# COMPUTERS

Computers a integral part of our lives every day, from checking e-mail, to posting information on social networks to paying bills, or completing school assignments. Regardless of your various reasons for purchasing a computer it is important to know what you need before making purchase in order to have a computer that you can accomplish your task with. With all the options of both standard packaged computer's or a custom built computer, learning which one is best for you can save you money, and headaches, in the long run.

**Key Terms**

In order to understand the computer purchasing process, consumers need to be familiar with some key terms. These terms are words that can be seen at stores were computers are sold, websites of computer manufactures' and other places were computers are seen.

- **Cable Modem** – used for connecting to the Internet and is much faster than a typical dial up modem.
- **Central Processing Unit (CPU)** – The area of the computer that processes everything from basic instructions to complex functions.
- **CDRW** – A CD drive that can read write and rewrite to a CD.
- **Computer** – A programmable machine. The term most often is used to refer to a desktop or laptop computer.
- **Desktop/Tower Computers** – Commonly referred to a computer system that is not moved frequently and stays on a "desktop" for use.
- **Digital Subscriber Line (DSL)** – Is a medium for transferring data over regular phone line and can be used to connect to the Internet.
- **Expansion Card** – A printed circuit board that can be installed in a computer to add functionality to it. For example a user may add a new graphics card for 3D graphic power.
- **External Hard Drive** – A drive located outside of the computer for the typical purpose of the backing up of an internal hard drive or for the storage of additional/large files.
- **Hard Drive** - This is where you will store all your files whether it be music, movies or word documents.
- **Input Device** – Any device that provides "input" to a computer. Such devices include keyboard, mouse, web cameras, etc.
- **Internal Hard Drive** – A drive that resides inside the computer, which most times includes the operating system and pre-installed applications.
- **Keyboard** – A board of keys used for inputting data into the computers.
- **Laptop** – Also known as notebooks, are portable computers that you can take with youth and use in different environments. They include a screen, keyboard, a trackpad/trackball which serves as a mouse.
- **Liquid Crystal Display (LCD)** – Super-thin displays that are used in laptop computers screens and flat panel monitors.
- **Memory** - Memory can refer to any medium of data storage, it usually refers to RAM, or random access memory. When your computer boots up, it loads the operating system into its memory, or RAM.
- **Monitor** – Used synonymously with 'computer screen' or 'display.' The monitor displays the computer's user interface and open programs, and the user to interact with the computer.
- **Motherboard** – Main circuit board of your computer.
- **Mouse** – One of the primary input devices on a computer. The mouse allows for quick movement around the monitor and implementation of action based on the ability to use the buttons located on the mouse.
- **Network Card** - Your computer should have an Ethernet port on it. This port will allow you to physically connect to the internet or your internal network by plugging it into your router / modem.
- **Operating System** - This is the software that makes your computer go. You can buy a computer with the Mac OS X operating system or Windows 7 or any flavor of Ubuntu Linux as well.
- **Optical Drive** - The optical drive in your computer should be able to read and write CDs and DVDs.
- **Processor** - This is the brain of your computer. It can also be referred to as the CPU. Processors come in many different varieties. Processor speed is measured in gigahertz or GHZ. The larger the number of GHZ the faster the computer.
- **Plug and Play (PnP)** – Devices that work with a computer as soon as they are connected.

- **Random Access Memory (RAM**) - The RAM or memory is what your computer use's to store information while you are using the computer. This can also be referred to as Random Access Memory.
- **Read Only Memory (ROM)** – Not to be confused with RAM, ROM is memory containing hardwired instructions that the computer uses when it boots up, before the system software loads.
- **Serial Port** – Type of connection on PCs that is used for peripherals such as mice, gaming controllers, modems, and older printers. Sometime called a COM port.
- **Sound Card** – A component inside the computer that provides audio input and output capabilities.
- **Storage Device** – Any type of hardware that stores data.
- **Speakers** – Common type of output device that produces audio output that can be heard by the listener.
- **Universal Serial Bus (USB)** – Most common type of computer port used in today's computers.
- **Video Card** - This is the part of your computer that allows you to show what you are doing. Without a video card you would not be able to see what you are doing on your monitor.
- **Video Graphics Array (VGA)** – Standard monitor or display interface used in most PCs.
- **Wireless Network Card** – A card you will be able to access the Internet without a wire connecting you to a router/modem.

Reference: Tech Terms Dictionary, http://www.techterms.com/

**Computer Purchase Options**

*Desktop or Laptop*

Before purchasing a computer, you need to decided what type, or style, of computer is best for you. Basically, computers are categorized as desktops and laptops. The information below provides a quick overview of the different options, and which would be a best option for you.

The laptop is a great option if you:

- Live in a small space that simply cannot house you and a desktop PC at the same time
- Have an aversion to wires
- Want to take your PC anywhere including in and around your house or on adventures beyond four walls without having to bring a hand truck
- Love your PC so much that you cannot bear to part with it. Ever.
- You're a super secret agent, where smaller and mobile is indeed better

The desktop PC is a great option if you:

- Want to pay a little less and get a little more
- Don't plan to take it anywhere, or if you do (you gamers especially), you don't mind the hassle of packing it up every time
- Like the idea of upgrading the heck out of it
- Are a super demanding computer user and multimedia junkie

Reference: Intel, http://www.intel.com/learn/practical-advice/before-you-buy/evaluate/desktop-or-laptop

**Factors To Consider If Purchasing A Laptop** (PC World, www.pcworld.com)

Notebook buyers have to think about such additional variables as size, weight, screen dimensions, battery life, and keyboard quality--plus options such as built-in wireless.

*Key Features*:

- **Processor**: Intel's dual-core processors have helped laptops gain ground in the power department. In PC World tests, laptops using these dual-core processors performed considerably faster than laptops using single-core processors, particularly when multitasking. In newer notebooks you may see references to Core Duo, Core 2 Duo, and Core 2 Extreme, which represent steps up in computing power for laptops.
- **System memory**: Unless you're buying on the cheap, a new laptop generally includes 2GB of system memory. Many notebooks today are available with 3GB of RAM or more. Before electing to upgrade to more RAM than

that, be sure to check which version of Windows your new notebook uses. A 32-bit OS can't efficiently use more than 3GB of RAM. A 64-bit version can go higher. Outfitting your laptop with more RAM at the time you buy it is convenient and helps you extend its useful life.

- **Graphics memory**: Portables can have either of two different types of video chip sets: dedicated video (which means a separate preinstalled graphics card) or integrated graphics. If you intend to use your laptop for even casual gaming, make sure that it has memory dedicated to graphics use, rather than relying on graphics that pull from main memory.
- **Screen**: Some laptop screens continue to get bigger--and most have gone wide, too, enabling you to view spreadsheets or movies with ease. But other screens have gotten significantly smaller to accommodate all sorts of road-ready computing. Price is no longer much of a deterrent for any of these choices. Even budget shoppers can afford the luxury of high-resolution color:
- **Battery**: Laptop battery life continues to improve. Keep in mind that manufacturers may improve their times by taking steps such as turning off wireless receivers, which tend to consume a lot of power. Also, check to see if the manufacturer's stated battery-life numbers are for its regular or extended-life battery--the latter kind of battery can last up to twice as long as a regular one. And remember that, in general, lighter laptops tend to have longer battery lives than big desktop-replacement notebooks do.
- **Keyboard and pointing device**: Though you can get accustomed to almost any laptop keyboard, it's best to try before you buy. Thin-and-light notebooks usually have smaller-than-average keys spaced more closely than the keys on a desktop-replacement model, and their layouts may differ from a standard keyboard's. If you have largish hands, be aware that an ultraportable's keyboard may be difficult to use. Buy a USB mouse designed for laptops. It's a small investment, and your hands will thank you for it.
- **Optical and other drives**: Most manufacturers offer laptops with rewritable DVD drives. But now that Blu-ray Disk has triumphed over HD DVD in the high-definition format wars, more notebooks are being configured with Blu-ray drives. If you need a floppy drive for some reason, you can buy a USB add-on drive.
- **Hard drive**: Even inexpensive netbooks now come with 60GB hard-disk drives (HDDs). Most all-purpose machines offer hard drives in the range of 200GB to 320GB, and ultraportables now pack solid-state drives (SDDs). Though SDDs are faster and lighter than HDDs, their capacities are considerably lower (maxing out at around 128GB) at a significantly higher cost. So, you need to balance speed and weight against price and storage capacity. Whichever choice you make, you'll find that hard-drive space fills up quickly, so you might want to consider buying a portable external drive as well.
- **Weight and bay design**: Laptops range from 15-pound desktop replacement monsters to ultraportable lightweights that rely on external drives to come in at under 3 pounds. One-bay notebooks balance features and weight. Some laptops continue to offer the optical drive as a modular device, so you can swap it out for a second hard drive or a second battery. When making a purchase, however, keep in mind that you should consider the weight not only of the laptop but also of the AC adapter, the extra batteries, any external modules, and their cables. Ultraportable notebooks have lightweight adapters, but they can weigh almost as much as a full-size notebook if you have to carry an external optical drive, too.
- **Communications**: Most laptops have at least two USB 2.0 ports; many offer four, and some up to six. A majority of notebooks include a four-pin FireWire (IEEE 1394) port for connecting an external drive or a digital-video camcorder. Others now include eSATA ports for high-speed data transfers. Built-in ethernet now comes standard on all portables, with many models carrying gigabit ethernet. Many laptops also have built-in Bluetooth.

**The Specs Explained**

Before shopping for a laptop, consider how you'll be using it. If your primary goal is to get some word processing or spreadsheet work done while staying on top of e-mail, a netbook (priced at less than $500) will meet your needs. But a netbook does entail some sacrifices: a smaller processor, about 1GB of RAM, not much in the way of hard drive space, no optical drive, and (at biggest) a 10.2-inch screen. On the surface not much separates the netbooks from sexy lightweight notebooks, but the specs under the hood (and a big screen inside it) can inflate an ultraportable's price to as much as $2000 more than a typical netbook.

Remember that most vendors let you custom-build and -price your own laptop by picking from a mind-boggling array of

features, which gives you a lot of control over the final product. You may be able to afford a faster notebook by accepting a smaller, less-expensive hard drive or DVD-ROM/CD-RW drive, instead of a BD-ROM.

Unlike those on desktop PCs, only some of the components (such as memory and the hard drive) are upgradable; others (such as the graphics board) are permanent once they're installed at the factory. That's slowly changing, as some manufacturers begin to incorporate upgradable graphics. But take your time and pick only what you need. Following is a rough breakout of some configuration options.

- Installed memory. The more installed memory your laptop has, the more applications you can run at once, and the better your machine will perform. Ease of access aside, upgrading memory in a notebook is a bit trickier than with a desktop, so buy as much memory preinstalled as you can afford. Laptops with 2GB of RAM are optimal. If you're running Windows Vista on a laptop, consider upgrading to 3GB of RAM (or more if your notebook uses a 64-bit version of the OS).
- Processor. The CPU determines how quickly a notebook runs applications and performs on-screen tasks. Core Duo and Core 2 Duo processors are good choices for speedy processing. Atom processors appear only in budget-friendly netbooks, so plan according to your needs
- Screen size. The specified size of a laptop's LCD screen represents a diagonal measurement. The larger the screen, the higher the maximum resolution and the more information you can view at once. The aspect ratio seen on some newer 16-inch laptop screens offers the ideal resolution for viewing high-definition movies on the go.
- Screen coating. A laptop's LCD panel is only as good as it looks when you look into it. Can you see text and images clearly when you're viewing them in broad daylight? Many notebooks that look sharp on store shelves (thanks to their extra-glossy coatings) may be tough to work with outdoors or in a coffee shop. So keep in mind not only how you plan to use your notebook, but where you want to use it.
- Hard drive. The larger the hard drive, the more data you can keep on your laptop. Most cheap netbooks offer 80GB drives at this point, so why not give yourself a little room to grow? If you plan to work with databases, spreadsheets, or digital photo or video files, opt for a large drive. Be sure to find out the hard drive's speed, too.
- Expansion bays. The more expansion bays your laptop has, the more options you'll have for switching in new optical drives or other storage drives. But switching drives takes time, and modular components aren't as common as they used to be. As laptops gravitate toward flush form factors and unibody designs, may find that your only practical option is to lug around external drives that plug in through USB ports.
- Optical drives. Most manufacturers offer laptops with rewritable DVD drives, which give you the most flexibility. Alternatively, you could purchase a notebook with a DVD-ROM/CD-RW drive, to save money.

**Factors to consider if purchasing a Desktop** (PC World, www.pcworld.com)
Today's modern desktop PCs offer a wealth of options: You can go for a PC with a fixed retail configuration, or you can customize your system by stepping through a sometimes dizzying array of choices from a configure-to-order vendor. The resulting array of components is no longer wrapped up in a beige box, but in a colorful shell of highly variable shape and size, differentiated by indecipherable naming conventions.

Presented with so many possibilities, you need to narrow the field by considering what you want to use your new desktop for. Are you an avid photographer looking for a speedy but cost-effective platform for editing high-resolution photos? If so, you'll benefit from buying a machine with extra RAM and a discrete graphics card. If you've acquired an extensive media collection, and want an inexpensive and compact way to pipe it to your HDTV, a compact PC tailored toward media sharing and playback may be your best bet.

Desktops fall into three major categories, each with its own range of price and performance:

- compact PCs,
- all-in-one PCs, and
- classic tower PCs
    - budget
    - mainstream

- performance

Each style of machine has different strengths and weaknesses, and choosing the one that's best for you depends' largely on how you plan to use it.

- **Compact PCs**
  As the smallest members of the desktop computer family, compact PCs often omit features to deliver computing power in a space-saving package. The combination of energy-efficient components, quiet operation, and small size makes compact PCs ideal for people who want a nonintrusive machine. A typical compact PC costs between $300 and $600, though the price goes up as you add upgrade options.

  Compact PCs tend to be equipped with notebook or netbook components, such as Intel Atom processors. This limits their usefulness in tasks that demand lots of processing power, but it makes for quiet, energy-efficient operation. Some compact PCs are configured for as low a bottom-line price as possible; others are packed to the gills to deliver optimal performance in a compact system.

  When assessing smaller PCs, keep an eye on the number of ports. The smaller the footprint, the fewer features you can reasonably expect, and that includes fewer connectivity options. Though you'll get a VGA port and (on average) six USB 2.0 ports, many compact PCs also offer HDMI--an asset for home-theater setups.

- **All-in-One Desktops**
  All-in-One PCs are self-contained: components are mounted behind a display, with screen sizes ranging between 18- and 27-inches. With no cords to manage or peripherals to juggle, setting up your new all-in-one PC can be as simple as pulling the machine out of the box and plugging it in. Some all-in-ones also offer a rather distinct perk: touchscreens.

  Many all-in-one PCs come with a wireless keyboard and mouse, Bluetooth support, and Wi-Fi connectivity. This reduces cord clutter to a minimum--an important consideration in spaces where an attractive décor or efficient use of space is at a premium.

- **Budget PCs**
  Typically these PCs are minitower systems, with fewer drive bays than a full tower has. Beware models that come equipped with AMD Sempron or Intel Celeron processors, as those CPUs' performance drawbacks will cancel the advantage of their low cost. Inexpensive tower desktops usually incorporate low-powered, integrated graphics rather than discrete graphics cards. As a result, your entertainment options may be limited. High-definition media playback suffers on models equipped with older Intel-based integrated graphics; and if you're interested in gaming, you'll be hard pressed to tackle anything more demanding than Flash-based offerings.

  Budget PCs generally offer at least 320GB of storage space and at least 2GB of RAM, but permit few upgrade options beyond adding RAM or a larger hard drive. They rarely leave much room for expandability inside their cases, either. Still, if you need a machine for nothing more than word processing, e-mail, and occasional DVDs or online videos, these machines should suit you just fine.

- **Mainstream PCs**
  up in the desktop chain, you'll find machines aimed at mainstream users. These PCs start in the vicinity of $800, and carry at least 500GB hard drives and about 4GB of RAM. Powered by dual-core and lower-end quad-core processors, they deliver better performance than budget desktops, without breaking the bank.

  Photo-editing applications stand to benefit from working with multi-core processors, and entertainment enthusiasts will appreciate the improved gaming performance and stutter-free HD media playback that a discrete graphics card helps deliver. Many of the machines in this category include a Blu-ray drive, either standard or as an optional extra. And if your video editing needs are modest, you probably can find a machine in the mainstream price bracket that

has enough power to handle your creative projects.

- **Performance PCs**
  Occupying the high end of the spectrum are performance desktops. Such PCs generally start at a little over $1500. Most performance PCs are full tower systems, equipped with a slew of drive bays and expansion slots. Designed to tackle challenging tasks, they come equipped with the latest and greatest Intel and AMD dual- and quad-core processors, 6GB or 8GB of RAM, and at least one discrete graphics card. Some performance desktops include multiple graphics cards to deliver improved graphics performance.

  Performance desktops are suitable for users who need a lot of processing power to get their work done--professionals who do extensive high-resolution photography or video editing, and gamers who are willing to pay for top-of-the-line visual effects.

**References and Resources**

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