*.

Q. O.K. I have my checklist and questions ready. What next?

A. Visit computer retailers. Ask for demonstrations. Try before you buy.

Q. How do I choose a good computer retailer?

A. Be sure the store offers good after-sale service. Ask for and read the product *warranty*. Compare warranties of competing products you are considering; they may help you decide. Make sure you know the store’s return policies.

Can you return the computer if it doesn’t work properly? Will you get a replacement? A refund?

Is there a time limit returns?
Is there a restocking fee for returns?

Q. Should I buy an extended *warranty*?

A. Some retailers offer an extended *warranty* for an additional cost. This is really a service contract and should begin at the end of the manufacturer's *warranty*.

Be sure the retailer is authorized by the manufacturer to service your computer, *monitor*, or *printer*. For that matter it's a good idea to know who will be servicing any of your electronic products.

HINT: If they won't demonstrate the computer or software, let you try it in the store, or return what you don't like for a refund, don't buy!

Q. I confess, I really don't understand what computer salespeople are talking about. How can I learn?

A. You don't have to be a computer expert to be a happy computer owner.

What sounds almost like a foreign language is really a kind of shop talk which has grown up among computer experts. If you have read through this booklet, looked up words you didn't understand in the Glossary, and checked off your needs and preferences, you can communicate with any knowledgeable computer salesperson.

HINT: Be sure you can read, with good understanding, the installation and user instructions for the computer you buy.

Q. Can I buy a computer by mail?

A. Yes, and sometimes at lower prices than from retail stores.

Be sure you really know the product you are ordering first, though; and before you buy:

Be sure that the money you save does not mean you will give up after-sale service and *support* (the right to ask questions of a knowledgeable person about the product).

Check to see if there is a facility near your home which will service the computer you plan to buy by mail or if you have to return the product to the factory for service.

Be sure you will get the same manufacturer's product *warranty* as if you bought in a store, and that the product is returnable if it does not meet your needs.

Q. What about buying a used computer?

A. You may be able to get a good bargain on a used computer, although such a purchase may be risky for a computer novice.

If you decide to try this route, follow the same procedures you would for a new computer, with the following additional steps.

Since computer dealers may not provide service or other support for a used computer, make sure before purchase that you have help available from friends, a computer user group, school, etc. for the particular computer

Look for sources of used computers in newspapers, computer magazines, user groups, and used-computer brokers (who may be able to help you with testing or negotiating a sale).

Check prices of used computers against the new prices in the computer stores, in magazines, or with current owners of similar systems.

Test all parts of the computer by connecting it to a *monitor* and running several *programs*. Listen for unusual noises which may indicate worn ball bearings in fans, etc. Run a diagnostic *software* program if available. Check every key on the *keyboard* to make sure they all display on the screen (except for non-printing keys like *Ctrl*, *Tab*, etc.) and they don't stick or feel loose.

Check *cables* to make sure they're not loose or frayed, and test any *peripheral* by using it with appropriate *software*. Unless it has a *hard disk*, move the computer around during the test to make sure it still works. With the power cord disconnected and without touching any internal parts, open the computer up and visually examine the inside for any loose components or signs of damage.

To test a *monitor*, ask the seller to *display* a file that fills the entire screen with every *Character* on the *keyboard*. Check the *display* for adequate brightness and contrast, character legibility, correct colors (if any), alignment of the image on the screen, and any "noise" (flashes of light etc.), distortion, or "tearing" of the image which may indicate problems.

To test a *printer*, connect it to the computer, type every character on the *keyboard* into a file, and print that file. Make sure all characters print and that the paper advances without tearing. Watch for odd noises or vibration, which may indicate failure in the near future. If the *printer* has a "self test" mode (see the instruction manual) run that too, making sure all of the letters are clearly printed.

Ask for instruction manuals and the original shipping boxes, if available. Make sure you keep the boxes for future shipping.

If you already have *software* for the same type of computer, test all your important *programs* with the computer to make sure they run (some may require extra *memory* or other devices, or may be *compatible* with a particular so-called “*compatible*” computer).

Q. How careful do I need to be with my new computer?

A. Computers need to be kept as free as possible from dust and dirt, extreme heat or cold, moisture and static electricity.

Some computers have special cleaning needs. The instruction manual that comes with your computer will tell you exactly how to care for it.

HINT: Establish a regular preventive maintenance program for your computer and *peripherals*.

Q. What suggestions do you have for keeping dust and dirt off my computer?

A. A wide variety of products are available to help you keep your computer free of dust and debris. Here are some ways to use them:

Keep an anti-static cover over your *monitor*, *keyboard*, *printer*, and *disk drive* when they are not in use. Exact fit covers are available for most brands of computers and their *peripherals* and you can even get a *keyboard* cover that you can leave on while you are using the *keyboard*.

Clean the *keyboard* occasionally with commercially-available pre-saturated pads or a static-free cloth and cleaning fluid. Do not use a cleaning fluid which contains Freon (also called trichlorotrifluoroethane). Spray the fluid on the cloth, not on the *keyboard*.

Remove tobacco smoke, dust, pollen, and other pollutants from the air with an electronic air cleaner.

Pick up dust and lint between *keyboard* keys and inside your *printer* with a computer vacuum cleaner which comes with a small nozzle and brush. Or clean the *keyboard* and *printer* with swabs dipped in a cleaning solution prepared for the purpose.

Pinpoint a fine stream of air into hard to clean places with a compressed air duster.



PC / Printer Vacuum

Q. How do I clean my *video* monitor screen?

A. Check your instruction manual. Manufacturers differ. But here are some tips:

Clean the screen frequently to reduce eyestrain.

Do not use window cleaner. It will create a wax film which, because computers generate static, will attract dust and yellow the screen (especially if there is cigarette smoke in the air).

Commercially-prepared, solution-saturated pads and sprays are available to clean your *monitor* screen. Do not spray screen cleaner directly on the screen. Spray it on a lint-free cloth, then use the cloth to clean the screen.

Do not use screen cleaner on a mesh screen.

Q. I notice you recommend *static*-free covers and cloths. How bad is static for my computer?

A. There is some chance that since static discharge (sparks when you walk across a rug, for example) can damage your sensitive computer *circuits* and *microchips*. There is even more chance that it will wipe out or scramble data on your *disks*. If you can, keep your computer in a room without carpets. If you have new carpets, vacuum them frequently.

Q. Besides static-free covers and cleaning cloths, what products will help cut static?

A. A *ground wire* on a static-control product is a sure way to eliminate static. You can find *ground wires* on control floor mats to go under your computer and *peripherals*. If static is not a big problem, try static-control strips which you can stick right on your *keyboard*.

HINT: Dry air promotes development of *static electricity*. Use a humidifier or other moisture source to keep some moisture in the air.

Q. I thought you said I should keep moisture away from my computer. Now you are telling me to add moisture in the air. What's the answer?

A. Add moisture to the air just as you would to make it comfortable for yourself and you will keep your computer happy. Keep liquids away from the area where you keep your computer and *peripherals*. Do everything you can to avoid spills. Soaking can ruin your *keyboard*, computer, *floppy disks*, and *data cartridge tapes*.

Q. What if I do spill something on my *keyboard*?

A. If it is a sweet and sticky liquid, such as a soft drink, take the *keyboard* directly to an *authorized service center*. If the spill is water or other clear liquid, unplug the *keyboard* and turn it upside down do drain. When it is completely dry, see if it works.

If not, take it to an *authorized service center*. Spills on the main computer unit or *peripherals* can also cause trouble. Read your instruction manual for advice.

Q. Does my *printer* require special care?

A. Ink, correction fluid, and other contaminants spell trouble for your *printer platen* (black rubber roller).

Q. How do I clean the *platen* and how often should I do it?

A. You will find easy-to-use *platen* cleaner at most computer, electronic or office supply stores. A good rule of thumb is to clean the *platen* each time you change your *printer* ribbon. But check your *printer* manual where you may also find cleaning instructions which require use of the following items:

A specially designed *platen* cleaner with a pre-loaded cleaning solution.

A soft or clean lint free cloth.

A can of compressed air to blow away dust.

HINT: Avoid using household cleaners, ammonia, powders, toothpaste and other abrasives, or cleaning fluids on the outside covers of your computer and *peripherals*. These cleaners cause scratches and some can eat away plastics.

Q. How else can I improve my computer's environment?

A. Make sure air can circulate freely around the computer and *peripherals*. Check with your retailer.

Q. Do I need to clean inside the computer?

A. Your computer's works should be touched only by trained service technician who knows how to avoid safety hazards and how to fix anything that might be wrong. Many computers do require cleaning of the *disk drive* recording *heads*

(which are inside your computer or inside an attached *extra-disk drive*) every 40 hours of cumulative drive use, or about once a month if you use your computer frequently.

You can clean the heads without taking the back (or the front) off your computer. Read your instruction manual. The manufacturer may recommend using a *head* cleaning kit. These are usually available from the retailers who sell and service your brand.

HINT: If you are having trouble *formatting* a disk, your *disk drive* system may need to be cleaned. Follow the instruction manual or check with your retailer.

Q. How can I protect the *disks* on which I have stored information?

A. Computer stores and catalogs offer *disk* storage containers ranging from those you can put in your pocket to files for a number of *disks*. Whether you use 5 ¼ inch flexible *disks* or hard plastic 3 ½ inch *disks*, it is okay to carry them or ship them. To make them last longer, take the following precautions:

Write on the *disk* label before you attach it to the *disk*.

Once the label is attached, write on the *disk* label only with a felt-tip pen.

Don't put a new label on top of an old one and don't cover any jacket holes or openings when you attach the label to the *disk*.

Don't touch the *magnetic* surface.

Don't bend the *disk* or attach notes to it with paper clips.

Don't force the *disk* into the *disk drive*.

Don't put a magnet on a *disk*, and keep *disks* at least three inches away from *magnetic fields*, such as stereo or TV speakers or transformers.

Don't leave a *disk* lying in the sun.

Don't smoke around your *disks*.

Don't put anything on top of a *disk* (tools or books, for example).
Try not to expose *disks* to extreme hot or cold. If you do, leave them at room temperature at least two hours (longer if you can) before using it.

Q. I have a *data cartridge* tape backup system. Does that need special care?

A. You should clean the *capstan* and the recording *head* after each eight hours of use. It is also important to exercise *data cartridge tapes* before use. Fast forward and reverse them for one complete cycle. And remember, just like *floppy disks*, they should stand at room temperature several hours (at least two) prior to use if they have been exposed to extreme heat or cold.

Q. And if I spill something on my *disks*?

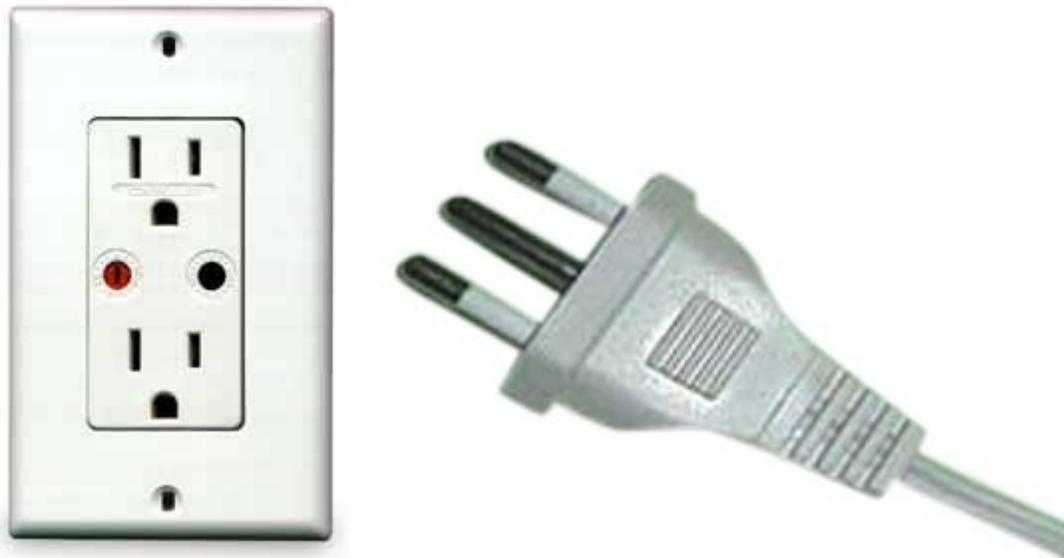
A. If chocolate, fingerprints, correction fluid, or other non-water soluble materials are on your *disks*, contact the *disk* manufacturer for advice in removing them. Inserting contaminated *disks* into your computer may damage your *disk drive*. If your 5 ¼ inch *disks* have been contaminated with coffee or soft drinks, use these procedure to clean them:

1. Place a clean cloth, a little larger than the *disk* jacket, on a flat surface.
2. Without removing the sealed *disk* jacket, be sure the spilled substance is at the bottom of the jacket.
3. Cut the top fold off the disk jacket 1/16 inch from the top edge.
4. Gently remove the *disk* from the jacket, holding it only by the outer edge and being careful not to scratch it on the cut jacket edge.
5. Place the *disk* on a clean cloth, without rotating it, so the top and bottom are in the same position as they were in the jacket.
6. Wipe both sides of the contaminated disk with a clean cloth dampened with clean water. Remove excess water with a clean dry cloth.
7. Take a new, unused *disk* of the same size and brand and repeat steps 1 through 3.
8. Carefully insert the cleaned *disk* (step 6) into the new *disk* jacket (step 7) in the same position it was when you removed it from the contaminated jacket (step 5).
9. Copy all data and files from the newly cleaned *disk* onto another, new, unused *disk*.

Some *disk* manufacturers will replace your contaminated *disk* if you send them both the contaminated and a new, unused *diskette* and jacket that remain after you have copied your data in step 9. Check with your *disk* manufacturer.

Q. I have heard that changes in the power supply caused by electrical storms can damage a computer. Is this true?

A. Yes, they may. Here are some steps you can take to avoid power surge problems:



Three-wire plug and wall outlet

Use three-wire electrical outlets for your computer system. This is important for

1. Safety (a three-wire plug *grounds* the equipment)
2. Avoiding errors in data caused by electrical noise on the wires when refrigerator or other electrical appliance motors cut in.
3. Preventing *interference* that your computer system might cause to TVs or radios in your house or apartment building.

(If you get *interference*, turn off your computer and *peripherals* to see if the *interference* stops. If it does, it was probably caused by your computer system. Contact your computer retailer to have it corrected.)

Plug your computer into a *surge protector*, a device which prevents hardware damage or loss of data from electrical *surges* (sudden increases or decreases of voltage on your electrical lines) or *spikes*.

HINT: In a lightning storm, unplug both the computer from the wall outlet and your *modem* from the phone line. A *surge protector* will not protect them from a direct lightning strike.

Q. What should I do if there is a power failure while I am working on my computer?

A. Turn off your computer. Otherwise, when the power goes back on a very large voltage spike, called a *transient*, could damage your computer. You will lose everything in *RAM* (*random access memory*), that is information you have not saved on a *disk* when the power goes out. That's why it is a good idea to 'save' information frequently as you work, and why you should keep a backup copy of any document you want to protect from this kind of loss.

HINT: If loss of your RAM data would be a real disaster, ask your computer retailer about an *uninterruptible power supply*. Then compare its price with what a data base loss might cost you.

Q. What's my budget?

A. To help you develop a total budget, we suggest you fill in the following chart:

HOME COMPUTER BUDGET		
Item	Description	Price
Computer	_____	P _____
Monitor	_____	P _____
Peripherals		
Disk drive(s)	_____	P _____
Printer	_____	P _____
Modem	_____	P _____
Other	_____	P _____
	Peripherals Total	P _____
Software	_____	P _____
	Software Total	P _____
Supplies ¹	_____	P _____
	Grand Total	P _____

¹Includes printer paper and ribbons, disks, cleaners, desk accessories etc.

Other Pamphlets

There are other pamphlets that may help you.

1. **Computer Installation Products** discusses items like connectors, cables, emergency power systems, etc. to hookup and expand your computer, decipher, software, etc.
2. **Home Automation** discusses the forthcoming EIA voluntary standard that will enable consumers to automate their home or apartment using existing wiring.
3. **Service Contracts** discusses what to look for in buying a service contract as well as repair service of your products.

Single copies of each pamphlet are free. Send a No. 10 self-addressed envelope with 75 cents postage for pamphlet 1, 30 cents for pamphlet 2, or 30 cents postage for pamphlet 3 to:

Computer Installation Products
Electronic Industries Association
P.O. Box 19100
Washington, D.C. 20036

Or

Home Automation
Electronic Industries Association
P.O. Box 19100
Washington, D.C. 20036

Or

Service Contracts
Electronic Industries Association
P.O. Box 19100
Washington, D.C. 20036

A separate envelop with postage is needed for each pamphlet.

Glossary

Note: Definitions in this glossary are for computer usage only. Many words defined here in a computer related sense have another meaning in other context.

Access—in computer usage, to open a computer program or to connect with another computer to retrieve information. For example, “I will access the word processor program”.

Acoustic coupler—a device that allows your home computer to be connected to a remote computer by placing a telephone handset into it.

Adapter—used to convert one kind of plug or jack to another type.

Analog—a type of signal that has many varying levels. The changing levels can be measured (read) by a computer and transcribed into information.

Application program—(a software program is sometimes referred to as an “application”) software which allows use of the computer to manipulate information by, for example word processing, creating graphics, or communicating with another computer.

ASCII—an acronym for “American Standard Code for Information Interchange”. This standard makes it possible to transfer information between incompatible computers.

Authorized service center—service and repair center staffed with manufacturer trained or approved service technicians.

Baud—a measure of the rate of speed at which computer information is transferred.

Binary numbers—a system of numbers having two as its base, whose digits are 1 and 0. The computer reads information only after it has been converted to a binary number system. Using this system, computer experts can manipulate computers to display information which humans can understand.

Bits—binary digits (1 or 0) used to write computer programs. Each 1 and 0 in a binary number is a binary digit, or ‘bit’, for short.

Board—a device that fits into a computer’s expansion slots. Short for ‘printer expansion board’.

Boot—to start up.

Bps—bits per second. The number of pieces of information sent in one second. Usually the same as baud.

Braided cable—a signal cable that has been heavily shielded with braided thin wire.

Buffer—a device used to compensate for differences between computers and/or computers and peripherals. A buffer may be used when transferring data from one computer or peripheral to another.

Bus—a software error. A hardware bug is an error in a computer or a peripheral.

Bulletin board—(short for electronic bulletin board) a remote computer, reached by way of a modem, used by computer owners to exchange messages and software to announce meetings. Home shopping, airline reservations and similar services available by computer are more sophisticated bulletin boards.

Byte—a single character or numeral data (eight bits)

Cable—a group of insulated conductors which act as a signal transmission line.

CAD—acronym for ‘Computer Aided Design’, special software used in designing buildings, tools, automobiles etc.

Camera-ready copy—a printed page whose type is crisp and clear enough to be used as the master copy in the offset printing process.

Capstan—rotating shaft that drives tape at a constant speed during record and playback.

Card—another word for ‘board’.

Cassette tapes—see data cartridge tapes.

CD-ROM—a special disk drive that uses compact disks used for mass storage applications such as encyclopedias, directories, bibles etc. A CD-ROM disk holds 500-700M bytes of information.

Cellular—in telephones, a modern two-way mobile telephone system designed to reuse radio frequencies, thereby allowing unlimited numbers of subscribers.

Central processing unit—see CPU

Character—a single letter, numeral or punctuation mark.

Chip—(short for microchip) a tiny computer component which holds an integrated circuit (IC). Chips, usually mounted on boards (cards), perform computations and remember data among other functions.

Circuit—in computers, a system which carries electronic signals from one point to another. In electricity, a system through which electric currents flow.

Circuit breaker—a device designed to interrupt the flow of electric current under certain conditions.

Circuitry—an interconnected group of circuits, as, for example, on a circuit board.

Clone—in computers, a product which exactly imitates another so as to use the same software and peripheral hardware

Communications software—allows computers to “talk “ to each other either directly, via a cable or over phone lines via a modem.

Compact disk—an electronic recording storage device used both in home entertainment centers and to enhance computer memory. See CD-ROM

Compatible—matching, as in pieces of electronic equipment or software which match (interface) or can be used together.

Component—in computers, a device which helps make up the circuit: resistors, capacitors, and chips are components.

Computer program—a series of instructions that enable a computer to perform a specific function such as word processing, file management, etc. Programs are usually stored on disks, tapes or cartridges ready to be placed into the computer’s electronic memory.

Connecting cable—a cable equipped with connectors for use between various electronic products.

Connectors—a mating plug and receptacle with link one electronic product with another.

Coprocessor—used to aid the CPU in time-consuming functions. There are math coprocessors for intensive math applications, such as calculating the angles of a CAD drawing or graphics coprocessors for high resolution graphics speed.

CPU—acronym for ‘central processing unit’, the heart of the computer that interprets and carries out instructions.

Cross talk—occurs when signals from one circuit disturb another circuit as interference.

CRT—acronym for ‘cathode ray tube’—a video screen or monitor on which images are displayed.

Cursor—a position marker on a computer display which usually blinks on and off.

D sub connector—the outside of a pin connector, shaped like a ‘D’ so that the connection is not made improperly.

Daisy wheel—a type of impact printer named for the shape of the print wheel.

Data base—the information contained in a computer memory. Sometimes refers to information available on a distant computer for sale or for the asking. Data bases are usually looked at like a stack of 3x5” cards or a stack of form papers that can be sorted by any field.

Data base management—a system (can be software only or a combination of hardware and software) which arranges data so that it can easily be expanded, altered and retrieve.

Data cartridge tapes—magnetic tape contained in a two-reel cartridge, used with a data cartridge system for making backup copies of computerized data.

Data transfer switch—a device which allows computers to share a peripheral device such a printer.

Desktop publishing—software which permits use of a personal computer to design and print documents such as newsletters and flyers which can include drawings, charts, graphs, etc.

Digital—a system which encodes the digits, 1 and 0, to represent two levers: ‘on’ and ‘off’, thus transmitting sound or storing information. A digital system also decodes those digits to produce sound or information.

Digitizer—alternative to the keyboard to input data into a computer. A mouse, a trackball, and a digitizer tablet are all digitizers.

Digital Tablet—a tablet, which includes a pencil-like device and a pad, used with compatible software to put graphics into computer memory.

Digits—used in recording or computing to represent information. See ‘bits’

Disk (diskette)—a round piece of magnetic-oxide coated flexible (floppy) polyester covered by a protective jacket used to store data.

Disk drive—a device that can hold the disk and can store or retrieve information on it.

Display adapter card—a card which must be placed into one of a computer’s expansion slots, and be compatible with the computer, before a new monitor will display anything on the screen.

Document—a creation of the computer user. Documents are the result of information the user enters into the computer.

Dot matrix—the system used by monitors and many printers to form letters, numbers and graphics. As in, “I have a dot matrix printer.”

Download—the process of transferring data from one computer to another, most often from a large, mainframe computer to a smaller one in a remote location.

Dpi—dots per inch.

Driver—a software package used to reformat data before it is transferred to a peripheral device such as a printer.

EIA—Electronic Industries Association

Electronic mail—a system by which one computer can call another and leave a message on a ‘bulletin board’ or in a ‘mail box’. To send and retrieve electronic mail a computer must be equipped with a modem in order to transmit messages across telephone lines.

Emulation mode—some computers and peripherals are able to emulate (or imitate) other brands for purposes of working together (or interfacing). When a computer is emulating the computer or peripheral it is trying to communicate with, it is said to be in emulation mode. Usually emulator software is necessary to put a computer or peripheral in emulation mode.

Emulation modes—occur when hardware or software imitates another system accepting the same data and processing it the same way. Emulation modes are achieved by attaching a hardware peripheral to a computer or by using software created for the purpose.

EPROM—acronym for ‘electrically programmable read only memory’—see ‘firmware’.

Ergonomics—in computer or other office furniture refers to a method of building to fit the human body. Ergonomic furniture is usually adjustable to fit individual needs.

Expansion card—see ‘board’.

Expansion slot—openings into a computer into which expansion boards, or cards, can be inserted to increase the computer’s capabilities.

Extension cable—a cable assembly equipped with one male and one female connector used to give greater length to a cable.

External disk drive—a peripheral disk drive, used in addition to the one inside the CPU to hold a second disk.

External drive connector—a port (or receptacle) on a microcomputer into which an external disk drive can be plugged.

External speaker—a peripheral speaker which can be added to a microcomputer which has no speaker or to give better quality sound for certain users.

Fixed disk—another name for a hard disk drive

Firmware—permanent software that is stored in the computer's EPROM memory rather than being stored on a hard or floppy disk or a cartridge tape.

Floppy disk—generally 5¼ or 3½ inch magnetic, sensitive disks on which information is stored.

Format—a specified form or style.

Friction feed—a system of drawing paper through a printer between two rollers, as in a typewriter.

Full-duplex—describes a communications system or modem capable of transmitting data in two directions at once.

Game controllers—devices (like joysticks) that plug into a computer and make it easier to play games.

Game paddle—a game controller that moves an object in one or two directions.

Gender changer—consists of two connectors at either end of a length of cable. A female gender changer is used to connect to male cables; a male gender changer is used to connect two female cables.

Giga byte (gig)—one billion kilobytes.

Graphics—any non text information input into a computer. A pie chart, a graph, a drawing, or a color transparency is considered a graphic.

Graphics tablet—a peripheral device usually used with graphics software, such as CAD, paint, or drawing software, to put information into the computer.

Ground—a conducting path between an electrical circuit (or equipment) and the earth (or some conducting body serving in place of the earth).

Ground—to connect electrically with a ground or base, used as common return for an electrical circuit.

Ground wire—a wire which drains off electrical current so it cannot harm a computer (structure, appliance or person.)

Hard disk drive (HDD)—a hard, magnetically-sensitive platter used to store large amounts of computerized information usually permanently encased in a disk drive.

Hardware—in computers, all the parts you can see and touch, such as the CPU, monitor, keyboard, etc.

Headphones—one or two audio speakers which are placed over, or on the outside of, your ears for personal hearing.

Heads—devices that make contact with magnetic tape disks to convert magnetism or electrical signals or vice versa. They are used to record or erase on tape, floppy, and hard drives.

Hierarchical files—a system of organizing computerized data, usually on disk, so as to keep together related documents, applications, and subdirectories or folders.

High resolution—in dot matrix printing, the more dots per inch, the better (or higher) the image (or resolution).

Icon—graphic representations, often used to display computer programs and files created by the user, on the monitor screen for the user to choose among.

Impact printer—prints through impact of type on paper as a typewriter does.

Import—a term used to describe the moving of text or graphics from one computer program or document into another.

Infrared—in computer language used to describe both the data that is put into a computer and the act of putting it in, as in “She input the data.”

Integrated circuit—an electronic circuit made into a silicon chip.

Integrated software package—software which includes several applications or functions. Once frequently used integrated package includes word processing, database management and spreadsheet planning.

Interface—the peripherals and/or software which connect two computers or a computer and a peripheral.

Interference—electrical signals, which have an undesirable effect on electronic signal transmission.

Internal disk drive—(see disk drive)

Joystick—a peripheral device used to manipulate the cursor, usually when playing computer games.

K (kilobyte)—in the metric system K stands for 1000; but in computer usage it represents 1024. Two Kilobytes=2048 bytes.

Laptop—a commonly-used nickname for a portable computer that can be battery operated.

Laser beam—a highly focused beam of laser light used to play the signals stored on CD-ROM disks.

Laser printer—a very high resolution printer for both graphics and for text printing.

Light pen—a pen-like device which can communicate with a computer when it touches the monitor screen.

Log off—term to describe the process of ending a computer connection.

Log on—computer usage term for connecting to a host computer via a cable or modem as in, “Log on to the shopping service”.

M (megabyte)—one million bytes of memory. In computer slang, a “meg”.

Macros—a series of instructions to a computer which have been programmed to be carried out with a single keystroke. For example, a logo; a frequently used phrase, sentence or paragraph; or a letterhead can be made into a ‘macro’ using the right software.

Magnetic field—the area surrounding a magnet which is affected by it. The field created by magnets in telephones, electric motors, TVs and other consumer products is usually only felt for a foot or two around them.

Magnetic tape—a ribbon of thin plastic coated with magnetic material.

Mainframe—a large, fast-working, costly computer which can support many users at separate terminals at once.

Memory—the part of a computer which retains information. Computers have both read only memory (ROM) the contents of which cannot be altered by the availability of the user and random access memory (RAM) which is available to the user to add to, alter, or delete. See also “integrated circuit” and “chip”.

Memory board—a thin board or card which contains memory chips and can be inserted into a slot in many microcomputers to expand the amount of RAM (random access memory) available to the user. The amount of RAM the board adds depends on how many chips are added to it or, in computer slang, how much it is populated.

Merge-print program—software which combines a list of names and addresses with a form letter in order to print personalized copies of the letters.

Microchip—see chip

Microcomputer—a small, one-user-at-a-time computer, which contains a microprocessor. Also called a PC, personal computer, home or desktop computer.

Mode—refers to whatever function the computer is performing. For example, “The computer is in word processing mode (or print mode)”.

Modem—(short for Modular-Demodulator), a device that connects a computer to other computers through a phone line, transforming digital computer signals into analog electrical signals so data can be sent between the computers.

Modular—the newest type of telephone connection using snap-in plugs to matching jacks.

Monitor—the screen on which you can view the activities taking place in your computer. See CRT.

Mouse—a computer peripheral used to give commands to the computer. See digitizer.

Multiple frequency monitor—a monitor which can be used with all kinds or types of display adapters.

Null modem cable—a cable that allows two computers to communicate by the serial ports. Also referred to as a reverse RS-232 cable.

Nybble—four bits, one-half a byte.

Operating system (or software)—a computer’s host software, the operating system consists of instructions that interpret other software applications. An operating system is needed in computer memory before it will open any software application.

Palette—the number of colors a graphics board or monitor can produce.

Parallel interface—a method of transmitting a byte (8 bits) of data at a time.

Parallel Printer—a printer which receives data from a computer over multiple data lines one character (byte) at a time.

Peripheral—short for peripheral device. A piece of computer equipment that can be attached to the main computer unit.

Personal computer—(also called a ‘PC’ or microcomputer) any computer designated for one person to use.

Pin configuration—the arrangement of pins on the connector at the end of a computer cable which is designed to make the computers or the computer and peripheral thus connected work properly together (interface).

Pin connectors—the devices on the ends of computer cables which plugs into ports on a computer or a peripheral.

Pin wires—the individual wires which are seated in a pin connector.

Pixel—the smallest picture element (dot) on a computer screen. A measure of resolution.

Platen—the rubber roller behind the paper on a printer or typewriter.

Plotter—a printing device that uses special pens to draw output. Some plotters can print pictures on very large size paper. Used in computer-aided design (CAD) by graphic artist, interior designers and other professionals.

Port—(**interface**) the input or output connections on the computer or peripherals, comparable to electrical wall sockets.

Print spooler—a software program (sometimes contained within a software package) which sends data to your printer while allowing you to work on other things with your computer. For example, it allows you to print a document while working on another application.

Printer—a device that produces a printed (hard) copy of data generated by the computer.

Program—a set of instructions that tell the computer what to do.

Public domain—owned by the public, rather than any individual or corporation. Software which is in the ‘public domain’ may be freely used by anyone without payment.

Random access memory (RAM)—the working memory of the computer. Information must be loaded into RAM from a disk or a tape each time the computer is turned on and should be downloaded to a disk or tape each time the computer is turned off. All information in RAM is lost when the computer is turned off or there is an interruption in the power supply.

RGB—stand for red, blue, green. Often used to differentiate between a black and white or a color monitor.

Read only memory (ROM)—that part of memory which stores permanent information, used to start up the computer, and software programs which are never changed by the user.

Registers—specific locations in the microprocessor.

Resolution—the amount of detail in an image displayed on a monitor or produced by a printer. A laser printer produces “high resolution”.

RS-232 serial interface—an Electronic Industries Association (EIA) voluntary standard which allows one brand of serial device to be compatible with the serial interface ports of another brand of computer.

Scanner—hardware which makes electronic copies of paper images by scanning a picture or other graphic and reproducing it as a digitized image which can be enlarged, reduced or cropped before being imported into a computer program for reproduction in a document.

Serial cable—a cable through which the bits travel in sequence. All telephone, and some computer, data travels serially.

Serial interface—a method of transmitting data one bit at a time. Modems transmits data serially over telephone lines.

Serial printer—a printer which accepts data one bit at a time, unlike a parallel printer which accepts data one byte (eight bits) at a time.

Service technician—the term most often used to describe a person trained to service or repair consumer electronic products, computers, word processors, etc.

Shareware—software, usually available through bulletin boards, catalogs, or computer manufacturers, available without charge. Some shareware is in the public domain and always free. Users of copyrighted shareware, however, may be expected to make a donation to the copyright holder.

Shielded cable—a specially constructed cable containing center conductors of insulated wire. Around this is a metallic barrier (shield) which intercepts outside signals before they can get to the center conductor and cause interference.

Software (programs)—instructions that tell the computer what to do.

Speech synthesizer—a computer peripheral that enables it to produce spoken words.

Spike—a quick, shaft peak in electric current transmission, also called a ‘transient’.

Spreadsheet—a computer program which arranges data in cells so that it prints out in chart like or column form. The term is borrowed from the many-columned pages used by bookkeepers and accountants.

Standardized—manufactured to conform with a set of rules (standards) often intended to make like products work well or fit together and be safe to use. Some standards are mandatory, set by the government. Others are voluntary, usually worked out by representatives of all affected parties.

Static electricity—charges of electricity produced by friction coming from an action like walking across a carpeted floor.

Subdirectory—an organizational tool usually used with hard disks. A subdirectory may contain many files or other subdirectories in a tree like fashion. For example, a word processing file might be subdivided into: Business, Home Accounts, Personal, and Christmas List and then show other file titles under each.

Support—the help you get from the dealer and/or manufacturer of the computer equipment and accessories you buy, and the ability of two pieces of computer equipment to work together, as in “This software supports many printers”.

Surge—a sudden rise of current in an electrical circuit.

Surge suppressor—a device which protects electronic products from a sudden rise of current in an electrical circuit.

System—a set of hardware and software that works together.

Template—software which provides a dummy page which the computer user can use to create documents, such as newsletters, proposals, and directors, which have a professionally designed appearance. Template software is available to import into desktop publishing or other software or it may be built into it.

Terminal—(A) a monitor or CRT that also contains a serial port to be connected to a remote computer. Also often referred to as a ‘dumb terminal’. (B) term used interchangeably with ‘monitor’ and ‘CRT’ to describe the screen on which information is displayed.

Terminate, stay, resident (TSR)—terms used to describe a program which stays in RAM after it ends and pops up again when a special keystroke is used.

Touch screen—a monitor screen which allows you to operate your computer by touching the screen rather than using a keyboard, mouse or other such devices.

Trackball—a game controller using a ball to control the movement of an object on the screen.

Tractor feed—a printer part consisting of two belts, similar to those on a tractor, studded with pins or knobs spaced to fit the holes on continuous feed computer paper.

Transient—see spike

TTY or TTD—teletypewriter communications often used by hearing impaired persons.

Uninterruptible power supply (UPS)—a battery-operated computer accessory which, when installed, keeps the computer running so data is not lost when the regular power supply is temporarily interrupted.

Volatile—information which will be lost when computer power is turned off. RAM memory is called volatile because it will be lost if it is being used when there is a power failure.

Voltage—electric potential.

Warranty—assurance of product integrity which provides for repair and/or replacement of defective parts for a specified time period. A manufacturer's warranty is provided as part of the purchase price of new consumer electronic products.

Word processor—a software program which permits you to enter word into a document, rearrange them, put them in the format you choose, for example letter, term paper, or outline, then print the document.

Workspace—the amount of space in computer memory not used by your operating system and software in which you can create documents, spreadsheets, etc.

WYSIWYG—acronym for “What You See Is What You Get”, refers to a monitor screen which shows how the printed page will look. Pronounced ‘wizzy-wig’.