Getting to Know Computer Basics

Using a computer is actually pretty simple, but understanding the various technologies that make up a computer is a little harder. You don't have to know how to build a computer, but to choose the right computer for your needs or talk intelligently with the clerk in the computer store or technical support, it helps to have a basic understanding.

In this chapter, you educate yourself about

➡ How data is stored on your hard drive

➡ What an operating system does

➡ Various computer configurations available such as desktops and laptops

➡ The value of wireless capability in your computer to keep you connected

➡ The various features offered in monitors that may make your computing life easier on the eyes

➡ Various options for storing your data

➡ What, exactly, a microprocessor is and which is the best one for you

Get ready to . . .

Examine Your Hard Drive

Your computer can have several drives. All but the hard drive are external and typically plug into your computer via a USB port. The hard drive is also called a hard disk. It's essentially a platter inside your computer where your computer stores programs and data.

Here are some important-to-know facts about your hard drive:

➠ **A hard drive uses magnetic recording to store data.** This is similar to old-style recording tape. You can write data to your hard drive as a series of bytes, use that data, and erase it. However, be aware that the magnetic pattern on your hard drive can retain erased data even after you've erased it.

➠ **Your hard drive is divided into *sectors* that include several tracks.** Every sector contains a set number of bytes. Typical sectors are 256 or 512 bytes. Formatting a hard drive creates this sector and track structure, along with a file allocation table that helps your computer retrieve data.

➠ **Similar to an old record player's stylus, a computer hard drive works with an arm containing read/write heads.** These heads move over the hard drive as it spins to locate various bytes of information.

➠ **Hard drives come with different capacities for storing data.** Today most are measured in gigabytes (GB). The higher the gigabytes, the more data your computer can store, so check computer manufacturer specs (see Figure 1-1) before you buy.

Figure 1-1: Manufacturer specs for memory and hard drive capacity

If you're not sure what capacity your hard drive has you can check your computer manufacturer's specifications. You'll find these in your user manual or go to the manufacturer's Web site and search for your model. You can also choose Start➪Control Panel➪System and Maintenance and click the View Amount of RAM and Processor Speed link to see your model name, RAM, and processor speed.

Understand Operating Systems

Operating systems (OSes) are software programs, such as Windows or the Macintosh OS, that run your computer. Your computer comes with an operating system pre-installed. An operating system runs your applications and allows you to manage files on your computer and protect your data.

Here are some things you should know about operating systems:

➡ **Tools:** Operating systems often come with extra tools and features to help you get your work done, such as calculators (see Figure 1-2), games, tools to help users with vision or hearing disabilities, and programs to protect your computer from viruses.

➡ **Incompatibilities:** Today, many operating systems allow you to use files created with other operating systems seamlessly, but there are still some incompatibilities. You may need to download converters to be able to open files created on a computer using one operating system on a computer using another.

➡ **Upgrades:** Over time new operating systems come out and you may reach a point where you want to upgrade your OS. Most offer frequent interim updates you can download for free, but when a new version of the product is released, you'll have to buy an upgrade package to begin using the newest features.
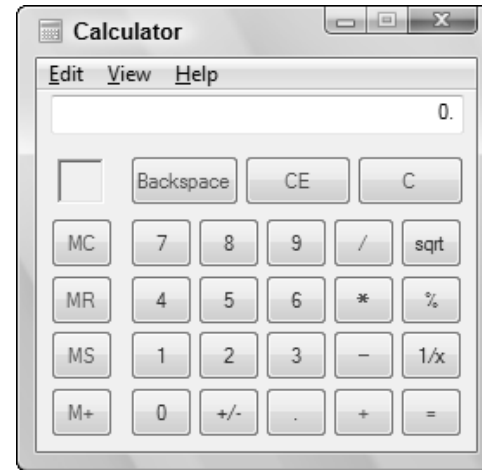

Figure 1-2: Windows´ Calculator

Security features of operating systems such as Windows Defender are getting more and more robust, and it's important that you take advantage of them to protect your data. However in many cases you have to enable these features for them to do any good. See Chapter 20 for more about computer security.

Choose the Right Computer

There are different styles of computers available. To help you choose the best computer for your needs, here are some styles to consider:

➠ **A desktop computer** (see Figure 1-3) is meant to stay at one location. It can take the form of a tower that you place on your desk or the floor with a separate monitor. Other models are designed so the monitor contains the guts of the computer, as with some Macintosh models.

➠ **A laptop or notebook computer** (see Figure 1-4) is more portable than a desktop, though these currently run the gamut from four pounds or so to heftier desktop models weighing in at nine pounds or more. With a laptop, the monitor is built into a chassis that also contains the keyboard and a built-in mouse that usually takes the form of a touch pad or touch button.

➠ **A Tablet PC** is a Windows computer that allows you to interact with the computer by "writing" on the screen or making choices using a stylus. Tablet PCs can lay flat, allowing you to use them like a pad or tablet.

Netbooks are like laptops, except that they have limited functionality. Essentially they allow you to surf the Internet and retrieve e-mail but not run other software programs. Because of their limited feature set, they aren't really considered PCs.

Figure 1-3: Desktops take up more space

Figure 1-4: Laptops are portable

Look at Wireless Capabilities

If you own a computer with wireless capabilities, you can connect to the Internet without plugging your computer into a cable connection or phone line. You can go online using a wireless card or device in your computer and an Internet access point in your home network or even use access points in many public locations such as airports and hotels.

Here are the basics about wireless connections:

➡ **Subscriptions:** You can subscribe to a Wireless Wide Area Network offered by companies such as Verizon (see Figure 1-5) and then pick up their signal as you move around.

➡ **Hotspots:** You can pick up public connections called *hotspots* (see Figure 1-6) at locations such as hotels and coffee shops. Some public locations charge a fee, but many others offer a wireless connection (also called Wi-Fi) for free.

➡ **Wireless home networks:** You can set up a wireless network in your home and access it from several computers located throughout your house after you've configured them to access the network.

➡ **Wireless protocols:** Check your computer's specifications to see what wireless protocol it uses. A popular wireless protocol is Bluetooth, referred to as 802.11, which you'll see associated with letters such as a, b, g, and n. Wireless version n is the latest and boosts your reception range significantly over earlier versions.

Figure 1-5: Verizon's broadband access map

Figure 1-6: Find directories of hotspots online

Select a Monitor

Your monitor displays your operating system environment, online documents, files and folders, and various applications you use to get your work done. Because you may look at your monitor many hours a day, it's important that you understand how monitor size and display quality affect your viewing experience.

➠ **Sizes:** Monitors come in sizes ranging from very small 8.6-inch netbooks (see Figure 1-7) to huge 24-inch desktop models (see Figure 1-8).

➠ **Displays:** Monitor displays use various technologies that afford different image quality. Some monitors use LCD (liquid crystal display) technologies and others use TFT (thin film transfer) liquid crystal display. One of the variables in display quality is how well it keeps crisp images no matter what the lighting around it.

➠ **Screen resolutions:** Screen resolution relates to the crispness of the image on your monitor screen. The higher the resolution numbers, the sharper your display image.

The monitor you choose depends on the type of computer you get (laptop where smaller size may be important for portability versus desktop); what activities you use your computer for (if you use lots of graphics applications or games, you might prefer a monitor with a higher-end graphics card); and any vision challenges you may face (in which case you might want a larger monitor).

Figure 1-7: Portable computers may sport very small monitors

Figure 1-8: A large display helps with games and graphics applications

Understand Data Storage

You can store data to your computer hard drive or store it on other media. In fact, it's a good idea to keep a copy of your important files on other media in case your computer hard drive gets damaged or wears out. Here are several types of data storage:

➠ **CDs and DVDS** are hard plastic disks that you can use to store data and read it. Your computer has a CD/DVD drive which looks like a slot that you slip the disk into.

➠ **Flash drives** are sticks, about the dimensions of a very thick piece of gum (see Figure 1-9), that slide into a USB (universal serial bus) slot. These have capacities up to and exceeding 8 gigabytes, so they can hold lots of files.

➠ **External hard drives** (see Figure 1-10) usually plug into a USB port in your computer. They range in size from a bit larger than a deck of cards to a paperback book, and essentially they give you a second hard drive to back up to.

> Netbooks, which are very small laptops that are becoming popular for their portability, don't have CD/DVD drives. To access CD/DVD content for these consider downloading software from the Internet, sharing a CD/DVD drive of a larger computer over a network, or getting an external CD/DVD drive.

Figure 1-9: A USB stick

Figure 1-10: An external hard drive

Understand Microprocessors

Microprocessors, also simply called *processors,* are what enable your computer to run and process data. Microprocessors are computer chips which include integrated circuits.

Here are some things to consider about microprocessors when you're buying a new computer:

➡ **Brand:** The two key players in manufacturing processors today are Intel (see Figure 1-11) and AMD. When you buy a computer and you prefer one brand to another, check the models to see which they use.

➡ **Speed:** Microprocessor clock speed ratings, given in gigahertz, determine how fast your computer runs. You'll pay more for a faster microprocessor, but if you use your computer quite a bit, especially for applications such as graphics and games, the speed may be worth the price.

➡ **Power management:** Laptop computers have power management issues that make the choice of processor even more important. For example, the Core 2 Duo processor from Intel uses less power than its predecessors.

One other thing to think about is chip cores. In the latest chips the processor 'brain' is divided up into different logic sectors called cores. This helps speed up your computer by allowing it to perform multiple tasks at the same time. For example, you might buy a laptop Core2 Duo processor, which has two cores, or spring for a high end desktop with a Quad Core chip (4 cores).
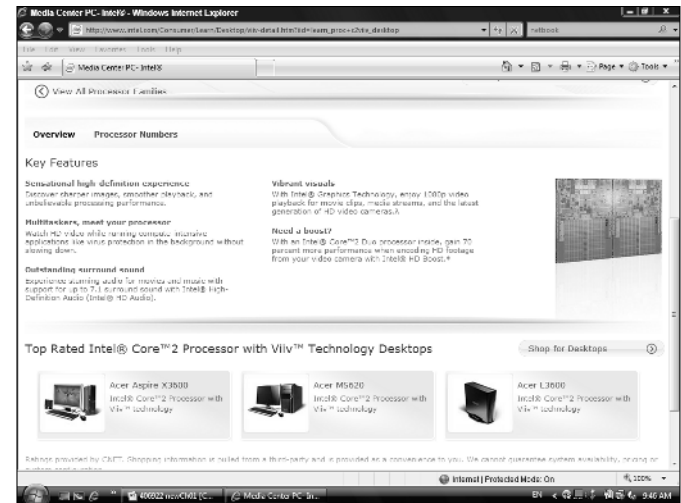

Figure 1-11: Intel's processors