

Introduction **to**
computer theory

For “O” and A’ Level

By

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Printed and published by Kisubi Associated Writers Agency
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PREFACE

This is Module 3, Word Processing, which provides the basis for the practice-based test in this module. Word Processing requires the candidate to demonstrate the ability to use a word processing application to create everyday letters and documents.

The candidate shall be able to:

The candidate shall be able to:

- Work with documents and save them in different file formats.
- Choose built-in options such as the Help function to enhance productivity.
- Create and edit small-sized word processing documents that will be ready to share and distribute.
- Apply different formats to documents to enhance them before distribution and recognize good practice in choosing the appropriate formatting options.
- Insert tables, images and drawn objects into documents.
- Prepare documents for mail merge operations.
- Adjust document page settings and check and correct spelling before finally printing documents.

This Module was made possible due to the efforts and encouragement provided by a variety of people around the world. Special thanks are due to two pioneering organizations working on computers in education in Uganda who provided advice and materials: Schoolnet Uganda, Computers for Schools and Crescent Future Kids. Three international development aid organizations: Camara, VVOB and IICD, also deserve special recognition for their contributions to this document and the efforts they are making to use ICT as a tool for development and education in Uganda and elsewhere.

Digital literacy is having an increasingly important impact on individuals, communities and societies as the world becomes more technology-dependent, and the information society and knowledge economy become increasingly global.

Kisubi Associated Writers Agency works with communities, local and regional authorities, governments, international stakeholders, Non-Governmental Organisations (NGOs), and other development-orientated organisations around the world to promote digital literacy, and to deliver ICT skills development across all key sectors.

The project involves use of modules that will be given to all teachers taking up the course. There will be testing centres in prominent secondary schools and colleges all over the country. The training takes five months after which one will be issued a valid certificate.

By the end of the course, each participants will have covered the following

- Module 1 – Concepts of Information and Communication Technology (ICT)
- Module 2 – Using the Computer and Managing Files
- Module 3 – Word Processing
- Module 4 – Spreadsheets
- Module 5 – Using Databases
- Module 6 – Presentation
- Module 7 – Web Browsing and Communication

This wonderful book is an invitation to YOU to join the ICT world and embrace the new pattern of development in education. You are important. Do not make yourself a minus in ther 21st century world.

COMPUTER

Introduction.

A **computer** is an electric machine, operating under the control of instructions stored in its own memory that can accept data (input), manipulate the data according to specific rules (process), produce results (output), and store the results for future use.

A **computer** is also defined as a device that does work faster than man can do. This is true by the fact that communicating on a phone, one gets the information very fast than when hand delivered.

A **computer** may also be defined as an electronic device that has the ability to interpret and execute programmed commands for input, output and computation of logic operations. A **program** is a set of instructions written in a computer language.

Literally, a **computer** may also be defined as an electronic device that has the ability to add, multiply, subtract, input, process and out put information according to the user's wish or wishes.

Data is a collection of unorganized facts, which can include words, numbers, symbols, images and sounds.

Information is processed data that is organized, has meaning, and is useful. Examples are **reports**, **newsletters**, a **receipt**, a **picture**, a book, etc.

Data **entered** in to a computer is called **input**. Processed results are called **output**. The cycle of input, output and storage is called the **information processing cycle**.

A **person** that communicates with a computer or uses the information it generates is called an **End user**.

The 3 wares

To build a complete computer system, you need hardware, software, and liveware.

Hardware

Computer equipment is called hardware because it's built from wires, screws, and other parts you can buy in hardware & electronics stores. Cynics say it's called "hardware" because it's hard to.

Hardware simply refers to the visible and tangible parts of a computer or the physical pieces of equipment in a computer system. It is simply the **assemblage** of metallic and plastic components that make up the computer.

The more memory and disk space a computer has the more work it can perform.

3 types of hardware

We all agree that a computer is “any machine that can seem to do useful thinking”. For a computer to do “useful thinking”, you must buy 3 types of hardware:

- The processor does the “thinking” itself; it processes info.
- The memory remembers the computer’s “thoughts”; it includes RAM, ROM, disks.
- The I/O devices communicates those thoughts.

Each type is important and useful. A computer without memory is as useless as a person who says “I had a great idea but can’t remember it.”

A computer without an input/output system is as useless as a person who says, “I had a great idea and remember it but won’t tell you.”

When you’re buying a computer, check all 3 types and make sure they’re good. This workshop explains how to judge them.

Software

The info that the computer deals with is called software, because you can’t feel it: it flows through the computer’s circuits as coded pulses of electricity.

Software is the series of **instructions** that tell the hardware what task to perform, when to perform and how to perform the tasks.

Without software, **hardware** is useless; hardware needs the instructions provided by software in order to process data into information.

The computer can handle two kinds of software: data (lists of names, addresses, numbers, words, and facts) and programs (lists of instructions that tell the computer what to do).

To feed the computer software (data and programs), you can type on the keyboard, or insert ROM chips or disks containing the software, or let the computer receive the software from another computer (by running wires between the computers or letting the computers chat with each other by phone).

If you feed the computer wrong software — wrong facts or wrong instructions — the computer will print wrong answers. Wrong stuff is called **garbage**. If you feed the computer some garbage, the computer spits out garbage answers.

If a computer prints wrong answers, the computer might not be broken; it might just have been fed wrong data or programs. If you tell a technician to fix it, the technician might reply, “Hey, the computer’s fine!

Don’t blame the computer! It’s *your* fault for feeding it garbage! If you put garbage in, you get garbage out!” That’s called the principle of garbage in, garbage out (which is abbreviated GIGO, pronounced “guy go”). The technician will say, “it’s just a case of GIGO”.

Liveware

The person sitting at the computer is called the liveware, operator, user, or meathead — because the person’s head is made of meat instead of wires.

The term meathead was first shouted publicly by that TV character from New York: Archie Bunker. The term liveware was invented in 1982 by Garry Trudeau, creator of the Doonesbury cartoons.

Summary

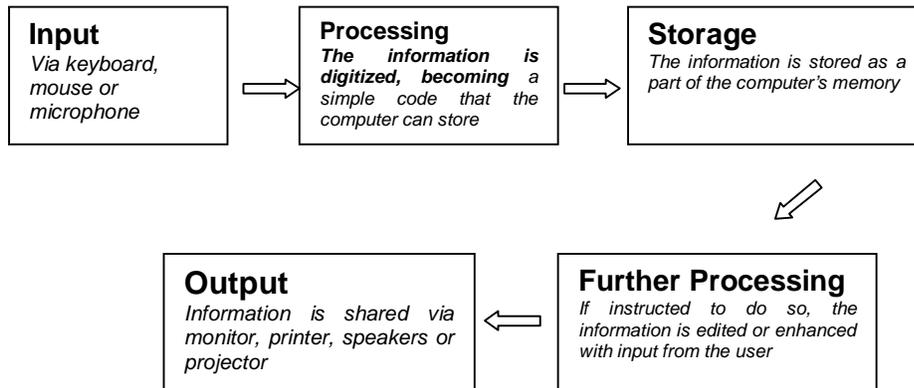
For a complete computer system, you need all 3 wares: the hardware (equipment), software (info), and liveware (people).

Beware of the 3 wares! You can spend lots to buy hardware (and repair it), buy software (and improve it), and hire helpers (and train them). Make sure you’ve budgeted for all 3 wares and that is why this training is very important!

How a Computer Works

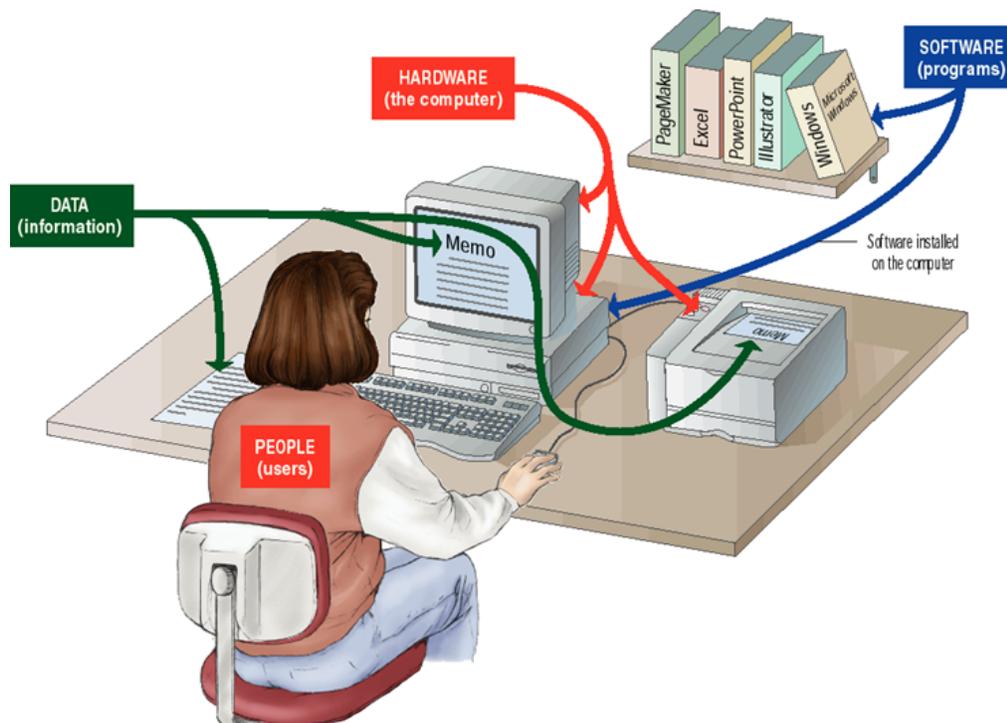
A computer is a fabulous instrument that turns human inputs into electronic information that it then can store or share/distribute through various output

devices. A computer performs (if instructed to do so) the steps shown in the diagram below, using information that a user provides (such as a typed sentence):



All of the equipment (hardware) and the instructions (software) needed to complete the above steps are described in the next section.

Amazingly, the information that the user inputs into a computer is processed so that it becomes a simple code made up of only two digits: zero and one! For all its complexity, a computer is only able to handle these two choices. This is because it is based on electrical signals that have only two options (such as either **on** or **off**).

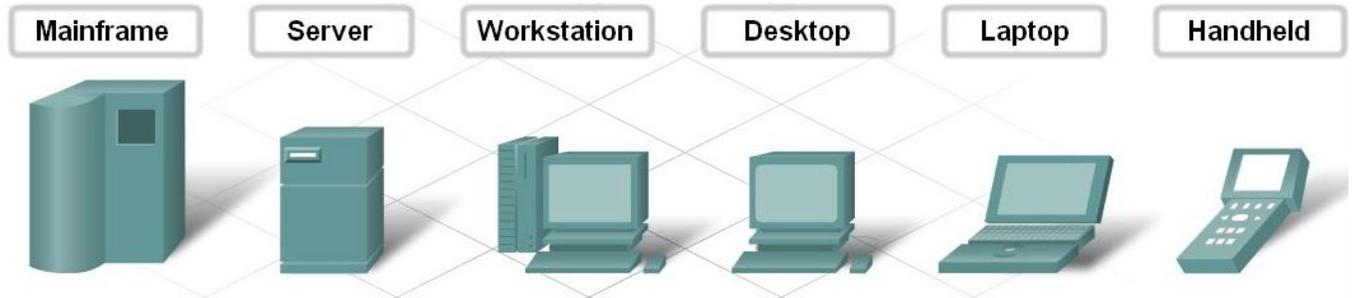


But computers compensate for this very simple code by using it in huge quantities.

A single unit of this zero/one code is called a **bit**. Grouping 8 bits together makes a unit of information called a **byte**.

Typing a single page of typed text on a computer requires a minimum of about 20 kilobytes (20 KB or 20,000 bytes) of information to be stored. Good quality digital photographs are usually 1 megabyte (1 MB or 1,000,000 bytes) or larger. So a computer is a very “busy” machine indeed!

Types of Computing Devices



WHY DO WE STUDY COMPUTERS?

Many reasons surround why we study computers especially in schools, colleges, universities and other institutions of any kind. Some of the reasons are given below.

1. To overcome any fears of computers now and in future.
2. To acquire knowledge about computers and learn how to apply the knowledge acquired.
3. To learn how to use computers in all aspects of life now and in future.
4. To attain a certain level of computer education that will enable us cope with the challenges brought about by the computer revolution
5. To acquire jobs/employments in future that are computer related.
6. To realise that computer revolution is upon us and that computers are affecting the way we live, play and work.
7. To learn how to communicate using computers. This is true as regards the internet where few people know how to use the internet/computers.
8. helping the learner develop and consolidate his/her knowledge of ICT and be aware of new and emerging technologies;
9. encouraging the learner to develop as an independent user;
10. encouraging the learner to develop ICT skills to enhance their work in a variety of subject areas; and equipping the learner with skills for lifelong learning.

Differences between Man and A Computer:

1. Man can operate a computer whereas a computer cannot operate a man.
2. Computers are man made whereas man is God created.
3. Man thinks whereas computers do not think.
4. Man has a natural intelligence whereas computers have artificial intelligence.
5. Computers use electricity to perform tasks whereas man uses energy accorded to him by God.
6. Computers get damaged or spoilt whereas man dies.

FEATURES/CHARACTERISTICS OF COMPUTERS.

Any device to be called a computer, it must manifest or possess some or all the following characteristics.

1. **Speed.** Computers are quite fast in their operations in that their speed is measured in millions of instructions per second (M/PS).
2. **Accuracy.** Computers are known to be so accurate that they hardly make mistakes. Computers are able to detect and correct any mistakes made.
3. **Storage:** For computers to be able to work, they must have some form of work space where data (raw facts and figures or unprocessed data) is stored before being processed or where information (processed data or summarised data or otherwise manipulated data) is stored before being output to particular devices.
4. This storage space is referred to as **memory**.
5. **Deligence.** Computers have the ability to perform the same task over and over for a long time without getting bored.
6. **Artificial intelligence:** Computers are artificially intelligent. They can respond to requests given to them and provide solutions. This is accomplished by the 'power' of the programmes installed in them.
7. **Automation.** Computers also work automatically. They do not need any supervision in order to perform programmed routines. For example telling of time is automatic no matter whether time is correct or not.
8. **Electronic.** Computers use electricity in order to perform their functions. They either use solar or thermal electricity. This explains why there are few computers in areas with no power.

USES/ADVANTAGES OF COMPUTERS:

Computers are widely used in our everyday lives to do particular tasks. Their uses may be as wide as the user may imagine. Some of these uses/advantages are as follows:-

1. **Research.** Computers are used in scientific research especially by doctors to come up with drugs and also by other scientists to come up with scientific findings. New drugs have been introduced and invented; movement into the space is possible (exploration). In places where human beings cannot survive, computers (machines) have been sent in space and data transmitted back to earth.

2. **Business environment.** In the world today, businesses have realised the benefits of computers; for instance one can sit at home or in an office and trades with the outside world through computer communication e.g. the use of a cellular/mobile phone.
3. **Calculations:** Computers are used in calculation of complex numbers especially in big organisations. It is not only this, but they are also used in balancing accounts to suit the needs of the owners.
4. **Recreation.** People today use computers to play games and also watch films especially when they are bored, from a hectic job as refreshment to their mind. It is also used for watching the mostly European soccer especially on TV (DSTV).
5. **Storage:** Computers are found by most organisations like schools, colleges and universities as the best means of keeping information for a long time. This is because once work is put on a flash disk, floppy diskette, it is easier to move with it yet again the information kept on a computer is not easily accessed if one doesn't know how to use a computer and doesn't have a password to the file.
6. **Time:** Computers are used in telling time. This explains why we have digital watches and also cellular phones have provisions for time telling.
7. **Communication:** Computers are used in communication from one person to another through the use of internet (e-mails – electronic mails) and also through cellular phone communication.
8. Computers are also used to get better and recent yet important information which has been posted on the web.

DISADVANTAGES OF COMPUTERS.

Though there are many advantages of computers, they have a lot of disadvantages and among them are the following:

- ✓ Computers are too expensive to be afforded. This explains why there are few computers in most Organisations, Schools, Colleges and Universities.
- ✓ Computers cannot be used in areas with no power; this explains why they are called electronic devices.
- ✓ Computers do not think, therefore they require the services of a human being before they can work or be used.

- ✓ Computers can spoil our eyes. This is exemplified by the fact that too much time taken on a TV may cause tears coming out of one's eyes.
- ✓ Computers can call for laziness especially those who take much of their time on watching films. They forget they are meant to do certain jobs given to them by their parents.
- ✓ There is also cultural disintegration as a result of watching films. As people watch films and also surf on the internet, they find out different modes of dressing which they copy yet they dilute our cultures.
- ✓ Moral degeneration. As a matter of fact, their certain literature and also pictures shown on the computers that are not good for consumption such as love stories and sex movies (Blue Movies). These erase our morals.
- ✓ Computers cause blood clotting as a result of strain by not moving i.e. being in one place static.
- ✓ They also cause back ache to those who are ever on the computer doing much of their work there.

HISTORY OF COMPUTERS:

Computers began way back in the 16th century. Computers were not so much known not until after 1940 when the first electronic computers were invented.

The first computer machine was known as **ABACUS** and it was used for volume computing especially in China and Japan. The first Aid of logarithms to be introduced was developed by **John Napier** in **1614**

In **1620**, **William Oughtred** developed the **slide rule** based on the concept of logarithms.

EARLY DISCOVERY (MECHANICAL ERA).

In **1647**, a French man in the names of **Blaise Pascal** invented the “**Mechanical Calculator.**”

In **1694**, a Germany mathematician in the names of **Leibniz** invented the **Leibniz’s stepped reckoner**. This was a more effective calculator, more advanced than Pascal’s machine.

THE START OF COMPUTER AGE:

Charles Babbage developed a device called “**Analytical engine**” which was able to combine arithmetic process with decisions based on its own, hence regarded as the father of modern computers.

These machines had moving parts, mechanical gears, electromechanical relays and dials and often used punched cards and magnetic tapes for storage of information.

ELECTRONIC COMPUTER GENERATIONS:

Computers were not so much pronounced not until the 19th century when the first electronic computers were manufactured. They were very huge and occupied very big rooms. Their processing speed was very low and they could only do a few tasks like additions, and subtraction of numbers. If compared to today’s calculator which can even find the square root, one realises that drastic changes have taken place in the computing industry.

Since the end of world war two, many developments have been seen in electronics. The computers based on the old form have been replaced by the new generation of computers based upon the modern latest forms of electronics.

Computers have gone through **five stages** of development and each generation of computer development has been characterised by a reduction in size and an increase in performance abilities.

THE FIRST COMPUTER GENERATION (1946 – 1956).

They relied on vacuum tubes to store and process information. These tubes consumed a lot of power, were short lived, generated a great deal of heat and weighed 30 tonnes. They were very heavy and too slow in their operations. They used magnetic drum memories to store data, and their memory was approximately 2KB (Kilobytes), with a speed of 10 kilo instructions per second.

These were the ENIAC computers i.e. Electronic Numerical Integrator And Computers. In 1945, **Dr John Von Neumann** developed a computer architecture still used today.

Characteristics of the first generation computers:

- They used vacuum tubes for internal operation
- They consumed a lot of power.
- They generated a lot of heat during their operations.
- They had a lot of maintenance problems
- They had limited primary memory of 2KB
- Used punched cards for input and output of data
- Programming used in machine and assembler language.
- They were very slow with a speed of only 10 kilo instructions per second.
- They produced a great deal of heat during their operation.

SECOND GENERATION COMPUTERS:

They relied on transistor technology and magnetic core memories. They were more reliable than the vacuum tubes; they generated little heat and consumed little power. Their memory size expanded to 32KB of RAM (Random Access Memory). The computers included were NCR501, IBM7094 and CDC-6600 Mainframe computers.

CHARACTERISTICS OF 2ND GENERATION COMPUTERS:

- They used transistors for internal operations.

- Introduced high level programming languages e.g. **FORTRAN** (Formulae Translation) and **COBOL** (Common Business Oriented Languages).
- Introduction of super computers.
- Computers became less expensive and popular than during the first generation
- Computers produced less heat as opposed to first computer generation
- They were small in size
- High processing speed and were more reliable.
- Their memory size expanded to 32 Kilobytes of RAM (Random Access Memory).
- They consumed little power.

3RD GENERATION COMPUTERS:

They used integration circuits (I.C^S) made of combining several transistors together. Magnetic disks were developed during this period for storage purposes. Computer memory expanded to 2MB (Megabytes) of RAM. Speed accelerated to 5 million instructions per second. This period also saw the first production of **Microcomputer** in 1974.

CHARACTERISTICS OF 3RD COMPUTER GENERATION:

- They used integrated circuits (IC^S) for internal operation.
- Use of parallel processing.
- Introduction of operating system (O/S) e.g. multic.
- Introduction of simple programming languages like BASIC (Beginners' All Symbolic Instruction Code).
- Low cost reliability i.e. computers became cheap
- Small size computers.
- Low power consumption
- Made computers more popular
- The memory size expanded to 2 megabytes of data.
- The processing speed accelerated to 5 million instructions per second.

4TH COMPUTER GENERATION:

The computers in this generation used large scale integration circuits (LSI) and very large scale integration circuits (VLSI). Memories used included magnetic disks, bubble memories and optical speed.

CHARACTERISTICS OF 4TH GENERATION COMPUTERS:

- Use of large scale and very large scale integration circuits for internal operation.
- Both deal with a number of electronic components.
- Development of microcomputers
- Development of microprocessors.
- Introduction of a wide variety of software.
- Computers became more powerful and cheap
- Small size computers were invented.
- The memory size expanded and the acceleration speed increased.

5TH GENERATION COMPUTERS.

This is the latest mode of computer generation. The major thrusts of this generation are the distributed computing systems and the merging of telecommunication and computing technology.

The technologies currently used and under research during this generation are parallel architecture, three dimensional circuit designs and super conducting materials.

CHARACTERISTICS.

- Increased electronic research
- Use of internet in communication
- Emergence of small computers
- Invention and use of robots
- High technology especially in space.

CARING FOR MICROCOMPUTERS/COMPUTER LAB:

There are many ways recommend of a good computer Lab and some of them are as follows:-

- Never use a computer in a dusty environment i.e. avoid dust in or on your computers.
- Water or moisture should be avoided near computers or in a computer room.
- Never eat or drink in a computer room to avoid liquids from splashing on the computers.
- Do not smoke near computers or in a computer room
- Do not block the ventilation holes on the computer when still hot.
- Use a dry clean cloth to clean the computers and not a wet one.
- Computer room must be well ventilated
- Do not allow or use foreign diskettes/media on your computers, they may contain viruses.
- Do not switch the computers on and off abruptly or irresponsibly, follow the normal way.
- Protect the machines using UPS (Uninterrupted Power Supply) and Stabilisers.
- Do regular repairs and maintenance on your computers.
- Do not expose computers to direct sunlight
- Dust covers must be used to cover the computers.
- Computers should be regularly serviced.
- Do not open a computer for inside cleaning, it should be handled by qualified personnel.
- Avoid connections when the computer is on power e.g. keyboard connection, mouse, etc.
- It is good practice to keep a record of the daily conditions in case of computer failure.
- The Peripheral devices such as the printers and the mouse should regularly be serviced.

NB: Peripheral devices are devices attached to the computer by cables e.g. the Keyboard, mouse, scanner, printers, etc.

CLASSIFICATION OF COMPUTERS:

Computers are classified into four ways i.e.

- ✓ Classification by Process
- ✓ Classification by Purpose
- ✓ Classification by Size and;
- ✓ Classification by Processor power.

CLASSIFICATION BY PROCESS.

Computers in this classification are classified according to how data processed is represented. It is further subdivided into three sub-classifications and these are:-

- Digital computers
- Analog computers
- Hybrid computers.

DIGITAL COMPUTERS.

These are computers that process data that is represented in discrete values i.e. discrete values are numbers that can be defined as 1,2,3,4,5,6...etc. an example of a digital computer is a watch.

ANALOG COMPUTERS.

These are computers that process data in a continuous form or measurable quantity/units. In other words, these are computers that can be used in measurements e.g. weighing speed, temperature, pressure, humidity, etc. an example of an Analog computer is a thermometer, Anemometer.

HYBRID COMPUTERS:

These are computers which have combined features of both the digital and analog computers.

CLASSIFICATION BY PURPOSE:

Computers are classified according to the work they do. These are classified into two i.e. Special Purpose computers and General Purpose computers.

SPECIAL PURPOSE COMPUTERS:

These are computers designed particularly to handle a particular task or job. Their form of work or operation is restricted in nature e.g. digital watches and calculator. Lifts in tall buildings also employ the special purpose computers.

GENERAL PURPOSE COMPUTERS:

These are computers designed to do or solve a wide range of problems or tasks. A typical computer of this kind can perform calculations, keep date and time, word process documents and also store information.

CLASSIFICATION BY SIZE:

General purpose computers are further sub-divided depending on the user capacity and size of the machine. These are classified into three categories i.e.

Main frame computers

Miniframe computers

Microcomputers.

MAINFRAME COMPUTERS:

These are large general purpose computers with extensive processing, storage, input and output capabilities, hence can accommodate many users at a time.

They can support between 500 – 1000 users at a time, each user working separately with a keyboard, and monitor but all using the same processor i.e. central processing unit. (CPU). These were mainly identified during the first generation computers. Mainframe computers are mostly used in companies for data processing and in science laboratories for complex mathematical calculations.

MINIFRAME COMPUTERS:

They possess the same principles as the mainframe computers only that for them they are small in size, and their user capacity is smaller ranging from 50 – 500 users at a time.

MICROCOMPUTERS:

These are very small computers compared to the mainframe and miniframe computers. They are single users i.e. the Keyboard, Central Processing Unit and Monitor can only be used by one person at a time. These computers are also referred to as Personal computers (P.C) or Personal systems (P.S). They are the most widely used computers in our everyday lives. They include:-

Desktop computers

Laptop computers

Palm top computers.

There are also **Super computers**, a term used to describe their abilities to perform certain functions such as extensive processing, speed and their diligence. They are the fastest and highest capacity computers. They are used for world wide weather forecasting and analysis of weather phenomena, oil exploration, etc.

DESKTOP COMPUTERS:

They are designed to be stationed in one place probably on top of a desk. These are the standard personal computers and most used in our everyday lives.

LAPTOPS:

They are designed for mobile computing e.g. one can compute or type a text even when on a vehicle moving to a distant place.

PALMTOPS/PERSONAL DIGITAL ASSISTANTS:

These are hand held computers although they don't evaluate the features of a desktop computer. They are made for few persons who are ever on the move. They can easily fit in a shirt pocket and at one time one can check for e-mail (electronic mail), take a few notes etc. an example is a **cellular phone**. These are at times referred to as Personal Digital Assistants.

COMPONENTS OF A COMPUTER:

A computer is composed of three components i.e. the;

The hardware

Software

User.

HARDWARE:

These are the tangible components of a computer i.e. the monitor, CPU, the mouse, printers, scanners, etc.

SOFTWARE:

These are the instructions that direct the activities of a computer system or the intangible components of the computer.

THE USER:

This is the person using the computer at that material time, whether literate or semi literate or a professional. This therefore explains that a computer is not complete or a computer without someone operating/using it.

MICROCOMPUTER INPUT DEVICES.

A computer inputs data, processes and outputs information. The mode of operation of a computer is in three phases i.e. the input, the processing and output. Specialised devices take up each of these phases. These devices include:-

Input devices

Output devices

Central processing unit which is the brain of the computer. It is referred to as the brain of the computer because it is where the processing and storage of information take place.

INPUT DEVICES:

These are devices/gadgets that are used to feed data into the computer i.e. the central processing unit.

Each input device inputs data in a specialised way or unique format depending on the type of data being input. The data being input might be graphics (pictures), sounds or characters (letters or figures).

Input devices include:-

- ✓ The Keyboard
- ✓ The mouse
- ✓ The scanners
- ✓ The digital cameras
- ✓ The digitizer
- ✓ The touch screens
- ✓ The Joystic

1. THE KEYBOARD:

This is the primary input and control device of a computer, or it may also be defined as a device that is used to feed data into a computer.

The keyboard comprises of three basic parts i.e.

The Alphanumerical keys

The functional (special purpose/control keys).

The Numerical keys (key pad).

The keys on the computer keyboard are typematic i.e. they can repeat if held without removing the hand.

ALPHANUMERICAL KEYS.

These are the A – Z letters. They derive their name from alphabetical letters yet above them on the keyboard are the numerical numbers hence alphanumerical keys.

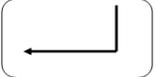
FUNCTIONAL KEYS.

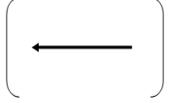
These are at times referred to as **Special** or **Control keys**. They issue commands to the computer and have different functions with different application packages e.g. F2, F3, F4, etc.

THE NUMERICAL KEY PAD

It consists of numbers and mathematical signs. It is similar to a calculator.

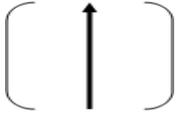
SPECIAL PURPOSE KEYS.

ENTER KEY  Its function is to issue or confirm an action or command. It is also used to move from one line or sentence to another when pressed. There are two enter keys on the keyboard i.e. one on the typewriter side and the other on the Numerical area.

BACKSPACE  Its function is to erase the character to the left of the cursor, one character by character or letter by letter.

SPACE BAR.

Its function is to insert space between letters or words.

SHIFT KEY  Its functions are:-

To activate the second function of the key with two functions when held down.

To turn to uppercase or lowercase of letters when held down depending on the case model of the keyboard.

CAPS LOCK

Its function is to turn to uppercase or lower case of letters when just touched depending on the case model of the keyboard. On touching it, Num lock indicator lights meaning one can type in uppercase and touching it again, the num lock indicator goes off meaning one can type in lowercase of letters.

DELETE.

This erases the character to the right side of the cursor and pulls all those characters to the right.

2. THE MOUSE:

This is a small box that resembles a mouse (small rat). It has two buttons i.e. the left hand side button and the right hand side button, but each button has got different functions to carry out.

The mouse is used in place of the keyboard to **move the cursor** around the screen and also to make **selections** of the items in the menu.

It can also be used to draw various structures on the Visual Display Unit (VDU)/Monitor or Screen.

DIFFERENT TYPES OF THE MICE:

They are three i.e.

DESKTOP MOUSE:

It is commonly used by the desktop computers. It has got the buttons on the top and a ball on the side. Moving the mouse on the surface causes the cursor to change positions accordingly on the screen.

TRACK BALL MOUSE:

It is common with most laptop computers. The rolling ball and buttons are embedded within the computer keyboard which looks the biggest part of the laptop.

TOUCH PAD MOUSE:

It is also common with the laptop computers. It has a rectangular pad with two push buttons and the movement of the finger pad causes the mouse pointer to change positions accordingly.

3. SCANNER

It is a device used to import external graphics like maps, photo and other drawings into the computer.

4. DIGITIZER.

It looks like a mouse except that it has a glass with a cross hair in the middle. This cross hair acts as a guide during the input of data (**raw facts** and **figures** or **unprocessed** information).

It can be used in Cartography i.e. map making and drawing to accurately trace out lines on the map.

5. OPTICAL SCANNER.

These look like photocopiers but for them, the images are not output on the paper but transmitted as an image to the computer. The image can be a photograph, an art work or a text.

6. JOYSTICK.

A joystick resembles much like a normal gear lever of a car. They employ the same principle as the mouse except that they are a bit more free. Joysticks have combined features of a mouse plus the cursor control keys. This enables them to rotate in a much wider angle. These joysticks are commonly used in recording computer games.

7. VOICE RECOGNITION EQUIPMENTS (VRQ^S).

It includes all types of microphones which are used to capture sound. Most multimedia computers have at least one microphone. These are mainly used by musicians in recording their music.

8. TOUCH SCREENS

These are screens that can sense when a particular part of the screen is touched or pressed and hence respond accordingly. They are common with security systems which can read the finger prints of an individual.

9. DIGITAL CAMERAS.

These take photographs like normal cameras do. The major difference is that they do not create an image on a film as in the ordinary cameras but instead the image is stored and later downloaded for printing.

MICROCOMPUTER OUTPUT DEVICES:

These are devices that produce information that has been fed into the computer in form of a hardcopy output. Output devices accept information (summarised data or manipulated data) from the **Central Processing Unit** (CPU) and produce it in a suitable form for the user.

The Central Processing Unit (CPU) is the heart of the computer where all the processing and storage take place (it is regarded as the brain of the computer). It has the **control unit** for control of other devices and programmes.

FORMS OF COMPUTER OUTPUT:

The computer can output information in one or all of the following forms i.e.

Text, graphics or images, sounds.

The type of output depends on whether the computer is to produce a hardcopy output or a softcopy output. The principle output devices include

- VDU/Monitor/Screen.
- Printers
- Plotters
- Speakers.

These output information in form of a hardcopy output (i.e. **hardcopy** refers to information produced or recorded on a tangible medium) or a softcopy output (i.e. **softcopy** refers to information produced or recorded in a seemingly intangible form).

The main hardcopy outputs are **printers and plotters** while the main softcopy outputs are the **Video screens and flat screens**.

1. PRINTERS:

A printer is a device used to print or produce information in form of a hard copy. It is capable of printing characters, symbols and sometimes graphics on papers. Printers are categorised according to whether the image produced is by the physical contact of the print mechanism with the paper or not. That is, there are two categories of printers i.e. Impact printers and Non impact printers.

IMPACT PRINTERS:

These produce a hardcopy output by the print mechanism i.e. print heads physically touching the print media e.g. paper, cloth, etc.

These printers include:-

- Character printers
- Line printers or High speed printers
- Dot matrix printers.

CHARACTER PRINTERS:

These are low speed printers which mimic the action of typewriters by printing one character at a time e.g. **Daisy wheel** printers and **thimble** printers.

LINE PRINTERS:

These also print one character at a time only that they are faster. They print a whole line of characters at once thus they print from one end a paper to the other end, hence line printers.

DOT MATRIX PRINTERS

These are the most used impact printers. They consist of pins and ribbons. When printing, the pins hit on the ribbon and in turn produce a print on the paper.

The character it produces consists of dots arranged in the pattern of what is printing.

NON IMPACT PRINTERS:

These are printers which produce a hardcopy without the print heads physically touching the printing surface e.g.

- ✓ Inkjet/DeskJet printers.
- ✓ Bubble jet (thermal inkjet) printers.
- ✓ Thermal printers
- ✓ Laser printers.

INKJET/DESKJET PRINTERS:

These print using ink and are capable of producing coloured prints. They have tiny holes that release out the ink in form of dots e.g. HP Desk jet 690^C and Epson stylus 640.

BUBBLE JET PRINTERS:

They work by print head nozzles spraying tiny droplets of ink onto a print surface. Unlike the inkjets, the ink pumps here use bubbles to force out a droplet of ink.

THERMAL PRINTERS:

It contains dot heaters (heating elements) which cause dots to appear on special paper when heated. Thermal printers have few disadvantages i.e.

They can print on any other paper because the heat generated will not cause any decolouration without burning the entire paper. These papers are also limited to a particular self life. The more they stay unused or used, the more they will be

affected by age, sunlight, humidity and chemical vapours which may cause the words to disappear completely.

The papers have to be prepared before being used in printing. This causes an inconvenience in commercial production like they can only be stored for a few years before they actually go bad.

The print heads cannot be serviced or repaired even if a single dot heater fails. Hence the whole print has to be replaced making them expensive to maintain.

The print head is also slow because the heads have to be allowed time to cool before the next printing cycle.

Thermal print heads have a shorter life span than other print heads.

ADVANTAGES OF THERMAL PRINTERS:

- ✓ They are nearly noiseless since they do not have any moving parts to generate the noise.
- ✓ They consume little power as compared to other printers like dot matrix or character printers.
- ✓ Their print mechanisms are reliable because they do not experience inconveniences like paper jams.
- ✓ Thermal printers print clear and crisp (neat) images with very high resolutions.

LASER PRINTERS:

These are high quality printers with a high speed output. They are low noise printers during printing. Excellent graphics are obtainable with this type of printers.

Factors to consider before buying a computer printer:

- ✓ Speed of print or pages per minute print out.
- ✓ Memory of at least 2 megabytes (MB).
- ✓ Price of the cartridge or Toner.
- ✓ Availability of the Toner and cartridge
- ✓ Purpose for which the computer is going to be put to.
- ✓ Printer drivers.

- ✓ Consider printers that consume little power.
- ✓ Printers that are repairable.
- ✓ Printers that produce clear images with high resolutions.

2. VDU/MONITOR/SCREEN.

These display information in a visual form. Monitor is a television like part of a computer or it is a Visual Display Unit of a computer.

3. PLOTTERS

These can be compared to line printers. They have a pen like print head that can accurately draw both straight thick meandering lines. This makes them suitable for architectural drawing and map making.

4. SPEAKERS:

These produce sound output, etc. with today's multimedia programmes, speakers have become such an important necessity.

COMPUTER MEMORY:

Computer memory acts as a “**scratch pad**” space where programs and data are kept during operation i.e. it is compared to the brains of a human being.

Data stored in memory is represented as electrical voltage which is either charged or discharged i.e. on or off. The data resides in a “**space**” called **memory addresses**.

During processing, data is loaded and accessed from internal memory or main storage. The results or outputs are stored in memory before transferred to **auxiliary storage** devices.

The amount of memory available in the computer can determine which programme **can run, how fast they can run and how much data** they will work with at a time.

The internal memory holds the software programmes and data during the processing. It also stores the resulting information or output before being sent to the **output devices** or **secondary storage** devices in the internal memory.

Program software code, processed data, data being processed and awaiting output is stored in **internal memory (Primary Memory)** during the computer’s operations.

The microcomputers use the basic types of memory i.e. **ROM** and **RAM**. The Central Processing Unit (CPU) **comprises of** primary, secondary, the control unit (microprocessors and Arithmetic logic unit – ALU).

FUNCTIONS OF THE CPU

- To hold program instructions
- To carry out data processing on input data according to instructions.
- To update any master files that need to be changed as a result of processing.
- To produce out information by transmitting the output to an output device.
- To process and store information.

PRIMARY MEMORY:

This is a working space where programmes and data are kept temporary while they are being processed. It consists of two components i.e. **Read Only Memory (ROM)** and **Random Access Memory (RAM)**.

READ ONLY MEMORY (ROM).

It is the system memory where instructions that make the computer to start to work are kept, the instructions are kept in and are permanent.

The computer can read or follow instructions in **ROM** but cannot change them or add to them. This is a stable memory which is not affected by power failure. It houses the **operating system (O/S)** and gives the CPU the start up process.

ROM helps in checking whether the **hardware** components like the **keyboard** and **monitor** are connected properly.

The contents in ROM are set during manufacture and cannot be altered. These contents of ROM (**software programmes**) are collectively referred to as **firmware**.

TYPES OF ROM

1. PROM (PROGRAMMABLE READ ONLY MEMORY).

It is a kind of memory that can only be programmed once after it has been manufactured. Once programmed, and instructions stored, it can never be altered. This is common with **compact disk writable** (write once).

2. EPROM (ERASABLE PROGRAMMABLE READ ONLY MEMORY)

In this kind of memory, instructions can only be **erased** once and then reprogrammed after which they can never be altered e.g. the **compact disk rewritable**.

3. EEPROM (ELECTRONICALLY ERASABLE PROGRAMMABLE READ ONLY MEMORY).

Unlike **PROM** and **EPROM** memories, **EEPROM** enables a user to put as many instructions in his/her computer as she/he wishes. The instructions will remain in the computer until one wishes to alter them. This application is mostly common with colour TV^S. The user can programme the various buttons for different channels and then reprogrammes them again for different other channels. Even **mobile phones** use this for **storage of names** and **mobile numbers** which can be erased or altered at any time. All this is done **electronically**.

RAM (RANDOM ACCESS MEMORY):

This is the memory which forms the **major proportion** of the **main storage**. It is constantly re-used for **temporally storage** of different data items or programmes. It is a **read or write memory** i.e. one can read what it contains and can add to

what it contains. This is the memory that holds **software** and other **input data** while one is working on them.

USES OF RAM

Storage of a copy of the main software programmes which controls the general operation of the computer (**operating system**).

Temporally storage of a copy of an application programme for **interpretation** and **execution** by the **central processing unit** (CPU).

Temporally storage of data items which have been input from the keyboard or other input devices until when instructions call for the data to be transferred into the **central processing unit** for processing.

Temporally storage of information that has been produced as a result of processing from the central processing unit until when instructions call for information to be either used again in other processing or to be transferred to output devices e.g. the **screen, printers or to storage devices**.

There are five types of Read Only Memory (RAM) and these are:-

- ✓ Conventional memory
- ✓ Upper memory area (UMA)
- ✓ High memory area (HMA).
- ✓ Extended memory (XMS).
- ✓ Expanded memory (EMS).

CACHE MEMORY:

Data **frequently** used by the **processor** is often stored in this **extra high speed access memory**. Its role is therefore to provide a space for temporally storage of frequently accessed data. Old data is usually replaced by newer data because of the limited space it has. Most modern computers today have only 256 KB 512KB of cache pipeline based RAM. KB refers to Kilobyte.

SECONDARY MEMORY:

This is the memory or storage devices that store information permanently. Here information is transferred from RAM to secondary storage devices. These secondary devices include among others:-

- ✓ Hard disks
- ✓ Magnetic tapes
- ✓ Flash disks
- ✓ Floppy disks, etc.

Memory measurements and the binary codes:

In data, memory is electronically represented by **storage cells** which are either **charged (on)** or **discharged (off)**. Therefore electronically computer memory can be represented as either **on or off**.

Mathematically it is represented as **0 or 1 (zero or one)** in the binary system or binary code. In other words, these **binary codes** are the **basic units** of storage data.

Binary digits:

Computers use binary system of measurement as their basis of working that is 0 & 1. Therefore computer memory is measured in terms of **binary digits** which are the **lowest units of measurements** or a **bit** is the **smallest unit** of information that a computer can process and is represented as **0 or 1 (zero or one)**.

Byte: Is a combination of eight bits. Each byte can represent a single character or a letter e.g. A = 01000001.

KILOBYTE (KB):

1KB is equivalent to 1024 bytes in terms of space in a document. It is equivalent to a single page of double spaced text.

MEGABYTE (MB)

1MB is equivalent to 1024 KB and is roughly equal to a 300 page paper book.

GIGABYTE (GB).

1GB is equivalent to 1024 MB of data.

TERABYTE (TB).

1TB is equivalent to 1024GB of data.

UNITS		VALUE
Bit	=	0 or 1
1Byte	=	8 bits
1KB	=	1024 bytes
1MB	=	1024KB
1GB	=	1024MB
1TB	=	1024GB

Various groups of binary codes have been developed to represent the 26 alphabetical letters and the special keys in accordance with specific standards and codes.

These codes include:-

- ✓ ASCII CODE
- ✓ EBCDIC CODE
- ✓ BCD CODE

PARITY BIT

It a bit that is normally added to data by the computer to ensure its accuracy. Data may be stored in 8 bit, 32 bit or 64 bit groups.

STORAGE DEVICES:

These are devices that **store data** for a relatively long time. They are divided into two i.e. permanent storage and temporally storage devices.

PERMANENT STORAGE DEVICES.

All storage devices such as hard disk (fixed disk) and floppy diskettes are known as permanent storage devices. This means that any data which is written onto them can be retrieved and used later. This type of drives uses a magnetic medium onto which the data is stored.

A computer uses two main types of storage i.e. the **main memory** also referred to as the **RAM or Primary memory** and the **secondary storage** (external or **auxiliary** storage devices).

The main memory is used to hold **instructions** and **data temporarily** while the computer is processing. This memory is also said to be **volatile** since any **instructions** and **data** in the memory are lost when power is switched off.

The secondary storage which widely consists of magnetic media is used to permanently store information or data.

Computers can store large quantities of information and are capable of accessing this information very rapidly. The capacities and speed vary with the type of media used for example a 5.25 diskette has a capacity equivalent to 360,000 characters or approximately 150 A⁴ size type written pages while the much smaller 3.5 diskette has a capacity twice as much.

The most common storage devices on microcomputers are:-

- ✓ Punched cards
- ✓ Flash disks
- ✓ Floppy diskettes
- ✓ Hard disks
- ✓ CD-ROM
- ✓ CD-R and CD-RW^S

PUNCHED CARDS:

These were the first storage devices in computers. They were flat cards with rows of numbers and letters neatly arranged in columns. To store data, the card was inserted in the computer drive and then a computer punched a series of holes in the rows of characters to represent the data stored.

Disadvantages of punched cards:

- These cards were made of papers and therefore they could easily be destroyed by moisture and cockroaches, let alone rats, tears and reluctance in handling
- Their storing capacity was small.
- Their data life was very limited because paper depreciates with time.
- They were vulnerable to wear and tear.

MAGNETIC TAPES:

They comprise a reel of tapes which is coated with a magnetic surface onto which data is recorded.

Disadvantages of magnetic tapes:

- They were bulky and needed a lot of storage space.
- Data life was limited due to the winding and unwinding which would wear down the tapes.

FLOPPY DISKETTES:

These are portable storage devices used to store information. They are made of a thin circular plastic material coated with a magnetic recording surface where data is stored as tiny magnetic particles. These are available in basic sizes i.e.

- ✓ 8 inches
- ✓ 5.25 inch
- ✓ 3.5 inch.

Advantages of using diskettes:

- ✓ They are the best in data storage and their size is acceptable.
- ✓ Their storage capacity if compared to magnetic tapes and punched cards is considerably bigger.
- ✓ Data can easily be accessed in any sector in a short time since it is a circular diskette.
- ✓ They have a random access unlike tapes that need rewinding.
- ✓ They are very portable and a single diskette can be carried in the middle of the book or in a shirt pocket like a palmtop computer.
- ✓ They are cheap in terms of buying
- ✓ Not easily destroyed by cockroaches or rats
- ✓ Not easily stolen as few people know the use and how to use.

PRECAUTIONS TO HANDLING/USING DISKETTES:

- ✓ Avoid extreme temperatures
- ✓ Avoid contact with water or dumpy places.
- ✓ Avoid dust in or on surface of the diskette especially on the white silver plate.

- ✓ Avoid contact with magnetic fields.
- ✓ Do not bend diskettes to avoid breakages
- ✓ Do not expose a diskette to direct sunlight.
- ✓ Do not touch a diskette directly onto a white silver plate with dirty or wet hands.
- ✓ Avoid giving them to children to play with them because they may get spoilt.

Hard/fixed disks”

These are permanently installed into the system unit of a computer. They are much faster in accessing data into the internal memory and are more reliable. Their storage capacities are bigger than for the floppy diskettes.

Identifying disk drives:

The **operating system** employs letters to identify various drives installed in the computer system. The **hard disk** is allocated letter **C** and is known as the **root drive**.

The **floppy drive** is allocated letter **A** ($3\frac{1}{2}$) and the **CD-ROM** drive is allocated letter **D**.

ADVANTAGES OF HARD DISKS:

- They are installed within the computer therefore; there are less chances of being stolen or misplaced.
- They store vast information between 20KB to 6MB.
- Speed and time of data is fast and convenient than that of a floppy disk.

DISADVANTAGES OF HARD DISK:

- They have a violent shaking
- Since they are metallic, they expand and contract depending on the changes in temperature. This may cause data loss.

CD-ROM (COMPACT DISK READ ONLY MEMORY).

They are called compact disks because they are small in size with a diameter of 12cm and a thickness of a few millimetres. The information on a compact disk is stored in a permanently accessible form, read only memory i.e. used to read data.

ADVANTAGES OF CD-ROM

- ✓ Due to their small size they are easy to store/keep.
- ✓ They are portable despite the vast amount of data that they carry.
- ✓ They have an enormous storage capacity of about 720MB of data.
- ✓ Depending on the speed of the drive, their access speed is very fast.
- ✓ Their data life is nearly 100%, that is can keep information for quite a long time.
- ✓ CD-ROM^s are the best in distributing today's huge software programmes.
- ✓ They are good for recording music and graphics.

DISADVANTAGE

A single scratch or breakage can make the whole CD-ROM useless.

SOFTWARE:

Software refers to the **programs** (machine readable **instructions**) that **direct** the activities of a computer system.

It also refers to all the **intangible** components of the computer. It may also mean the different **programmes** that can be used to make the computer start to work. They are the instructions that tell the computer (**Central Processing Unit**) what to do.

In short, software refers to a term used to mean **describe** the programmes and its associated documentations.

Software is divided into two major categories i.e. the **Application software** and the **System software**.

SYSTEM SOFTWARE:

This consists of programs that manage the computer system resources efficiently and programs that aid the user in preparing and running his programs or application. These are classified into three groups i.e. the **Operating system (O/S)**, **Language Processors** and the **Utility software**.

OPERATING SYSTEM:

An Operating system (O/S) is the **link** between the **hardware** and **software**. It ensures that all the components that make up the computer system **function** together and efficiently. When one starts the computer, the Operating system (O/S) is started first.

Application software such as word processors can only be started after the Operating system is loaded. Without the **Operating system**, the application **cannot** and **will not** function.

The Operating system (O/S) is a systems program that **supervises** all other programs and **controls** their executions; it coordinates the operation of all hardware components of a computer e.g. the mouse, keyboard and the monitor.

This system is provided by the manufacturer and it resides in a disk called **system disk** or **boot disk**.

The Operating system (O/S) insulates the user from the **hardware components** and also makes the computer easy to use.

Functions of the operating system

- ✓ It is responsible for all file management aspects on the computer.
- ✓ It is responsible for file naming.
- ✓ Allocates memory space and loads programmes for execution.
- ✓ Provides services for obtaining data and producing output to storage devices.
- ✓ Allocates various computer resources back and forth.
- ✓ It activates the computer.
- ✓ It acts as a translator between the computer and the operator.
- ✓ It controls space allocation on storage mechanism.
- ✓ It controls the internal and external instructions of files on a disk and allows people to create files, delete, copy and rename.

A file is the storage of relevant information on a disk under a name.

TYPES OF OPERATING SYSTEM

MS DOS (Microsoft disk operating system)

Windows VISTA (this is a new operating system which is not common on most computers).

MS windows (3.11, 95, 98, 2000, NT, XP)

UNIX

Linux

Of the operating systems, the MS DOS was the most popular but it now being replaced by the Windows based operating systems.

LANGUAGE PROCESSORS:

Computers have languages of their own they understand or use. Users usually enter commands or instructions in English like languages but the computer changes them into languages they understand in binary or machine codes. These languages are the ones programmers use to write programmes for the computer.

A program is a list of instructions for the computer to follow to accomplish a task of processing data into information.

MACHINE LANGUAGE

This deal with bytes (bits) and codes such as ASCII, ABCDIC i.e. 0^S and 1^S. Mostly used during the first computer generation.

ASSEMBLY LANGUAGES:

These use abbreviations or mnemonics. These were identified during the 2nd generation computers.

HIGH LEVEL PROCEDURE LANGUAGES

They are easy to understand. They are programming languages with names like BASIC, PASCAL, C/C++, and FORTRAN.

They are called procedural because they are designed to express the logic that can solve general problems. Identified during the 3rd generation.

BASIC:

It stands for Beginner's All Symbolic Instruction Code. It is widely used on microcomputers.

C/C++

It is a general purpose language that is useful for writing operating system spreadsheet programs and Database programs.

COBOL

Common Business Oriented Language.

FORTRAN.

It is a short form for Formulae Translation. It is a scientific and mathematical used language.

HTML:

Hyper Text Mark up Language. It is not quite used like BASIC; it consists of tags that are saved in a document.

JAVA

These are mostly used on the internet (Applets) to add animations and interest to the web page.

PASCAL.

It is a language that was named after **Blaise Pascal**. It works well with graphics/images.

PROBLEM ORIENTED LANGUAGES (4TH GEN).

These are designed to solve specific problems e.g. developing financial models. These include **query languages** and **application generators**.

UTILITY SOFTWARE:

These are system programmes used to enhance the performance of the operating system (O/S). They are compilers, debuggers, disk fragmenters, Y2K solutions and Anti-viruses.

COMPILERS:

It is a software that converts high level language symbols into instructions that a computer can execute.

DEBUGGER

It is software that detects, locates and removes all errors in a computer system.

FUNCTIONS OF UTILITY PROGRAMMES/SOFTWARE

- Listing files on a disk.
- Backing up data or back up of files.
- Deleting files.
- Repairing damaged files e.g. Norton anti-virus.
- Detecting and removal of viruses and errors.
- Data recovery i.e. use of disk repairing software like scan disk, Norton disk doctor (NDD).
- Copying files (back up utilities).
- Compressing files i.e. data compression.
- Sending files to the printers.
- Sorting data.

- Disk fragmentation.
- Data communication software.

APPLICATION SOFTWARE:

These refer to the programs that help one to do his/her work or job. They are problem oriented programmes designed to solve specific problems such as word processing, accounting, balancing of books, etc.

CHARACTERISTICS OF APPLICATION SOFTWARE/PACKAGES.

- They are targeted for a wider range of users with a popular and common objective.
- It is user friendly (easy to use).
- It is designed for power and flexibility.
- It is designed to work on a range of computers and data can be transferred from one computer to another.

There are two types of application software i.e. **Off shelf** and **Customised**.

OFF SHELF:

These are ready made software which users buy and install into their computers according to their wish/wishes.

GENERAL FUNCTIONS OF OFF SHELF:

- Used in processing of work, editing, writing of letters and memos.
- Used in manipulation of numerical data.
- Used in accounting and balancing of books.
- Used in graphical formation.
- Used in designs and presentations.
- Used in Cartography i.e. map making and drawing.

These off shelf packages include; **word processors, spreadsheets, database, presentation software, desktop publishing software, graphics processing (Photoshop) and communication software.**

PROGRAMME TYPE	PURPOSE
Word processors	Used in production of letters, books, articles, mailing lists, reports and any other textural materials.
Spreadsheets	Creation of and maintenance of numerical data and calculations or balancing a/c, keeping schedules
Database	Creation and management of data or storing and manipulating information and analysing data.
Presentation software	Creation of slides, slide shows, over heads, lectures, etc.
Desktop publishing software	Creation of news letters, brochures, booklets, etc.
Communication software	<ul style="list-style-type: none"> - These include Microsoft internet, browsers, Netscape, e-mail software, etc - To navigate around the web - Sending and receiving of data from another computer.
Graphics processing (Photoshop)	<ul style="list-style-type: none"> - Creation and editing of graphics (pictures/images and adverts).

Word processing refers to the processing of texts through letter by letter or character by character.

SPREADSHEETS.

It is a grid of rows and columns on a worksheet used to produce financial projections and reports. Or electronic spreadsheet is an automated version of the accountant's ledger hence it consists of rows and columns of numerical data.

ADVANTAGES OF ELECTRONIC SPREADSHEETS.

- The data entered in an electronic spreadsheet can be edited and revised using the program's commands.
- The design and appearance of the spreadsheets can be enhanced in many ways e.g. numeric entries can be displayed with dollar signs or with a set number of decimals.
- Spreadsheet programs let one enhance the appearance of the spreadsheet by changing the style and size e.g. bold or italics.
- The user has the ability to "play" with the values in the worksheet to see the effect of changing specific values on the worksheets.
- Most electronic spreadsheets also have the ability to produce a visual display of data in the form of graphs.
- They have the ability to open and use multiple spreadsheet files at the same time. This is called 3-D i.e. creating of multiple spreadsheets within a file.
- They allow use of formulae i.e. both built in and applied formulae.
- They have the ability to quickly edit and format data, perform calculations, create graphs and print the spreadsheet.

DATABASE:

It is a collection of interrelated files in a computer system. Or it is a collection of integrated or cross referenced, electronically stored data that different people may access for different purposes. Or it is a collection of electronically stored data.

FILE MANAGER.

Is a software package that can access only one file at a time.

FEATURES OF DATABASE:

1. **Organisation of database** i.e. from smallest unit to largest items into fields, records and files.

FIELD.

It is a unit of data consisting of one piece of information whether text, numbers, media objects e.g. a field is one's name.

RECORD.

It is a collection of related fields. An example of a record is one's name and address.

FILE.

It is a collection of related records.

2. Sorts
3. Select and display
4. Calculate and format.
5. Queries.
6. Reports.

IMPORTANCE OF DATABASE.

- Creation and management of data or storing and manipulating information and analysing data.
- Reduced data redundancy i.e. the same information is availed to different users.
- Improved data integrity i.e. data is accurate, consistent and up to date.
- More program independency.
- Increased user productivity i.e. they are fairly easy to use.
- Increased security, though data can be shared, access to some data is impossible with database.

DISADVANTAGES.

- Cost issues. Installing and maintaining a database is expensive.
- Data vulnerability issue. Much as it is easy to restrict piracy, it is also easy to have access to databases.
- Privacy issues.

CUSTOMISED:

These are programmes made for **specific use** upon the user's needs. They solve problems of individual nature or solve specific problems like loading of airtime on a cellular phone.

VIRUS

A virus is a code specifically designed to disorganise or distort the smooth running of the computer. It may also be defined as a code (program) specifically designed to damage or cause irregular behaviours in other programs on a computer.

A virus is purposely designed to carry out two tasks of functions i.e.

To be able to replicate from one computer to another; and also to be able to position itself in a computer system in such away as to make it possible to destroy software programs or data files.

TYPES OF VIRUSES:

There are many types of viruses and some of them are as below outlined:-

- ✓ Droppers
- ✓ Packagers
- ✓ Testfiles
- ✓ Time bombs
- ✓ Trojans
- ✓ Trojan horses
- ✓ Worms

NB. A **bug** is an error in the computer system that causes undesirable results or unwanted procedures in the computer system.

A **worm** is a computer program that sits in the computer memory, rewrites itself continuously into memory until when the system runs out of the memory.

Symptoms of computer viruses:

- ✓ Files may fail to open
- ✓ Creation of different file names with different file extensions
- ✓ Making of bar icons work differently
- ✓ Causes loss of vital data on the computer.
- ✓ Causes over writing of files.
- ✓ Causes nasty or annoying messages
- ✓ Causes error messages to appear or to be generated in the operating system.
- ✓ It causes some applications not to run at times.
- ✓ Some viruses cause the screen to judder.

- ✓ Some viruses may cause the computer to crash
- ✓ Viruses cause change in value or loss of valuable information in the system unit or memory.
- ✓ Some viruses attempt to protect themselves in nasty ways.
- ✓ Less memory available than usual
- ✓ Unusual error messages occurring more frequently.
- ✓ Unfamiliar graphics or quizzical messages appearing on the screen.
- ✓ Programs taking longer than usual to load.

Causes of computer viruses.

There are many factors that may lead to virus attacks on one's computer and among them are the following.

- ✓ Through contaminated systems and repairs.
- ✓ Update of legitimate software.
- ✓ Playing of fake games especially those sent through or downloaded from the internet.
- ✓ Through use of foreign media like floppy diskettes, flash disks, CDs, etc on your computer.
- ✓ Through downloading of information from the internet.
- ✓ Through pirated software
- ✓ Buying of illegal software from unbonafide suppliers.
- ✓ Use of public domains like freeware and shareware.
- ✓ Sharing of data especially through networks, etc.

Ways of protecting computers against viruses:

There are various ways of protecting computers against viruses and some of them are as below.

- ✓ Identify and isolate PC^s and disks which could be affected.
- ✓ Seek the advice of a specialist

- ✓ Use anti virus guards like Norton anti virus to guard your computer.
- ✓ Avoid use of any kind of foreign media whose whereabouts are unknown.
- ✓ Scan all foreign media before use if possible.
- ✓ Not all programs should be loaded on your computer.
- ✓ Always have a routine check (scan) for viruses on your computer including any media used to store data.
- ✓ Always have back up copies of all programs and data files kept safely.
- ✓ Avoid opening of mails sent to e-mail address especially if you don't know the persons who sent you such messages.

Introduction to computer networks, internet and intranet

A network is a system of interconnected computers or other communications devices that can communicate with one another and share applications and data.

COMMON TERMS USED.

Telecommunication: It is the electronic transfer of information from one location to another.

Functions of communication software.

- ✓ It establishes connections among computers.
- ✓ Error corrections.
- ✓ Data compression.
- ✓ Remote control.
- ✓ Terminal emulation.

Host computer. Is a main computer in a system of computers or terminals connected by communication links.

Server: It is a computer shared by several users in a network.

Anode. It is simply a device that is attached to a network. It can be a micro computer terminal, storage device or a peripheral device.

FILE SERVER.

It is a computer that stores the programs and data files shared by users on a LAN or it is a type of computer used on a local area network that acts like a disk drive and stores the programs and data files shared by users of LAN.

Bridge: Is an interface used to connect same type of network.

Router: A device that supports connectivity between like and unlike LANS and between LANS and WANS/MANS.

GATEWAY

It performs the functions of both a bridge and a router at the same time or it is an interface that enables dissimilar networks to communicate with one another.

MODEM

It is a short form for modulator or demodulator. It converts digital signals to analog and vice versa.

TYPES OF NETWORKS:

1. LAN

It is referred to as Local Area Network. It is a communication system designed to enable computers and computer related devices (printers, terminals, etc) to communicate with each other within a small area of less than 10KM, usually within the same building.

BENEFITS/ADVANTAGES OF LAN

- ✓ Hardware sharing.
- ✓ Information sharing
- ✓ Software sharing
- ✓ Improved computer facilities management
- ✓ Online learning on internet
- ✓ Online communication, etc.

COMPONENTS OF LANS.

- ✓ Servers
- ✓ Workstations
- ✓ Network interface card (NIC).
- ✓ Communication media
- ✓ Network resources (printers, hard disks, etc).
- ✓ LAN operating system.

NB

A communication network is a system designed to enable different objects in the network to exchange information.

2. MAN

It refers to Metropolitan Area Network. It covers a medium size geographical area e.g. entire city within a radius approximately 10KM. they are more expensive than LANS.

3. WAN

It refers to Wide Area Network. They cover unlimited geographical area e.g. entire state, country or world (WWW). They are expensive to build and have low data rates. They have a higher speed.

4. INTRANETS.

These are larger forms of LANS. These are said to exist where many networks are interconnected. Big institutions like Museums, hospitals, Research centres, and Universities can have their departments interconnected but not linked to the outside world.

5. EXTRANETS.

These are much wider in terms of area or span than the WANS. They can cover regions or continents but their accessibility is only limited to those authorised to do so e.g. if Uganda connects all her Embassies in the world, this is extranet.

6. INTERNET.

It is the biggest form of WAN. On the internet, the different computers can be accessed by means of software browsers like Netscape or Microsoft navigator.

Internet therefore is the connection of computers over long distances sharing resources or it may be referred to as the global connection of computers sharing resources.

TOOLS OF THE INTERNET:

1. WWW

It stands for World Wide Web. It is an interconnected system o f sites on the internet that stores information in multimedia form for viewing.

2. E-MAIL

It stands for electronic mail.

It links computers by wireless connections and allows users through their keyboards and the use of user ID to post messages and to read responses on their display screens.

ADVANTAGES OF ELECTRONIC MAIL (E-MAIL).

- ✓ It helps avoid playing phone tag or copying with paper and stamp.
- ✓ It is cheaper in terms of cost than ordinary mail.
- ✓ It is quicker than a fax message and more reliable than a voice mail
- ✓ It is easy to determine the messages that are important.
- ✓ It creates an archive of all sent messages.
- ✓ They are time saving in that they are very speedy in communication.
- ✓ It is cheaper than postal mail
- ✓ Besides sending texts, one can send sounds, images, videos and computer software.

DISADVANTAGES

- ✓ It can be sent to a person only if he has an e-mail address.
- ✓ It is not easy to send anything physical like money, book, handkerchief, envelope, flash disk, etc.
- ✓ A lot of sorting is done
- ✓ These messages are far from private and can be read by e-mail system operators.
- ✓ They often bounce around the various computers i.e. they take a circuitous route.
- ✓ Pile up of messages may take up a lot of space on some system server.

3. MAILING LISTS.

It allows one to subscribe to an e-mailing list on a particular subject or subjects and to post messages i.e. necessary to download and delete messages.

4. USENET NEWSGROUP.

It is a short form for user network. It is an electronic discussion group that may focus on a particular topic (i.e. chat and talk).

5. F.T.P

It stands for File Transfer Protocol. It is a feature of internet where by users can connect their PC^S to remote computers and transfer (download) publicly available files.

6. TELNET

It is a terminal emulation protocol that allows one to connect to remote computers. It allows microcomputers to communicate successfully with mainframes. It also allows one to access public files e.g. University libraries abroad.

7. GOPHER.

An internet program that allows users to use a system of menus to browse through and retrieve files stored on different computers.

COMMON TERMS USED.

HOME PAGE:

The first page/screen seen upon accessing a website.

WEBSITE:

This is a file(s) stored on a computer as part of the World Wide Web.

URL

It stands for Uniform Resource Locator. It is an address that points to a specific site on the web.

HTTP.

It stands for Hyper Text Transfer Protocol, which is the protocol for transferring files i.e. web files.

HTML.

It stands for Hyper Text Mark up Language which refers to a specific document name “info.” It is a language for formatting files on the web.

TOPOLOGY

It is the configuration of a network.

VIRTUAL MEMORY.

Feature on an operating system that increases the amount of memory available to run the programs.

WEB

A web is a service that provides a multimedia interface to resources on the internet.

DOWNLOAD.

It means to retrieve files online from another computer and store them in the user’s own microcomputer.

USES OF THE WEB.

- ✓ Performing research.
- ✓ Downloading software e.g. freeware and shareware.
- ✓ Taking classes.
- ✓ Obtaining news e.g. on sports.
- ✓ Arranging travel plans.
- ✓ Shopping on the net through e-commerce.
- ✓ Chatting i.e. through chat rooms.
- ✓ Managing investments. Etc.

A WEB BROWSER.

It is a graphical user interface software used to browse through the website.

HYPERLINKS.

Underlined words or highlighted items in a website’s page that indicate links to other sites i.e. a mouse pointer changes to an icon.

ADVANTAGES OF INTERNET.

- ✓ It acts as a retrieval service e.g. file transfer protocol and Gopher.
- ✓ It allows one have access to abundant information about anything in the world.
- ✓ It is possible to attach files, reports, production data and then send an electronic mail to any place in this world.
- ✓ It is speedy in transferring information and retrieving.
- ✓ It is convenient and inexpensive means of communicating via its electronic mail facilities.
- ✓ Publish one's portfolio on the net
- ✓ E-commerce i.e. the selling and buying on the web. It enables business persons to carry out business on the web/internet.
- ✓ Visit an electronic zoo or museum through the net.
- ✓ Find out which computer programming languages that are ruling the industry.
- ✓ Sending and receiving greetings for various occasions across the globe.
- ✓ Online employment i.e. job seekers can register and obtain information for vacancies with various companies.
- ✓ Online education system i.e. students don't require going to an institute to register or to be admitted for any course.
- ✓ World Wide Web services i.e. navigate through millions of pages with text, image, sounds, and video information on any subject.

Factors affecting communication speed on the internet.

- Computer processing speed.
- Hard disk i.e. its size, and data transfer rate.
- Network interface card i.e. the wider the bus width, the better the performance.
- Cables speed and number of users at the time.
- The server itself.
- Band width of type of connection.
- Traffic on the internet at any given time.

- Weather that may lead the network to disappear.

NEGATIVE EFFECTS OF COMPUTERS ON SOCIETY.

- Moral degeneration especially on the side of the youths.
- Theft as many youths learn and copy electronic transfer of money skills.
- Consumption of much power.
- Training and repairs are very expensive.
- Hackers or hawking remains the order of the day.
- Hire rates of forgery.
- Internet is good for communication but in case of a virus attack, it can spread to millions of computers.
- In case of break down, a lot of information can be lost.
- Due to much time spent on computers, one may lose proper eye sight.
- Cultural disintegration. Situation where many of the youths have decided to copy what belongs to the western world and forget their culture, etc.
- Pornography. This has eroded the morals of most youths in the society. They have resorted to bad acts, thinking and above all their hearts on such things.

VIDEO CONFERENCING:

It refers to users communicating across networks using audio and video images.

BENEFITS OF VIDEO CONFERENCING:

- Students taking modern foreign language courses can interact directly with other schools in different countries.
- Students can use the global connection/network links to experience different cultures.
- Junior school pupils can find out more about school life in secondary schools by linking with older students at local schools to discuss topics in different curriculum subjects.
- Students in tertiary institutions can gain valuable knowledge from career sites and links with other colleges, schools and universities.

- Video conferencing is also ideal for meetings between remote sites. This reduces on time taken in organising meetings, expenses on travelling and accommodation.

SAMPLE QUESTIONS AND ANSWERS.

What is an Application Package?

These are software programs that aid the user to do his job effectively e.g. word procesors, spreadsheets, etc or are problem oriented programs designed to solve specific problems.

Identify three characteristics of Application Packages.

- Are targeted for a wider range of users.
- They are user friendly i.e. easy to use.
- Designed for power and flexibility.
- Data can be transferred from one computer to another.

The Central processing unit (CPU) is the brain of the computer. Identify any three functions of the CPU.

- To hold program instructions.
- To carry out data processing
- To produce out put information
- To update any master files that need to be changed.
- Temporally/permanent storage of data/information.

What is system software?

It is a software that controls the computer and enables it to run the hardware and application software.

Identify functions of utility software.

- Listing files on a disk.
- Backing up data or back up of files.
- Deleting files.
- Repairing damaged files e.g. Norton anti-virus.
- Detecting and removal of viruses and errors.
- Data recovery i.e. use of disk repairing software like scan disk, Norton disk doctor (NDD).

- Copying files (back up utilities).
- Compressing files i.e. data compression.
- Sending files to the printers.
- Sorting data.
- Disk fragmentation.
- Data communication software.

Identify functions of operating system.

- It is responsible for all file management aspects on the computer.
- It is responsible for file naming.
- Allocates memory space and loads programmes for execution.
- Provides services for obtaining data and producing output to storage devices.
- Allocates various computer resources back and forth.
- It activates the computer.
- It acts as a translator between the computer and the operator.
- It controls space allocation on storage mechanism.
- It controls the internal and external instructions of files on a disk and allows people to create files, delete, copy and rename.

Identify any benefits of LANS.

- Hardware sharing.
- Information sharing
- Software sharing
- Improved computer facilities management
- Online learning on internet
- Online communication, etc.
- Sharing resources, etc.

Identify any four basic components of LANS.

- Servers
- Workstations
- Network interface card (NIC).
- Communication media
- Network resources (printers, hard disks, etc).
- LAN operating system.

Identify five functions of the internet.

- It acts as a retrieval service e.g. file transfer protocol and Gopher.
- It allows one have access to abundant information about anything in the world.
- It is possible to attach files, reports, production data and then send an electronic mail to any place in this world.
- It is speedy in transferring information and retrieving.
- It is convenient and inexpensive means of communicating via its electronic mail facilities.
- Publish one's portfolio on the net
- E-commerce i.e. the selling and buying on the web. It enables business persons to carry out business on the web/internet.
- Visit an electronic zoo or museum through the net.
- Find out which computer programming languages that are ruling the industry.
- Sending and receiving greetings for various occasions across the globe.
- Online employment i.e. job seekers can register and obtain information for vacancies with various companies.
- Online education system i.e. students don't require going to an institute to register or to be admitted for any course.
- World Wide Web services i.e. navigate through millions of pages with text, image, sounds, and video information on any subject.
- Net banking i.e. easy to deposit and withdraw or upgrade one's account.

Identify any five factors affecting communication speed on the internet.

- Computer processing speed.

- Hard disk i.e. its size, and data transfer rate.
- Network interface card i.e. the wider the bus width, the better the performance.
- Cables speed and number of users at the time.
- The server itself.
- Band width of type of connection.
- Traffic on the internet at any given time.
- Weather that may lead the network to disappear.

Identify any four characteristics of first generation computers.

- They used vacuum tubes for internal operation
- They consumed a lot of power.
- They generated a lot of heat during their operations.
- They had a lot of maintenance problems
- They had limited primary memory of 2KB
- Used punched cards for input and output of data
- Programming used in machine and assembler language.
- They were very slow with a speed of only 10 kilo instructions per second.
- They produced a great deal of heat during their operation.

As a student of computer science, identify six ways of caring for microcomputers.

- Never use a computer in a dusty environment i.e. avoid dust in or on your computers.
- Water or moisture should be avoided near computers or in a computer room.
- Never eat or drink in a computer room to avoid liquids from splashing on the computers.
- Do not smoke near computers or in a computer room
- Do not block the ventilation holes on the computer when still hot.
- Use a dry clean cloth to clean the computers and not a wet one.
- Computer room must be well ventilated

- Do not allow or use foreign diskettes/media on your computers, they may contain viruses.
- Do not switch the computers on and off abruptly or irresponsibly, follow the normal way.
- Protect the machines using UPS (Uninterrupted Power Supply) and Stabilisers.
- Do regular repairs and maintenance on your computers.
- Do not expose computers to direct sunlight
- Dust covers must be used to cover the computers.
- Computers should be regularly serviced.
- Do not open a computer for inside cleaning, it should be handled by qualified personnel.
- Avoid connections when the computer is on power e.g. keyboard connection, mouse, etc.
- It is good practice to keep a record of the daily conditions in case of computer failure.
- The Peripheral devices such as the printers and the mouse should regularly be serviced.

What is a computer printer?

A printer is an output device used to output information in form of a hard copy output i.e. a tangible media.

Outline any five factors one would consider before buying a computer printer.

- Speed of print or pages per minute print out.
- Memory of at least 2 megabytes (MB).
- Price of the cartridge or Toner.
- Availability of the Toner and cartridge
- Purpose for which the computer is going to be put to.
- Printer drivers.
- Consider printers that consume little power.
- Printers that are repairable.

- Printers that produce clear images with high resolutions.

Why are laser printers preferred than dot matrix printers. Give six reasons.

- They are widely used in commercial printing.
- They are very fast and often produce clear and crisp texts.
- They are nearly noiseless during their operations (printing).
- They produce clear and neat images of any colour and font once adjusted to suit the needs of the user.
- They are easier to maintain and repair than dot matrix
- They have a reliable nature that makes them useful devices.
- They produce excellent graphics.
- They don't generate much heat during printing of work.

Brian is a student of computer studies in one of the prominent secondary schools in Jinja district. He has failed to accept that spreadsheets are good software programmes. As a student of computer science, can you explain to Brian the importances of spreadsheets.

- Ability to create, edit, save and retrieve worksheet.
- Built in functions and formulae for adding, etc.
- Data formatting both texts and numeric data
- Ability to adjust column width and row heights.
- Data sorting and filtering capabilities.
- Printing of entire worksheet.
- Ability to perform "what if" analysis which is used to find out the effect of an item.
- Summarising data using consolidated and pivoted tables.
- Charting facilities to draw line graphs, pie charts, etc.
- Financial summaries, balance sheets, can all be carried out using spreadsheets.

Identify four functions of presentation software.

- Creation of slides.
- Creation of slide shows.
- Presentation of lectures
- Creation of over heads especially as used on projectors.

What is a computer virus?

It is a program designed specifically to distort the smooth running of the computer system.

Identify five ways

a) How computer virus are spread/

- Through contaminated systems and repairs.
- Update of legitimate software.
- Playing of fake games especially those sent through or downloaded from the internet.
- Through use of foreign media like floppy diskettes, flash disks, CDs, etc on your computer.
- Through downloading of information from the internet.
- Through pirated software
- Buying of illegal software from unbonafide suppliers.
- Use of public domains like freeware and shareware.
- Sharing of data especially through networks, etc.

b) How computers are protected against viruses.

- Identify and isolate PC^s and disks which could be affected.
- Seek the advice of a specialist
- Use anti virus guards like Norton anti virus to guard your computer.
- Avoid use o f any kind of foreign media whose whereabouts are unknown.
- Scan all foreign media before use if possible.

- Not all programs should be loaded on your computer.
- Always have a routine check (scan) for viruses on your computer including any media used to store data.
- Always have back up copies of all programs and data files kept safely.
- Avoid opening of mails sent to e-mail address especially if you don't know the persons who sent you such messages.

Computers have changed the way we live, play and work. Discuss.

This question requires a student to define what a computer is, give us the positive ways and negative ways how computers have changed the way we live, play and work.

Answers.

A computer is a system of hardware and software. Or a computer is an electronic device with the ability to interpret and execute programmed commands for input and output of information.

Literally, a computer is an electronic device that is capable of doing work/programmed routines faster than man can do e.g. a robot does work faster than man can.

Positive changes.

RESEARCH.

Computers are used in scientific research especially by doctors to come up with drugs and also by other scientists to come up with scientific findings. New drugs have been introduced and invented; movement into the space is possible (exploration). In places where human beings cannot survive, computers (machines) have been sent in space and data transmitted back to earth.

BUSINESS ENVIRONMENT.

In the world today, businesses have realised the benefits of computers; for instance one can sit at home or in an office and trades with the outside world through computer communication e.g. the use of a cellular/mobile phone.

CALCULATIONS:

Computers are used in calculation of complex numbers especially in big organisations. It is not only this, but they are also used in balancing accounts to suit the needs of the owners.

RECREATION.

People today use computers to play games and also watch films especially when they are bored, from a hectic job as refreshment to their mind. It is also used for watching the mostly European soccer especially on TV (DSTV).

STORAGE:

Computers are found by most organisations like schools, colleges and universities as the best means of keeping information for a long time. This is because once work is put on a flash disk, floppy diskette, it is easier to move with it yet again the information kept on a computer is not easily accessed if one doesn't know how to use a computer and doesn't have a password to the file.

TIME:

Computers are used in telling time. This explains why we have digital watches and also cellular phones have provisions for time telling.

COMMUNICATION:

Computers are used in communication from one person to another through the use of internet (e-mails – electronic mails) and also through cellular phone communication.

Computers are also used to get better and recent yet important information which has been posted on the web.

SPEED.

Computers are quite fast in their operations in that their speed is measured in millions of instructions per second (M/PS).

ACCURACY

Computers are known to be so accurate that they hardly make mistakes. Computers are able to detect and correct any mistakes made.

DELIGIENCE.

Computers have the ability to perform the same task over and over for a long time without getting bored.

ARTIFICIAL INTELLIGIENCE:

Computers are artificially intelligent. They can respond to requests given to them and provide solutions. This is accomplished by the 'power' of the programmes installed in them.

Negative effects.

- Computers can spoil our eyes. This is exemplified by the fact that too much time taken on a TV may cause tears coming out of one's eyes.
- Computers can call for laziness especially those who take much of their time on watching films. They forget they are meant to do certain jobs given to them by their parents.
- There is also cultural disintegration as a result of watching films. As people watch films and also surf on the internet, they find out different modes of dressing which they copy yet they dilute our cultures.
- Moral degeneration. As a matter of fact, their certain literature and also pictures shown on the computers that are not good for consumption such as love stories and sex movies (Blue Movies). These erase our morals.
- Computers cause blood clotting as a result of strain by not moving i.e. being in one place static.
- They also cause back ache to those who are ever on the computer doing much of their work there.
- Theft as many youths learn and copy electronic transfer of money skills.
- Consumption of much power.
- Training and repairs are very expensive.
- Hackers or hawking remains the order of the day.
- Hire rates of forgery.

- Internet is good for communication but in case of a virus attack, it can spread to millions of computers.
- In case of break down, a lot of information can be lost.
- Due to much time spent on computers, one may lose proper eye sight.
- Cultural disintegration. Situation where many of the youths have decided to copy what belongs to the western world and forget their culture, etc.
- Pornography. This has eroded the morals of most youths in the society. They have resorted to bad acts, thinking and above all their hearts on such things.

Identify four tasks one would do with a computer.

- Processing of texts/information through typing using the keyboard.
- Storage of data that has been fed into the computer.
- Communication through e-mails, chat and talk, etc.
- E-mailing of messages.
- Manipulation of data e.g. subtractions, additions, etc.
- Keeping schedules, date and time, etc.
- Graphic presentations.
- Education/virtual realities/study purpose.
- Scientific research.
- Recreational purpose i.e. playing of music, games, etc.
- Business environment through electronic commerce.
- Chat and talk, etc.

MOST COMMON TERMS IN SECTION A OF THIS PAPER (P840/1).

GROUPWARE:

It is application software that is used on a network and serves as a group of users working together on the same project.

DIGITAL

It refers to communications signals or information represented in a binary or two – state way.

EXPANSION SLOTS.

Sockets on the mother board into which users may plug an expansion card.

CONTROL UNIT.

The part of the Central Processing Unit (CPU) that tells the rest of the computer system how to carry out a program's instructions. It directs the movement of electronic signals between main memory and the ALU. It also directs these electronic signals between main memory and the input and out put devices.

ARITHMETIC LOGIC UNIT (ALU).

It performs arithmetic operations and logical operations, and controls the speed of those operations. It compares pieces of data to see if it is equal = to or greater than.

ROM BIOS.

These are the instructions that help the processor to transfer information between the keyboard, screen and other peripheral devices to make sure all units are functioning.

DRIVER.

It is a software program that links a peripheral device to the computer's operating system.

SEARCH ENGINE.

It is a program that allows one to search for a particular set of words specified by the user on the internet.

WEB SERVER.

It is software that delivers web pages. It contains a number of websites that are a group of hyperlinked documents.

SOFTWARE

It is a term used to describe the instructions that tell the hardware how to perform a task or it is the instructions that make a computer to work.

COMPUTER LITERACY

Is having an understanding of what a computer is and how it can be used as a resource.

COMPUTER PROFESSIONAL.

Is a person who has a certain amount of experience in the technical aspects of using computers e.g. a software engineer or computer programmer.

STAND ALONE COMPUTERS.

Computers that cannot share resources with other computers i.e. they are not connected to any network.

DOMAIN NAME:

It is a unique name identifying an internet site or server name that is indicated at the <http://> of a site.

MULTIMEDIA

It refers to the application which can sort all media into one form of presentation or it is computer technology that presents information in more than one medium, including texts, graphic, animation, video, music and voice.

COMPUTER COMPETENCY.

This is the ability to apply computer skills in order to meet information needs and improve productivity. It may also mean ability to transfer basic skills to new systems and new software.

E-MAIL.

Software controlled system that allows computer users to send and receive messages over a communications network.

PERIPHERAL DEVICES.

Any hardware device that is connected to the computer by cables e.g. keyboard, mouse, monitor and printer (external peripherals) and disk drives (internal peripherals).

MOUSE.

Input hardware device that can be rolled about on a desktop to direct a pointer on the computer's display screen.

BUS.

Electronic path way through which bits are transmitted within the CPU and between the CPU and other devices in the system unit.

PORT.

Connecting socket on the outside of the computer system unit that is connected to an expansion board on the inside of the system unit.

MONITOR.

It is referred to as the Visual Display Unit of a computer, or a television like part of a computer. In general, a monitor is a peripheral device where information entered into the computer is displayed for human viewing.

C.R.T.

It refers to Cathode Ray Tube. A vacuum tube used as a display screen in a computer or video display terminal.

LCD.

It refers to Liquid Crystal Display. It is a flat panel display that consists of a substance called liquid crystal.

PLOTTER.

Specialized output device designed to produce high quality graphics in a variety of colors.

BACK UP UTILITY.

Operating system utility that makes a duplicate copy of contents on a disk.

DEFRAGERS.

System software utility that removes redundant elements, gaps, and unnecessary data from computer files so that less space is required to store and transmit data.

FORMATTING.

It refers to determining the appearance of a document.

CELL.

In an electronic spreadsheet, the rectangle where a row and a column intersect/meet is a cell.

FONT.

It refers to a particular typeface and size of a letter, or figure.

ICON.

It refers to a small pictorial figure that represents a task, function, program, file or disk.

INSERTION POINT.

It is commonly referred to as the cursor. It is a moveable symbol on the screen that shows the user where data may be entered next.

BANDWIDTH.

Difference between the highest and lowest frequencies transmitted in a particular channel of system.

AVATAR.

Graphical image of you or someone else on a computer screen or it is a graphical personification of a computer or a process that is running on a computer.

HACKER.

People who gain unauthorized access to computer or telecommunications systems for the challenge or even the principle of it.

What techniques would one use in order to effectively use a mouse while doing computer work?

- Point at the area of need
- Drag the information needed. To drag is to pull to your side what you actually require.
- Drop the mouse in order to effect what you have dragged.
- Click at what you want click may mean to press the button of the mouse depending on the application needed i.e. left click or right click
- Double click. Etc.

Identify some of the communication devices used in ICT.

Modem (modulator or demodulator).

It is a device needed especially in Internet, e-mail fax and video conferencing communications using telephone cables.

Its function is to convert digital signals to analog and vice versa.

Sound card:

It's an interface for music on speech from programs, CD-ROMS and microphones.

MIDI (Musical Instrument Digital Interface).

It's an interface needed to connect musical instruments to a computer so that the music played can be stored as a file, displayed on screen, edited, printed or played back.

Network card

It's an interface that enables the computer to communicate with other computers linked together with other cables.

Communication ports

An interface on a computer onto which one can connect a device. These ports are; USB (Universal Serial Bus), Serial port, Parallel port and Ps/2 port.

Write the following in full.

EBCDIC

Extended Binary Coded Decimal Interchange Code.

BCD

Binary Coded Decimal

ASCII

American Standard Code for Information Interchange

VCR

Video Cassette Recorder

LCD

Liquid Crystal Display

What do the following terms mean?

Booting

It refers to the starting of a computer i.e. the process by which a computer begins to work.

Cold booting

It's the process of starting a computer that has not been working i.e. that has not been used at that time in point

Warm booting

It's restarting a computer that has been working by holding down a combination of keys CTRL + ALT – DEL and releasing them all at once

Bios

It stands for Basic Input/Output System. It is a set of instructions on a ROM chip that controls how the hardware and the operating system communicate.

POST

It stands for Power On Self Test.

GIU

It stands for Graphical User Interface. It provides an interface between human operating system (brain) and the computer' operating system through the use of pictures (icons) and texts provided on the screen.

Identify some of the features/characteristics of graphical user interface.

- Presents information to the user in the form of pull down menus and icons.
- User clicks on pull down menu to display the menu
- Use of icons
- The user gives commands to the computer by selecting items from the menu.
- GUI are easy to use and learn.

Examples of GUI

- Windows 98
- Windows 2000 professional
- Windows XP
- Windows XP home edition
- Windows Visita/Spirat

Other functions of utility programs.

- File management
- Disk management
- Memory management
- A back up program
- Data recovery program
- Data compression program
- Anti virus program

Types of operation system (O/S)

- Windows 3.1
- Windows 95
- Windows 98
- Windows M.E (Millennium Edition or Mistake Eternal)
- Windows NT (New Technology)
- Windows 2000
- Window XP Home Edition
- Windows XP professional
- Windows CE/ Pocket PC i.e. CE refers to Consumer Electronics.
- Palm O/S
- Unix
- Linux
- Mac OS etc.

Identify some types of computer software.

Public Domain Software

They are owned by everybody, free to use or make copies and can be changed by any one.

Free ware

Are free to use but have copy rights, cannot be changed or used in another program without permission from the owners of the copy right.

Shareware

Commercial software.

Types of viruses

- Boot sector viruses
- CMOS virus
- Companion virus
- Executable virus
- Hoax virus
- Logic bomb
- Macro virus
- MBR virus (Master boot record)
- Multipart virus
- Non Resident virus
- Polymorphic virus
- Resident virus
- Stealth virus
- Software bombs, etc

Detecting viruses/virus properties:

- **Encryption**

Virus detection will look for programming codes that allow programs to replicate on clone.

- **Polymorphism**

It can be detected by its signature i.e. each virus has a signature, or a piece of code that is specific to that individual program. This is done/seen during scanning.

- **Stealth**

Detection programs note the characteristics of files and watch changes which may indicate an infection.

- One's computer may be infected even if files are just copied.
- Can be memory/non memory resident

- Viruses can carry other viruses and infect that system and also infect with the other virus as well.
- Can make the system never to show outward signs.
- It can stay on the computer even if the computer is formatted

How can viruses affect files?

- It will increase the file size even if it can be hiding.
- It can delete a file(s) as they are run.
- It corrupts the files randomly
- It can cause write protect errors when executing **.exe files** from a write protected disk.
- It can affect any files usually the **.com. exe** or any data files.
- It can convert **.exe** files to **.com** files
- It can reboot a computer when a computer is running i.e. it can restart a computer even when it's on
- Deletes files
- Various messages in files or programs
- Cause the system to run slow
- Can create more than one partition.
- Alter the system time/date
- Causes error linked files
- Cause keyboard keys to be remapped
- A directory may be displayed as garbage
- Changes volume label
- Increases disk access time
- Increases/decreases memory size
- Displays pictures
- Causes system to hang or freeze, etc.

Identify some of the materials needed while cleaning a computer.

- Soft-lit free cloth
- Soapy water
- Cotton swabs
- Eraser
- Water spray bottle
- Used fabric softener cloth
- Floppy disk drive cleaner
- CD-ROM drive cleaner
- Compressed air
- Spirit

NETWORKS.

Advantages of Client/server network:

- Centralized. Resources and data security are controlled through the server.
- Scalability. Any or all elements can be replaced individually as needs increase.
- Flexibility i.e. new technology can be easily integrated into system
- Inter-operability. All components (client/network/server) work together.
- Accessibility. Server can be accessed remotely and across multiple platforms.

Disadvantages of a Client/Server network.

- It's expensive i.e. it requires initial investment in dedicated server
- Maintenance i.e. large network requires a staff to ensure efficient operation
- Dependence i.e. when the server goes off/breaks down, operations will cause/stop across networks.

Topology:

It refers to a configuration of cables, computers and other peripheral devices.

Bus topology

A bus network is such that there is a single link (the bus) to which all nodes connect only to this bus.

Advantages of a bus network.

- Easy to implement and extend
- Well suited for temporary network
- Typically the cheapest topology to implement
- Failure of one station does not affect others
- Easy to connect a computer on a peripheral to a linear bus.
- Requires less cable length than a star topology.

Disadvantages of a bus network.

- Difficult to administer/trouble shoot
- Limited cable length and number of stations
- A cable break down can disable the entire network
- Maintenance costs may be high in the long run
- Performance degrades as additional computers are added.
- Entire network shuts down if there is a break in the main cable
- Terminators are required at both ends of the backbone cable.

Types of topology.

Mesh topology

It is a network topology in which there are two nodes with two or more paths between them

Ring topology

It's a network in which every node has exactly two branches connected to it.

Advantages of a ring topology

- All stations have equal access
- Growth of the system has minimal impact on performance

- Each node on the ring acts as a repeater

Disadvantages of a ring topology

- Failure of one computer may impact on others
- Often the most expensive topology.

Star topology

It's a network topology in which peripheral nodes are connected to a central node which rebroadcasts all transmissions received from any peripheral node.

Advantages.

- Easy to implement and extend even in large networks
- Well suited for temporary networks.

Disadvantages of star topology

- Limited cables and number of stations.
- Maintenance costs may be higher in the long run.
- Performance degrades as additional computers are added
- Failure of the central node can disable the entire network

Tree and Hyper tree topology.

What is a Grid network?

It's a network or kind of computer network consisting of a number (computers) systems connected in a grid topology.

What factors would one consider before buying a school network?

- Ease of use. The staff and students have to be able to send and use or receive software, messages and school work easily.
- Compatibility. Many networks are being produced every after the other day, so compatibility should not be a problem.

- RAM use. How much of the RAM does the network require for each computer. The higher the RAM the better.
- Size, distance and expandability. Consider how many computers does the network require hence can it be expanded in the near future, if yes buy that one.
- Security. Does the network provide security while still allowing one to do whatever possible, if not what is the way forward?
- Maintenance. Many schools leave maintenance of computers to teachers; ask the manufacturer about computer/network management. It's cheaper to have a technician to service the computers.
- Band width, speed, through port, interface and gateways. What type of information would you like to receive or send over the network?
- Ease of installation. How easy it is to install a particular type of network
- Money/cost in buying a network.
- Length of cables needed, profitability of the network, etc.

What are some of the advantages of installing a school network?

- Program security i.e. stores copies of programs locked, protect program files from unauthorized copying and prevents tampering with programs of computers.
- More secure personal files i.e. easy to save personal work on hard disk, password protected from malicious copying and no loss of information from damaged or cost removable storage media.
- Reduced need for floppy disks. It's easy to store information on another hard disk than storing on a floppy disk.
- Easy to share files and data e.g. assignments and texts given.
- Easy to share printers, and also gaining access to different types of printers.
- Easy to share resources like peripheral devices, access important information yet current e.g. Sports news, new software, fashion shows etc.
- Easy maintenance. A well planned network meets needs for several years.
- Management programmes. They support management programmes that may give users/teachers reports on a student's progress.
- Speed. Easy to transfer files than copying them to flash disks, floppy diskettes or any other removable storage device.

- Centralized software management. It's possible to load all software to one computer (server). This removes the need to spend time and energy installing updates and tracking files on independent computers.

Disadvantages of installing a school network.

- It's expensive though it may save money over time
- Requires administrative time, it requires expertise and supervision let alone administrative support like monitoring.
- File server may fail hence entire network going to a halt.
- Breakdown of cables may lead to breakdown of entire network.

What are the benefits of an administrative network?

- Many people (staff) can view and edit students' records.
- Data entry can be more efficient
- Centralized storage of students' information
- Back up copies of all critical information files is centralized
- Access to productivity software is shared
- Access to expensive peripheral equipment is shared
- Scheduling students is easy
- Generating reports for students communally, etc.

Identify some of the requirements for setting up a school wide network/Local Area Network.

- Hardware
- Software
- Physical facilities like buildings
- Furniture like chairs, tables, etc
- Supplies
- Hub. It's a device whose primary function is to send and receive signals along the network between the nodes connected to it.

- File server
- Workstation
- Network interface card (NIC)
- Repeaters. It's a device that regenerates and amplifies signals to create long distance network.
- Bridges
- Switches. It's is a high speed multi-port bridge.
- Router.

What is a Protocol?

It's a set of rules that govern the communications between computers on a network.

Types of protocols

SM.T.P

Simple, Mail Transfer Protocol. It's an internet protocol for transferring of e-mails.

FTP

It stands for File Transfer Protocol. It's an internet protocol for file transfer.

TCP

It stands for Transmission control Protocol. It's responsible for delivery of data over the network.

IP

It stands for Internet Protocol. It does the packet forwarding and routing.

Disadvantages of e-mail.

- May be intercepted as it passes many routers and networks during transmission.
- One may receive junk mail that may include bullying information
- Through e-mail, there is a great possibility of money laundry
- It's expensive in the long run where one has to continuously pay for the services so as to check mail.

- Loss of the user password brings untold trouble to the user as he/she cannot be able to sign-in in order to access his/her mails.
- Incase one comes to learn of the user password, may turn out risky as the other can check mail of the genuine user.
- It's another source of computer viruses that may be transmitted through infected e-mail attachments.

Identify the various anatomies/parts of an e-mail message.

- To i.e. address of the recipient
- From i.e. address of the sender
- Subject i.e. topic of message e.g. greetings.
- Date i.e. both receiver and sender.
- CC i.e. carbon copy
- BC i.e. blind copy
- Attachments
- Body
- Signature.

State some of the features of word processing package that could be used to ensure that a heading stands out.

- Bold
- Italics
- Underline
- Font size (allow lettering).
- Font type
- Centred/aligned e.g. left or right aligned.
- Colour
- Bordering (box)
- Highlighting/shading background
- Automatically applying a style

- Word Art.

Identify some of the benefits that ICT can offer to an organization like Plan International, NADS, etc.

- Increased speed of processing information or greater productivity.
- Increased accuracy of calculations i.e. additions, multiplications, divisions, etc
- Performs repetitive tasks.
- Allows greater flexibility in vast amounts of data stored in small space.
- Better presentation of information/data possible
- Improved or up to date company image.
- Efficient research and retrieval services
- Improved communication
- Improved security.
- Better working conditions
- Improved decision making
- Ability to employ from a world wide labour pool.

Identify some of the advantages of providing Internet access to the school.

- Students are able to study independently without the teacher instructing them.
- Saves costs on staff time that would be used in preparing work for teaching.
- Easier to contact students using e-mail
- Work can be submitted on-line for marking, verifying etc.
- Improved image of the school
- Less resources like books required
- Accessibility to abundant information
- Ease to cope with new innovations as procedures are found online.
- Communication becomes easy i.e. with other schools that are interconnected.

Some of the advantages to the students of having internet provided by the school.

- Can access materials from anywhere any time.
- Easier to submit work
- No need to attend lectures as materials are available on-line
- Discussion groups/news groups can be available and one can get help with studies in any discipline.
- Greater availability of information.
- Students are able to get friends outside their individual schools (Pen pals).

Disadvantages to the students of using internet for study.

- Health problems i.e. due to the use of ICT e.g. eye sight, backache, etc
- Lack of social contact with friends or teacher as one works alone from a room.
- One misses details that would be given by a teacher on a particular aspect.
- Information obtained may be unreliable or inaccurate.
- Internet is not as stimulating as a teacher would be while studying.
- Lack of other references that can be given by a teacher incase a student has failed to understand the example outlined.

Factors that one would consider before buying a given type of computer.

- The nature/type of the central processing unit. Large computers use CPUs made of separate high speed sophisticated components yet microcomputers use microprocessors.
- The amount of main memory the CPU can use. A computer with a large amount of memory is more preferred because it supports more complicated programs and can hold several different programs.
- Capacity of storage devices. Large computer systems tend to be equipped with higher storage devices and small CPs with lower capacity storage devices; hence the capacity varies with the nature of the system itself.
- Speed of output devices. Larger computers have a higher rate of output than small ones and it is measured in hundreds/thousands of times that can be printed per minute.

- Processing speed i.e. Millions of Instructions Per Second (MIPS).
- Number of users that can access the computer at the same time.
- Cost of the computer system.
- Provision for memory expansion.

Other characteristics of computers.

- It's programmable i.e. it can run many programs written under its CPU.
- It's an interactive machine i.e. one can play games, watch TV, videos, listen to radio and play music.
- It's a communicable machine i.e. it can be used for communication purpose like in radio stations, e-mail facilities, video conferencing, etc.

Other uses of a computer.

- Computes the behaviours of nuclear reactors.
- Predicts the performance of an aircraft or missile still on the drawing board.
- Prepare electricity bills and make out pay slips.
- Predicts weather (super computers).
- Solve problems of physics and engineering design
- Explore the relations of biological and physiological processes.

Some of the disadvantages of the early computers.

- They were very slow in carrying out a task.
- Only performed one task at a time.
- They were very expensive
- They consumed a lot of power
- Access to data was sequential which made it even more slow
- Produced a lot of heat which led to malfunction of other internal parts.
- They were very huge and could take up an entire room.

Some of the devices that were used to aid calculations as suggested in the books of history of computer.

- Abacus
- Calculating clock
- Napier's bones
- The Pascaline
- The ENIAC (Electronic Numerical Integrator and Computer).
- The EDVAC (Electronic Discrete Variables Automated Computers).
- The UNIVAC (Universal Automated Computers).
- Algorithm
- Slide rule.

Explain why peripheral drivers are needed.

- Provide interface/communication between the operating system and the peripheral.
- Translates formatting and highlighting information between a form that the printer can understand best.
- Translates scanned images into a form the software/computer can understand.
- Error messaging e.g. scanner or printer not ready.

State some of the advantages of using integrated packages rather than separate application packages.

- Ease of transfer of skills to different parts of packages.
- Many operations are the same in different parts of the package (common user interface).
- Can transfer data between parts of the package
- Shorter learning time
- Less training needed after learning first package
- Confidence building for naïve users.

How is ICT used in schools and what are its effects.

It has three sections i.e. how ICT is used in schools, its negative and positive side to the schools.

How it's used.

- Scanners are used to input pictures into the computers, hence can be edited, change colour, and size.
- Joysticks can be used in playing games e.g. students learning cricket on computers, pool, also can be used for controlling games on one's computer.
- Printers are always availed to students and teachers for learning purposes e.g. printing out hardcopies after a day's work on the side of students.
- Touch screens may be in schools for students with disabilities. They are used for inputting data into the computer and are very fast.
- Photocopiers such as scanner copiers with a good printer are required for both scanning, printing and photocopying.
- Smart cards are a break through and are used in schools as identity cards as well as library. They are also used in financial institutions.
- Computers are also available though the ratio between schools may vary, teachers and students may need to use them for work like generating of report cards, printing of certificates, among others.
- A school network where teachers will be able to send and also receive messages. The network can also be used for research, chat and talk, etc.
- Bar code readers are useful in the school library to check out on books. It cuts down on the time wasted where manual methods are employed in the library.
- Light pens may be available for teachers to draw oval objects for example the map of Uganda, school, college, university, etc.

Effects.

- Mails are sent through phone lines and are very fast.
- It encourages and trains staff on the best values and needs of maintaining a network infrastructure.
- It facilitates the sharing of data, resources online

- It facilitates research in many fields e.g. social, political and economic lines, etc.
- It facilitates transfer of information online from one part of globe to the other.
- Downloading of important yet abundant information on the net.
- Attaching one's portfolio.
- Communication
- Arranging travel plans
- Getting friends
- Downloading music, films and games
- Etc.

Negative effects

- Gradual spread of computer viruses
- Pornography
- Hacking
- Forgery
- Money laundry
- Inadequate socialization
- Health problems.

How is ICT used in society?

- Text messaging i.e. communication using a mobile phone
- Phone calls i.e. allows fast time people to contact each other on certain aspects in life or projects.
- Picture messaging i.e. taking records and sending digital photos. Some phones have cameras built in them.
- WAP (Wireless Application Protocol). It's a means of accessing digital information over the phone.
- Video messaging. It's a new way of communicating through pictures others than texts.

How far true is it that “computers are an aid to education?”

- It's used in teaching as an aid in many different subjects e.g. MTC, Biology, chemistry, etc.
- It can be used while monitoring progress and testing pupils e.g. computer generated reports.
- Used for electronic mailing system both inside school and to communicate with other schools.
- Assists in administration e.g. database of students. This makes storage and retrieval of information regarding a student timely and whenever needed.
- For career advice or helping to find a place in a college or university.
- Students can revisit the training package as many times as is necessary for further reference and acquaintance.

It's not however true that computers are an aid to education.

- Does not provide human interaction i.e. may not answer all of the trainee's questions. This makes the learning and education process more of a theory than a required necessity.
- Only as good as the program/rules that have been written, all rules must be completely accurate. This limits the use of other programs in line with education.
- Cannot allow for unforeseen eventualities, random events, among others as machines used are always slow and not modern.
- If data or rules written into programs are wrong, then the answers/responses too will be wrong.

Types of computer crimes.

- Hacking
- Phreak. The action of using bad and mostly illegal ways in order not to pay for some electronic bills
- Software piracy

Dangers of computer crimes.

- Causes loss of money through embezzlement
- Causes the spread of computer viruses
- Causes loss of privacy through cracking and breaking of firewall. **Firewall** refers to the server that filters incoming messages to protect internal network from viruses, hacking, etc.
- Causes abuse of the computer resource.

Identify some facilities available on an electronic mail (e-mail) system.

- Forward messages to another recipient
- Multiple recipients mailed to simultaneously
- Hold delivery until predetermined time
- Auto-acknowledgement from recipient
- Blind copying to suppress recipients, etc.

Identify some of the illegal activities that are carried out on the internet.

- Terrorism/illegal groups.
- Football hooliganism
- Hacking/logic bomb and viruses
- Stalking
- Black mail
- Theft/fraudulent behaviours
- Copyright infringement
- Money laundering
- Selling of illegal items like software, etc.

How the Internet does legalises/supports illegal activities.

- Recruitment of members through websites/mail addresses.
- Easier for one to keep in touch/contact at any time of the day/night and in any place in the world since it's a globe connection of sites.

- Wider groups can be formed internationally since boundaries are removed when using the web.
- Can give false personal details
- Purchase goods online, easier to commit credit card fraud with stolen card numbers
- Data moving across communication links makes hacking easier
- Easier to launder money though harder to track fraud as vast sums of money can be moved quickly electronically.
- Downloading of music/pictures/software, etc.

State some of the advantages of CD-ROMs over other storage media like floppy diskettes.

- It stores vast amounts of data compared to floppy diskettes.
- They are the best in distributing today's huge software programs.
- They can record graphics, sounds and texts.
- They are used for storage purposes and their data life is nearly 100% reliable
- They are not easily affected by viruses.
- They employ an audio-visual display for both music and graphics.
- They are good in playing and carrying games or distributing games from one computer to another.

Computer studies and ICT

The study of computer studies has become too rich that it is now getting hard to draw a difference between Computer Studies and "ICT".

Computers and communication have brought and still bringing changes in our lives. Therefore, the following concepts are more or less becoming family names.

- Information technology
- The communication revolution/Telephone revolution
- Internet revolution
- Multi media (data, sound & video)
- The Binary Age
- Information society
- The information super highway/ "Information" or I-way or Data-Way.
- The digital Age or Dot Age.

The need for better and best ways of doing things has triggered more and more research in the best technologies, more reliable information, and the best communication means. Hence;

Telecommunication = electromagnetic devices and systems for communicating over long distances. Such devices include; radios broadcast TVs, telephones and cable TVs.

Communication = Communication (electronic transfer of data from one place to another) Technology = Methods/modes of doing things

ICT - Information.: Communication Technology

. IT = Information Technology

Therefore, ICT/IT relates to all means, which facilitates information or data capture, processing, storage, and communication or output.

Old Technologies

- Newspaper
- Recordings
- Radio
- Paper Printed Photographs
- Film
- Televisions

New Technologies

- Satellites
- Cellular phones
- Compact disk
- E-mail
- Internet
- Data warehouses or data bases
- Video conferencing
- Fiber optic cables (for communication media)
- Fax machines

IMPACT OF IT /ICTs ON SOCIETY

ICTs have had both positive and negative contributions to society.

a) Benefits/ advantages of information technology.

- Increased interaction or collaborations through e-mails, chat rooms, video conferencing, etc
- Increased sharing and access to common databases within and outside organizations through networking.
- Increased access to information through DBMS. Huge amounts of material on all subjects now exist - ease research.
- Increased inventions and innovations.
- More and more technology in management fields.
- Improved and sustained quality goods and services.
- Increased efficiency and effectiveness' leading to increased productivity (hence less wastages & more efficient use of resources).
- Increased investment opportunities in commercial tele-centers, Internet cafes, chart rooms, etc.
- More leisure as people get shorter working hours. Increased use of ICTS implies higher standards of living.
- Highly skilled jobs are being created like programming, systems analysis.
- Software engineering, etc.
- Many IT products for the disabled.
- Reduced costs of production through less demanding ICTs
- Improved corporate image.

b) Disadvantages

- Widens the gap between the rich and the poor as the rich producing with the help of ICTs produce faster and flood the markets.
- Isolate older people since it is not very easy for them to cope with the many IT changes.

- Bombards (internet) people with too much information- (good and bad)
- Increased instability as people get compelled to learn new things every now and then.
- Health problems e.g. eye sight losses, repetitive strain injury, etc
- Moral problem through access of pornographic materials on the net.
- Erosion of individual privacy as more data about people is stored on databases and can be accessed any time.
- Unemployment as less skilled people get retrenched and their roles taken over by more effective ITs.
- Addictions to computer games plus surfing by young people
- ITs isolate man and also erode the social aspect of work as some people opt for executing their office duties from their homes.
- Initial, maintenance and on-line IT costs are very high segregative.
- Virus threats make data stored on computers very insecure.
- Increased crime through forgeries and piracy etc.

AREAS OF APPLICATION FOR INFORMATION TECHNOLOGY

(1) Education and training.

Many Universities, Colleges, school and public libraries are on line with websites for purposes of making easy access to educational information ..

Education references soft ware e.g. the Infopedia, Encarta, etc are programs used for helping people with English usage, data collection and analysis etc

(2) Information plus data storage.

ITs have got immense internal and external storage devices for storage of huge volumes Data. Hence the common paperless society

(3) Word Processing

Word processor programs e.g. Microsoft word, word star, lotus notes etc are now on market for use to produce professional looking documents like, letters, invoices, orders etc.

They have easy to use document edit, format, table tools etc .

(4) Business

E-Business and E-commerce facilitate the buying and selling of goods, services and works on line.

Businesses have got websites and networked computers they use to advertise, processing of orders, receipting of purchased products, etc.

For instance Web sites like: - www.CD-Now for buying music CDs, DVDs & VCDs, and Interflora.com - for flowers.

Other businesses include;

- Computer Secretarial Bureau.
- Internet cafes.
- Commercial computer schools.
- On-line banking

(5) Entertainment and Leisure.

ITs offers lots of leisure and entertainment activities in form of;

- Computer games
- Computer audio music and video players
- Games on line
- Leisure centers on line.
- Leisure websites

Skynet.com for sports and manu.com, are some of the informative leisure websites.

(6) Health & Medicine.

ITs are now being used for;

- Medical tests for instance blood, cancer, Brain damage etc
- Carrying out sensitive operations on sensitive body parts like the brain, heart, kidney, etc.
- Drug mixing and prescriptions.

7 Transport & communication

ITs are also being used for;

- Units of carriage surveyance in logistics management.
- Sending and receiving of messages like sms (E-mail = sms over the internet), and interactive websites.
- Reservations for units of carriage and hotels.

8) Accounting and Finance.

Software/programs are now available for producing financial reports like income statements, Balance sheets, and cash flow statements. Such programs aid financial planning plus management, determination of NPV, PBP, IRR, etc

Such application/programs include Pastel, Tally, Sand systems, Excels, etc

(9) Climate and Weather:

Programs have now been developed to accurately predict and report changes in climate and weather to aid travelers and farmers.

(10) Security and military.

IT Laser guided cameras and satellites are now used for national and domestic security. Business like Banks, supermarkets etc also use IT Laser guided cameras for customer monitoring in the business hall.

Information technologies are also used in the military to fly and direct combat planes, locate enemy positions and hit/shell them with minimal civilian and property losses.

(11) Manufacturing:-

In many large manufacturing and production processes robots are being used to handle tasks, which cannot be efficiently handled by humans.

Computer Aided Design (CAD) and CAM (Computer Aided Manufacture) are also in this category.

Other areas of application include;

- Hotel and Institutional catering.
- General Management. For instance; DSS, HRS, MKT, ESS, tele-working and tele-commuting, .
- Information technology helps in the jurisdiction of cases in courts of laws, sports and games; ITs (video evidence) have been adduced to influence decisions.

THE CONCEPTS OF DATA AND INFORMATION

DATA:

Refer to basic/raw facts and figures. Data is not a good basis for planning or decision making e.g.

- Hours worked by an employee. .
- Arrival time of an employee
- Sales figure for a day etc

TYPES OF DATA

Direct data or Primary data: Originates from the source i.e. first hand data.

Indirect or secondary data: Data which comes in a more round a bout way. It is already researched data e.g. textbook data, magazine data, newspapers, etc.

Others forms of data include;

- Currency. Data expressed in monetary value.
- Number (0 - 9)
- Date/time
- Memo
- Text. Data constructed from letters of the alphabet, or a combination of letters of the alphabet and numbers.
- Image.
- Voices.

Data processing methods includes:-

- Manual methods. Involves use of human beings for data processing.
- Mechanical. Involves use mechanical typewriters, abacuses, slide rules etc
- Electronic Data Processing (EDP)
- Electro-mechanical methods

(Think and give the Advantages and Disadvantages of each mode)

INFORMATION

This refers to processed data i.e. data that is already converted into a more useful/meaningful form. Information should be the basis for decision and policy making.

On many occasions the two concepts (data and information) have been used interchangeably. One has been used to mean the other.

LEVELS OF INFORMATION -Strategic information

- Tactical information

-Operation information

Types of information

- Past information
- Present information.
- Future information
- Strategic information
- Tactical information
- Operational information

The monetary value placed on information depends on:

- The accuracy of the information
- It is intended purpose

Good information can do one or all of the following.

- Reduce costs
- Eliminate losses
- Lead to a more efficient use of resources
- Provide better management and more accurate decision-making.

QUALITIES OF GOOD INFORMATION

- Timeliness. Having data at the right time.
- Cost effectiveness. Having data which is within the means of the firm.
- Completeness/ Comprehensiveness. Having information that is not lacking in any form.
- Relevance. Having data which is capable of solving organizational needs. It must be directed to the right audience and from the right author.
- Clarity. Having data that is error and ambiguity free.
- Must be through the most appropriate channel. I.e. a channel which is noise free, or minimize noise.
- User specific or easily attached to the user. It must be properly qualified or structured.
- Accuracy. This is all embracing i.e. Time accuracy. Cost accuracy.

Data/Information Processing Cycle Getting information is a process involving:
Data Collection ~Data Inputting ~Data Processing (Processor) ~ Data Outputting (Information).

PART TWO SYSTEMS THEORY

A System:

A system is a set of inter-relate components
Elements set together to perform a given task.

Types of systems.

A system can be classified as;

- Deterministic system: - Is a system where given the input the output can be determined.

- Probabilistic/stochastic system. Is a system where given the input the output cannot be successfully determined.

- Self-organizing/ Adaptive/Cybernetic systems.

Systems which are highly complex. i.e. system which continuously adapt to changes in the environment.

Systems can also be classified as;

- Data processing systems.
- Information system.
- Knowledge based system

Data processing systems (DPS):

- These are systems that automate many of the routine clerical and administrative procedures in organisation. E.g. order processing system
- Stock control system, Routine billing system, etc
- Management can not base on them for tactical and strategic decisions. On-line Analytical Processing Systems (OLAPS):
- These are Interactive systems.
- Transaction Processing System(TPS):
- Support the operation of organisations by processing transactions and keeping them in master files. They work as the interface between the organisation and its customers.
- Information Systems (IS)/Management Information System (MIS):

Are system that convert data from internal and external source into information to be used by manager if effective decision making for planning, Directing and control of original activities.

They include:

Executive information system (EIS) or Executive Support system ESS.

Systems used by the highest levels of control to ease access to internal and external data for effective decision and policy making.

EIS/ESS usually provides summarized reports. Decision support Systems (DSS)

Used to help manager in effective decision-making where data is unstructured.

Unstructured data is one with very high level of uncertainty and it is more difficult to make the right decision using it.

Expert System:

- Systems designed to provide specialized information/data. E.g. Accounting/Finance system.
- Marketing information system.
- Human resource information system.
- Health applications

Other Systems include; Neural Network System Artificial intelligence systems ..

Fuzzy logic systems

Open systems

Closed Systems

NB. The most fundamental Invention in ICTs is the COMPUTER.

MODULE 3

WORD PROCESSING

Word 2003 is the word processing software in the Microsoft 2003 Office Suite. It allows you to create a variety of professional-looking documents such as letters, flyers, and more.

Getting Started with Word 2003

Microsoft Word 2003 is the word processing application in the Microsoft Office Suite. Create professional-looking, formatted text documents with this powerful Word processing software.

Lesson 1: Identifying Parts of the Word Window

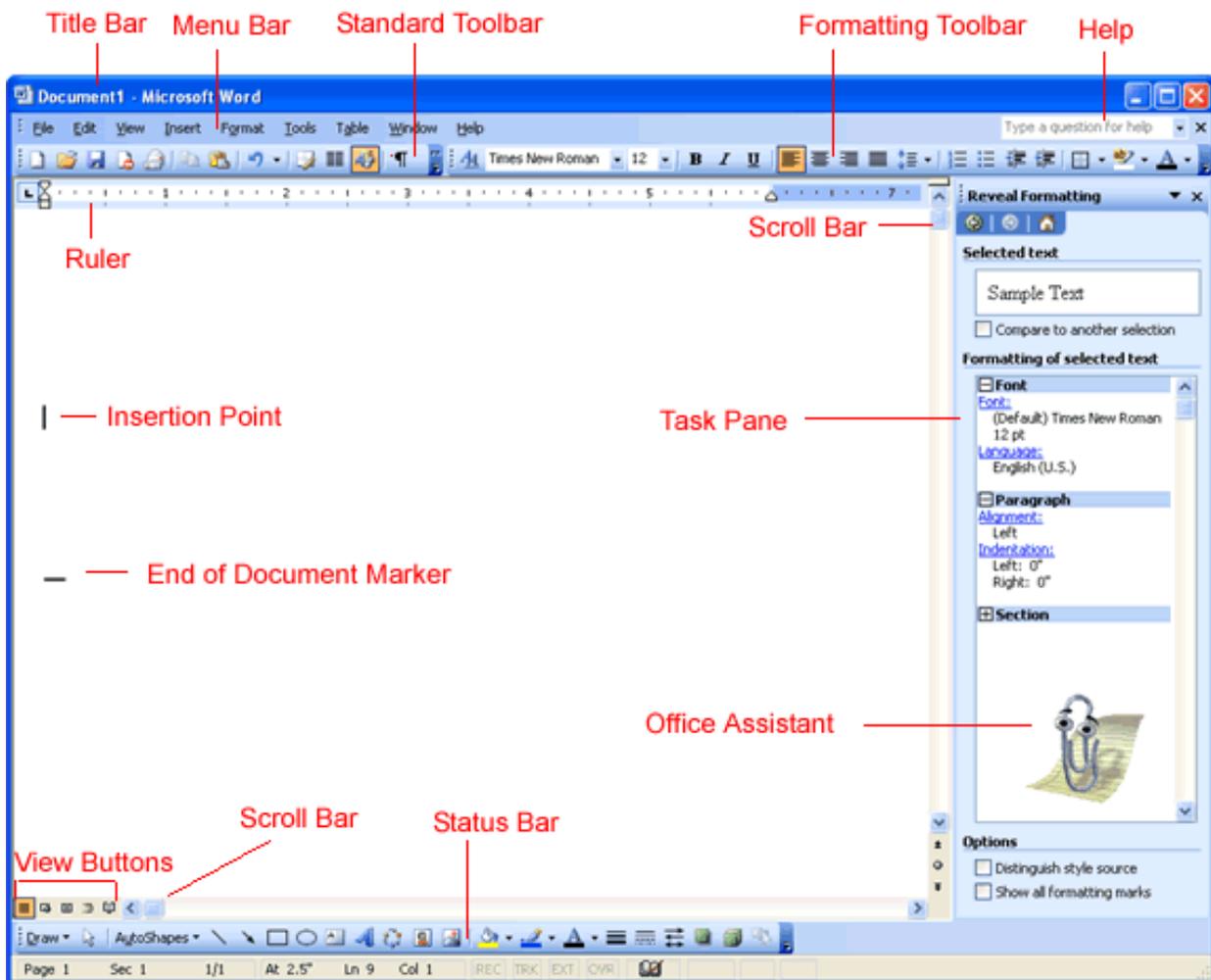
By the end of this lesson, learners should be able to:

- Identify the parts of the Word 2003 Window
- Change the document view
- Operate the drop-down menus
- Identify the Task Pane

The Basics of the Word Window

Let's briefly review the basic parts of the Word 2003 window before we move onto word processing.

Shown below is the Microsoft Word default window. When Word is launched, a new blank document, or default window, opens in Print Layout view. Although window elements are fully explained in our Windows course, here is a brief explanation of the Word window.



Title Bar

Displays the document name followed by a program name.

Menu Bar

Contains a list of options to manage and customize documents.

Standard Toolbar

Contains shortcut buttons for the most popular commands.

Formatting Toolbar

Contains buttons used for formatting.

Ruler

Used to set margins, indents, and tabs.

Insertion Point

The location where the next character appears.

End-of-Document Marker

Indicates the end of the document.

Help

Provides quick access to Help topics.

Scroll bars

Used to view parts of the document.

Status Bar

Displays position of the insertion point and working mode buttons.

Task Pane

Provides easy access to commonly used menus, buttons and tools.

View Buttons

Changes the layout view of the document to Normal View, Web Layout View, Reading Layout View, Print Layout View, or Outline View.

Office Assistant

Links to the Microsoft Office Help feature.

Change in View

In an effort to provide various ways in which to view your work in progress and remain organized, Word 2003 offers six different views for your document. The six views are Normal View, Web Layout View, Reading Layout View, Print Layout View, Outline View, and Full Screen View.

Normal view is best used for typing, editing, formatting and proofreading. It provides a maximum amount of space without rulers or page numbers cluttering your view.

Web Layout view shows you what your text will look like on a web page.

Reading Layout view is best for documents that you do not need to edit. The goal of this view is to increase legibility so that the user can read the document easily.

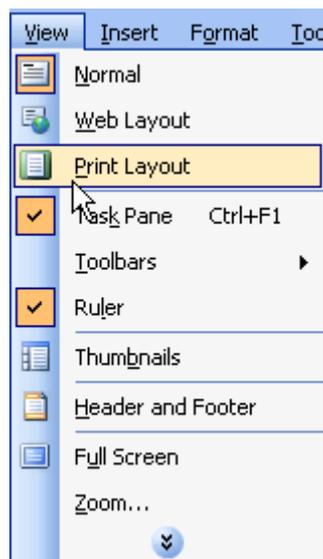
Print Layout view shows you what your document will look like when it is printed. Under Print Layout view you can see all elements of the page. Print Preview shows you this as well.

Outline view is used to create and edit outlines. Outline view only shows the headings in a document. This view is particularly handy when making notes.

Full Screen view displays **ONLY** the document that you are working on. All the other pieces of the Word window are removed except for one button that allows you to Close View Screen.

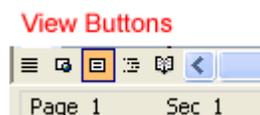
Changing your Document View:

- Click **View** on the **menu bar**.
- Select the view of your choice.



OR

- Click **one of the five buttons at the bottom left** of your Word window (View Full Screen is not available in this location).



- **Pull-Down Menus**
- Each Office 2003 program features a **menu bar**. The menu bar is made up of many different **menus**. Each menu contains **commands** that enable you to work within the program.

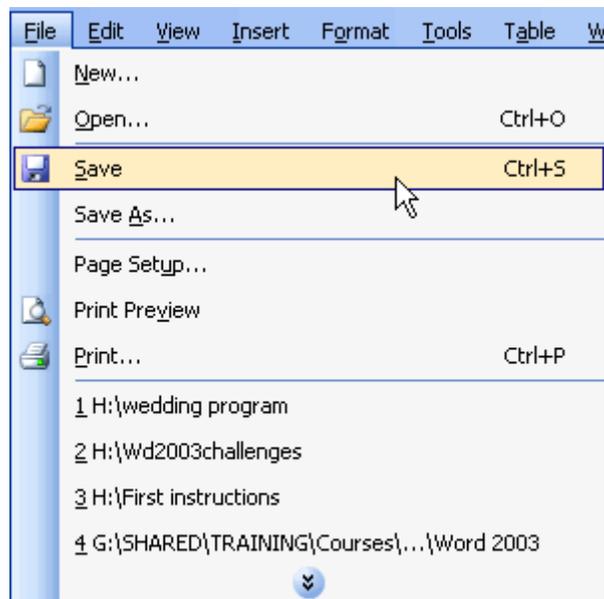
If you have used a previous version of Microsoft Word, you may notice the menu bar in Word 2003 operates a little differently than before.

Word 2003 uses **pull-down menus** that initially display commands that users most often need.

Operating the new Pull-Down Menus

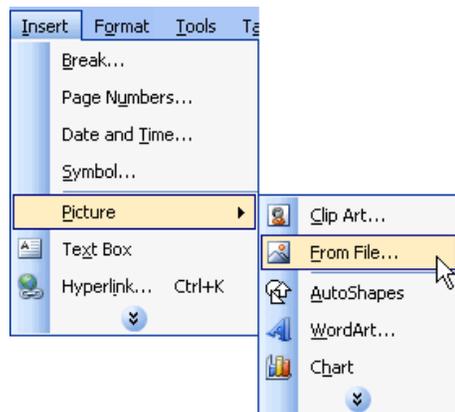
To Open a Menu:

- Click on a **menu name** on the **menu bar**.
- View the **commands** listed under the **pull-down menu**.
- With the menu open, drag the mouse pointer to a command and click on it to select the command. (As you drag your mouse pointer over the commands, each command is highlighted in blue.)



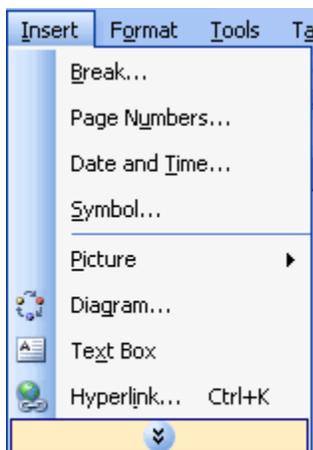
Choosing the Save Command from the File Menu

- If there is a **small black triangle** next to a command, hover the mouse pointer over the command with the triangle and a **cascading menu** with additional options will appear. Point and click to make a selection from the cascading menu.



Choosing a Command from a Cascading Menu

Commands that are not used often in 2003 are initially hidden from the viewer. If you do not see all the commands on a menu, click on the double arrows at the bottom of the pull-down menu. You can also double-click the menu to expand it.



Double-arrows

Using the Task Pane

When opened, the task pane will appear on the right side of the Word window. The task pane provides easy access to commonly used menus, buttons and tools. By default, the Task Pane will appear when Word 2003 is first launched.

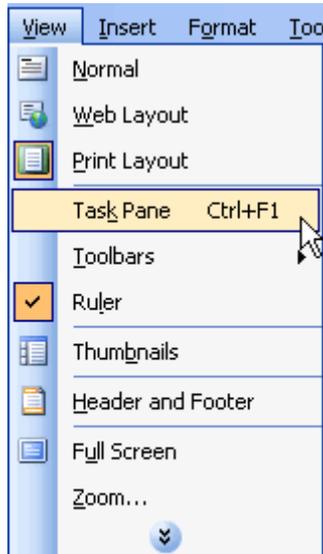
If you do not see your task pane, you can view it by either selecting certain commands or by manually opening it.

To Open the Task Pane:

- Click on **View** in the **menu bar**.
- Select

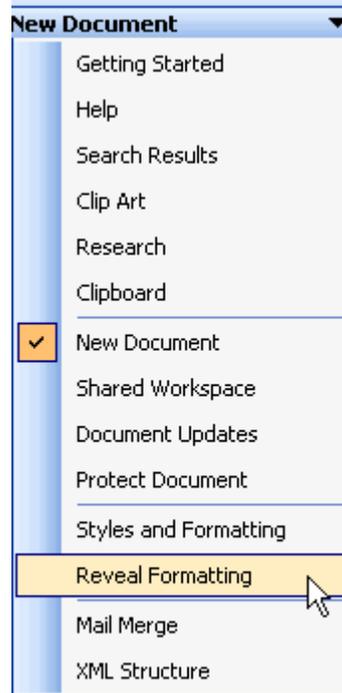
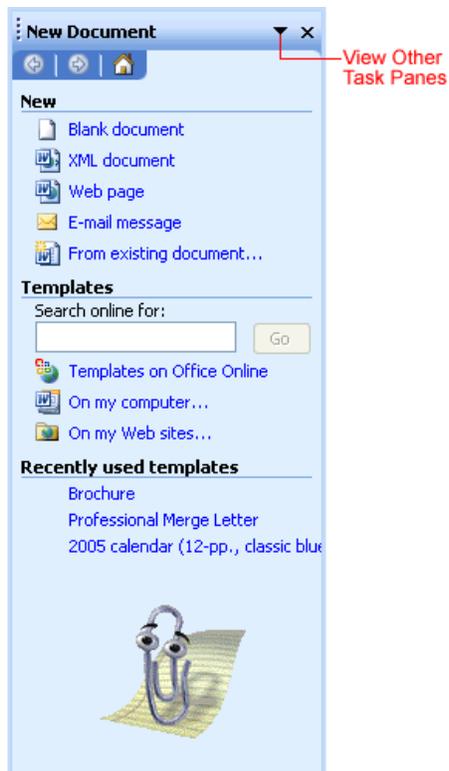
Task

Pane.



Selecting the Task Pane from the View Menu

Along the top bar of the task pane you should see small backwards and forwards buttons on the left as well as a down arrow on the right. To view different task panes available to you, click on the down arrow. Once you have opened different task panes, you can navigate through them by clicking on the left and right arrow button on the left. To close your task pane, click the x symbol on the far right of the bar.



Choosing Reveal Formatting from the Other Task Panes

Challenge!

- Download and save the **Personal Letter** Word document to complete challenges 1 through 6. Need help? [How to Download a file.](#)
- After opening the document, change the view to **Normal View**.
- Practice using the pull-down menus on the menu bar.
- Find the **Task Pane** and become familiar with it.
- Type today's date at the beginning of the document.
- Save the document by selecting **File >> Save** from the main menu.
- Close the document.

3.1 Using the Application

3.1.1 Working with Documents

- Open, close a word processing application. Open, close documents.
- Create a new document based on default template, other available template like: memo, fax, agenda.
- Save a document to a location on a drive. Save a document under another name to a location on a drive.

- Save a document as another file type like: text file, Rich Text Format, template, software specific file extension, version number.
- Switch between open documents.

3.1.2 Enhancing Productivity

- Set basic options/preferences in the application: user name, default folder to open, save documents.
- Use available Help functions.
- Use magnification/zoom tools.
- Display, hide built-in toolbars.
- Restore, minimize the ribbon.

Lesson 2: Save and Save As

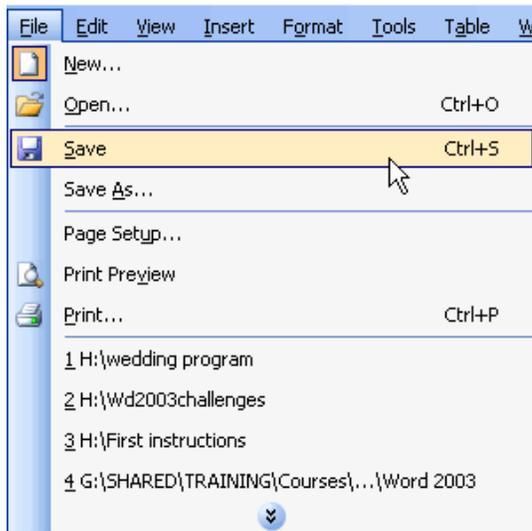
By the end of this lesson, learners should be able to:

- Use Save
- Use Save As
- Save a document to a location on a drive. Save a document under another name to a location on a drive.
- Save a document as another file type like: text file, Rich Text Format, template, software specific file extension, version number.

Saving a New File

When Saving a File for the First Time:

- Click **File** on the Menu Bar.
- Select **Save** - Ctrl+S.



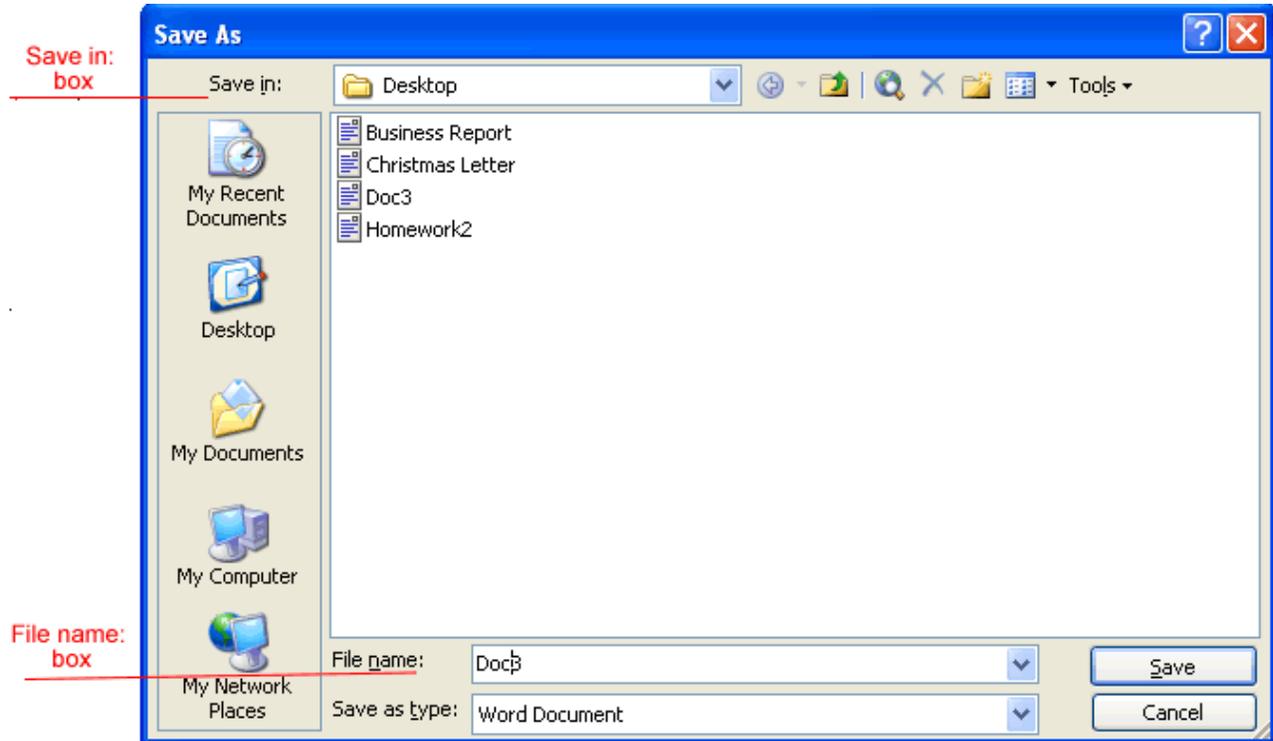
Choosing the Save Command from the File Menu

Using the Standard Toolbar to Save:

- Choose the **Save** button  on the **Standard Toolbar**.

Save As Dialog Box

After selecting Save from the Menu Bar or the Standard Toolbar, the **Save As Dialog Box** appears.



To Specify a File Location:

- Open the **Save In:** drop down list box.
- Choose 3 1/2 floppy (**A:**) if saving to a floppy disk.
- Choose (**C:**) if saving to your hard disk.
- Name your file in the **File name:** box.
- Click **Save**.

If you do not choose a file name, Microsoft Word will assign a file name for you. It assigns the first line of text in your document, unless you give it a different name when prompted in the File name box.

If you do not specify a file location, Office uses the My Documents folder as the default location. So, if you can't find a file, check My Documents.

After Naming and Saving a File Once:

- Click the **Save** button  on the **Standard** toolbar.

OR

- Go to the **File** menu and choose **Save**.
*You will not get a **Save As** dialog box again.*

Saving a File Under a New Name

If you wish to create an exact copy of an original document for editing or revising purposes, you should perform a **Save As** on the file and save it under a new name. This will guarantee that you always have a saved, original copy.

Follow these steps to perform a **Save As**:

- Click **File** from the menu bar.
 - Select **Save As**. The **Save As Dialog Box** appears.
 - Type a new name for your file in the **File name: box**.
 - Click **Save**.
- Choose **Save As** to rename a document. Be careful not to overwrite your original file.

Did you Know?

Save periodically when you are working in an application. Losing information is never fun! You can quickly save by using the quick-key combination **Ctrl + S**.

If Word encounters a problem, it may automatically shut down without giving you the chance to **Save**. The **Document Recovery Task Pane** will appear the next time you open Word. This pane allows you to view files that were recovered when Word discontinued working properly. Select the best version of your document and make sure to save it.

Lesson 3: Use Backspace/Delete and Undo/Repeat

By the end of this lesson, learners should be able to:

- Use backspace and delete
- Use undo and repeat

Backspace and Delete

Use the backspace and delete keys (on your keyboard) to erase text in your document.

- The **backspace** key erases the text to the left of the insertion point one character at a time.
- The **delete** key (located under the Insert key) erases the text to the right of the insertion point.

Using Undo - Ctrl + Z

Have you made a mistake in your document and needed to go back and make changes, but you thought it was too late? Good news! Word offers a feature that helps prevent this from happening.

The **Undo command** lets you "undo" or delete the last change made to your document. As you can imagine, this is a very useful feature. If you make a change or mistake that you do not want or did not mean to do, you can simply "undo" your action.

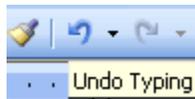
Word remembers up to **300** actions in a document and allows you to undo any or all of them as long as you haven't closed the document first.

To Use Undo:

- Click **Edit** on the menu bar.
- Select **Undo** - this command will change names depending on the action you just took. If you accidentally deleted a sentence, it says Undo Clear.
- Press **Ctrl + Z** on your keyboard for a **shortcut** to Undo.

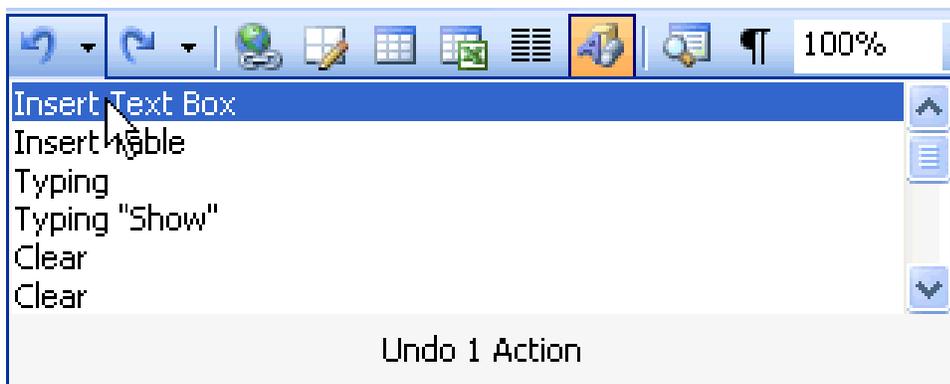
OR

- Undo all your recent actions by repeatedly clicking the **Undo button** located on the **Standard toolbar**.



Notice the small **list arrow** next to the **Undo button**. When you click on it, you see a list of all the separate actions you have performed on the document you are working on. You can select as many actions as you want to undo.

IMPORTANT: If you undo an action in the middle of the list, you will also undo all the actions above the one you select. For example, if you undo the 15th action in your list, you will also be undoing the 14 actions that came before the one you select.

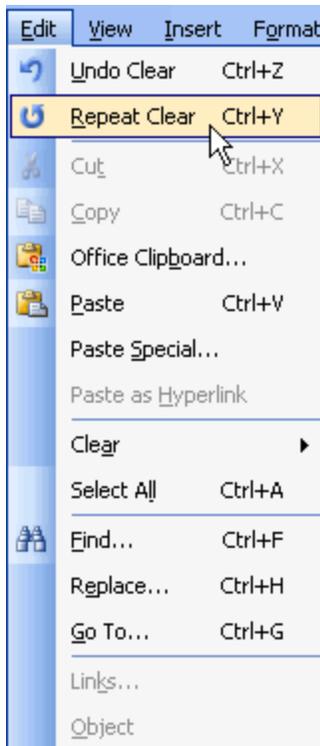


Using Repeat - Ctrl + Y

The **Repeat** feature allows you to repeat the last action and can help to save a lot of time as you create your document.

To Use Repeat:

- Click **Edit** on the menu bar.
- Select **Repeat** - this command will change names depending on the action you just took. If you need to format a title on one page and wish to format another title the same way using Repeat, it will say Repeat Style.
- Press **Ctrl + Y** on your keyboard for a **shortcut** to Repeat.



Challenge

- Open the personal letter document.
- Write a new paragraph and discuss the following:
 - Challenges you face as a distance learner.
 - What you hope to gain from completing tutorials.
 - Any other important points about distance learning.
 - Click **Enter** twice.
- Practice using the **Backspace**, **Delete**, **Undo**, and **Repeat** functions as you type your paragraph.
- Move the **insertion point** to the end of the final sentence in the letter and click **Enter** twice.
- Write a Closing (i.e., Sincerely, Yours Truly, etc.).
- Save the document using the **Save icon** on the Standard Toolbar.
- **Close** the document.

➤ You can Copy information from many different sources including Websites, Emails, and other Office applications like Excel and PowerPoint.

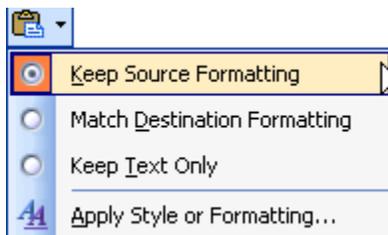
Working with Blocks of Text

To Cut and Paste a Block of Text:

- **Select** the text you want to move.
- Click the **Cut button** on the **Standard Toolbar**. 
- Place the **insertion point** where you want the text inserted.
- Click the **Paste button**. 

To Copy and Paste a Block of Text:

- **Select** the text you want to move.
- Click the **Copy button** on the **Standard Toolbar**. 
- Place the **insertion point** where you want the text inserted.
- Click the **Paste button**. 
- Once the item has been pasted, you can determine the formatting by clicking on the **Paste Options** button that appears just below your pasted selection.
Check or de-select any of the following options:
 - Keep Source Formatting - maintains the text formatting of the original document.
 - Match Destination Formatting - formats the pasted text to match the text formatting in the document in which it was pasted.
 - Keep Text Only - removes any graphics that you may have copied along with the copied text.
 - Apply Style or Formatting - allows you to choose a specific format from the Styles and Formatting menu.



Viewing the Clipboard items:

- Click **Edit** on the Menu Bar.
- **Select** Office Clipboard.

- The **Clipboard** will appear on the right side of the Word window in the **Task Pane**.
- The Clipboard will display any of the 24 items you have copied.

➤ **Menu Commands:**

- Edit → cut
- Edit → copy
- Edit → paste

➤ **Keyboard Shortcuts:**

- Ctrl+C = copy
- Ctrl+X = cut
- Ctrl+V = paste

Become comfortable using the keyboard shortcuts to increase your speed in word processing.

If you cut, copy, or paste something you didn't mean to, use the **Undo button** or **choose not to save changes** to your document when you close your document.

Drag and Drop

The **drag and drop** method of **moving** text allows you to move selected text using your mouse.

This method is convenient for moving text when:

- Moving text from one location to another within a document.
- Moving text to another document.

To Drag and Drop Selected Text:

Drag:

- **Select** the text you wish to move.
- Place the mouse pointer anywhere on the selected text without clicking.
- Click and hold the **left** mouse button until the insertion point changes into a white arrow pointing up to the left.
- Left click and **drag** the selected text to the **new location**.

Drop:

- During this process, the mouse pointer changes to a box with a small white arrow over it, indicating you are dragging text.
- When you reach the new location, release the mouse button to drop the text into place.
- Once you release the mouse button a menu list will appear that offers you the following options:
 - Move Here
 - Copy Here
 - Link Here
 - Create Hyperlink Here
 - Cancel

(Be sure to **remove** the selection highlight before pressing any key, so that you do not delete your newly moved text. If you do accidentally delete, simply press the **Undo button**).

Challenge!

- Open the personal letter document.
- Use the **Drag and Drop** feature to move the first sentence of the letter (“My daughter just got...”) to the **end** of the **final** paragraph of the letter.
- Use the mouse to **select** the paragraph you wrote (3rd paragraph).
- Use the **Copy**, **Paste**, and **Cut** features to move the 3rd paragraph so it is the second paragraph of the letter.
- Save and close the document.

Lesson 5: Use AutoCorrect and Find and Replace

By the end of this lesson, learners should be able to:

- Use AutoCorrect
- Use Find
- Use Replace
- **AutoCorrect**
- Word's **AutoCorrect** feature can assist you in word processing tasks. AutoCorrect can help you locate misspelled words and correct them as you type. AutoCorrect can also be customized so that commonly used words will be automatically entered without having to type the entire word.

Examples:

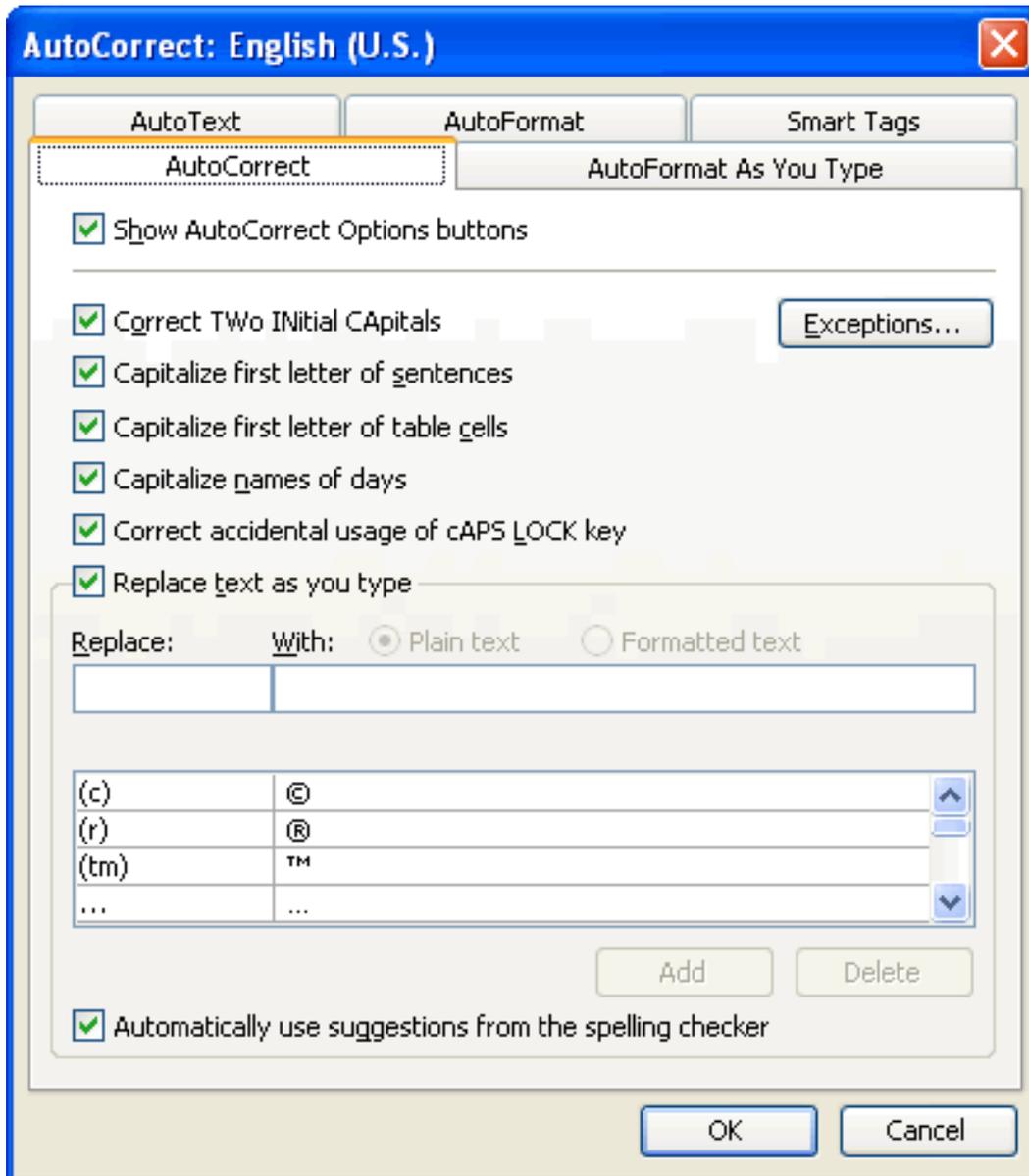
When typing the misspelled word, stannd, Word will automatically convert this typo to the correct spelling, stand.

Instead of having to write a long proper noun like, GCFLearnFree.org, you can customize AutoCorrect to automatically complete the rest of the proper noun once you type the letters GCF.

Modifying AutoCorrect:

- Click **Tools**
- Select **AutoCorrect Options** from the menu bar. The **AutoCorrect Options dialog box** appears.
- **Check or de-select** any of the following options:
 - Show AutoCorrect Options buttons.
 - Correct two initial capitals.
 - Capitalize the first letter of the sentence.
 - Capitalize the first letter of table cells.
 - Capitalize names of days.
 - Correct accidental usage of Caps Lock key.
 - Replace text as you type.

- Use the **Replace: box** to type a word you frequently misspell or type a shorthand word to represent a longer word or phrase, such as GCFLearnFree.org.
- Use the **With: box** to type the correct word.
- Click **Add**.



If you type a misspelled word into AutoCorrect's **With: box**, AutoCorrect always misspells that word.

If AutoCorrect changes a word that you don't want it to change, you can hover the pointer over the area where the autocorrection was made and a **Smart Tag** will

appear that allows you to reset the original word. Click on the Smart Tag and a drop-down list with options to reverse the action is displayed.



Find and Replace

Word 2003 allows you to search for specific words in your document as well as fonts, special characters and formats. The **Find and Replace** functionality can really help save you time and effort in your word processing goals.

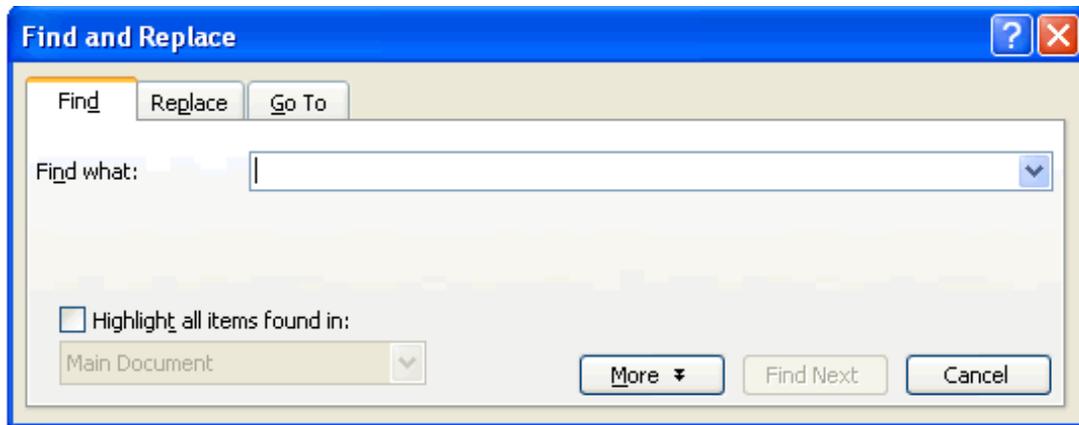
For example, consider a document you are editing that displays Word XP needs to be updated to Word 2003. Currently the document has the text, Word XP, typed again and again throughout the document. Using **Find and Replace** to replace Word XP with Word 2003 will save you much time and effort in your editing process.

Using Find - CTRL + F

- Click **Edit** on the menu bar
- Select **Find**. The **Find and Replace dialog box** appears.
- Type a word, phrase or format in the **Find What** box.
- Click **Find Next** to start the search.
- Word will jump to the first instance of this word and will highlight the word for easy location.
- Continue Clicking the **Find Next button** to find all other instances of this word.

OR

Check the **Highlight all items found in:** box to find all instances of the word at the same time. Use the list box below to select all, or portions of your document.



You can perform a more detailed search by clicking the More button on the Find and Replace dialog box:

- Click **Edit** on the menu bar
- Select **Find**. The **Find and Replace dialog box** appears.
- Type a word, phrase or format in the **Find What** box.
- Click **More** to conduct a detailed search.
- Click the **Search** list box if you want to limit your search to a specific part of the document.
- Use the **check boxes** to limit your search.
- Click **Format** if you want to limit your search to words in a specific Font, Paragraph, Tab, Language, Frame, Style or Highlight.
- Click **Special** to search for punctuation marks or section breaks.
- Click **Find Next** to start the search.

Using Replace - CTRL + H

- Click **Edit** on the menu bar.
- Select **Replace**. The **Find and Replace dialog box** appears.
- Type the word, phrase or format in the **Find What:** box that you are searching for.
- Type the word, phrase or format in the **Replace With:** box that will replace what is in the **Find What:** box.
- Click **Find Next** to conduct your search.
- When Word finds a word or phrase, do one of the following:
 - Ignore it.
 - Click Replace.
 - Click Replace All to replace every occurrence of the selected text with the replacement text.

- Click **Find Next** to bypass it and find the next.
- Click **Cancel** to quit.

Did You Know?

Thesaurus: a book of words that have the same or nearly the same meaning

Are you having trouble finding the right word to use? Word offers a Thesaurus feature that can help you find just the right word.

Using the Thesaurus:

- Click **Tools** on the **Menu Bar**.
- Select **Language** and then follow the cascading menu to **Thesaurus**.

OR

- Use the quick key combination, Shift + F7

Challenge!

- Open the personal letter document.
- Use the **Find and Replace** feature to change the name of the person you are writing from "Tom" to any name you choose.
- Go to **Tools >> AutoCorrect Options**. Look at the functions that AutoCorrect can do for you.
- Save and close the document.

Lesson 6: Spell and Grammar Check

By the end of this lesson, learners should be able to:

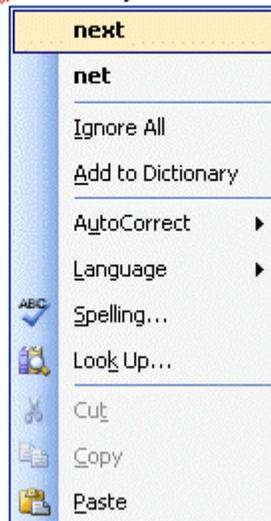
- Use Spell and Grammar Check
- **Spell and Grammar Check**
- Not only does Word allow you to **Undo** possible mistakes in your document and **Paste** corrections, it also automatically reviews your grammar and spelling as you type. Green wavy lines are placed underneath possible grammar mistakes and a red wavy line under possible spelling mistakes. All of Word's grammar and spelling errors may not be correct, so you can choose to **ignore** these error markings and keep typing, or you can **correct** the mistakes and/or **add** the corrections to Word's dictionary.

Check Spelling as you Type

Word puts a red wavy line under possible spelling mistakes. If you click on the suspected misspelling, Word gives you one or more suggested corrections.

Example

The seminar will be scheduled for the next Thursday at 8:00 am. Please bring your registration form as well as payment.



To Use Spell Check as You Type:

- Place your I-Beam over the misspelled word and **right-click**.

- A menu list displays the following options: boldfaced suggested spellings, Ignore All, Add to Dictionary, AutoCorrect, Language, Spelling and Look Up.
 - Select the boldfaced suggestion to replace the incorrectly spelled word in the document.
 - Select **Ignore**, and Word ignores all future instances of this spelling in this document.
 - Select **Add to Dictionary**, and Word adds the underlined word to the dictionary so it won't be flagged as an error in any other document you create.
 - Select **AutoCorrect** to add the correct spelling to your list of words that Word automatically corrects as you type.
 - Select **Language** to specify a word as part of another language, preventing Word from seeing this word as a mistake.
 - If you select **spelling**, the Spelling and Grammar dialog box appears.
 - If you select **Look Up**, a window opens in the Task Pane and you are given general search parameters. This feature is helpful when dealing with words, such as proper nouns, that are not found in the dictionary.

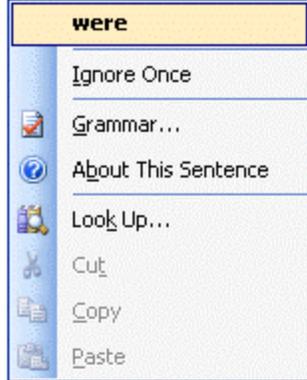
Check Grammar as you Type

Word puts a green wavy line under possible grammar mistakes.

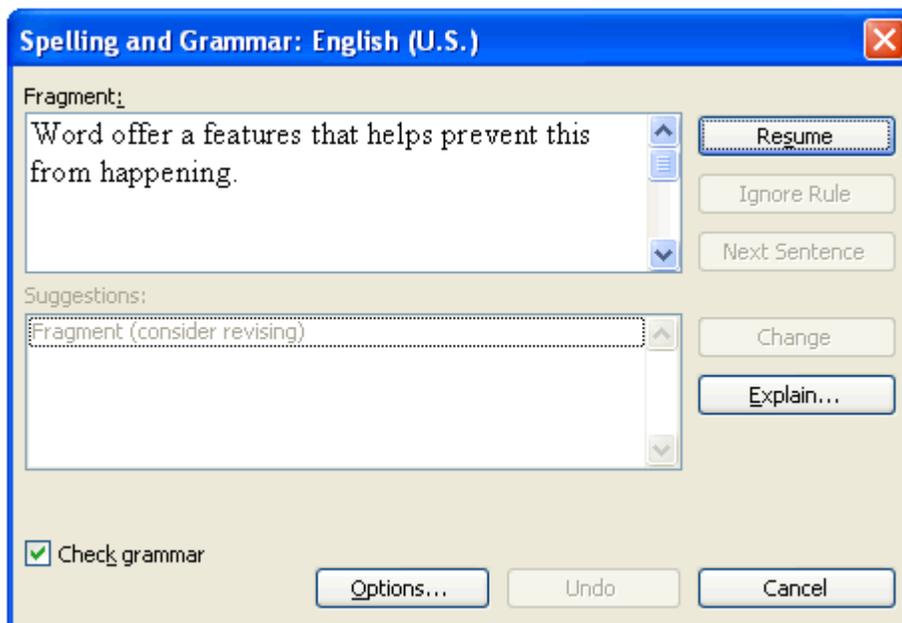
To Work on Suspected Grammatical Mistakes:

- Place your I-beam over the grammatical mistake and **right-click**.
- A menu list displays the following options: boldfaced grammar suggestion, Ignore, Grammar, About this Sentence.
 - Select Ignore, and Word ignores the grammatical mistake it believes to exist.
 - Select Grammar, and the Grammar dialog box appears.
 - Select About this Sentence, and the Office Assistant will offer you reasons as to why Word believes this to be a grammatical error.

There was three books in the book bag.



Spelling and Grammar Dialog Box



To Use the Spelling and Grammar Dialog Box:

- Choose one of the following options, depending on what you think of Word's suggestions:
 - Click Ignore Once to ignore this one instance of the grammatical error in your document.
 - Click Ignore Rule to ignore this grammatical error and all other grammatical errors of this type in the document.
 - Click Next Sentence to take you to the next grammatical error listed in your document.

- Click Change to replace the error with what is in the Suggestion box.
- Click Explain to open the Office Assistant, which will offer you reasons for this error.

➤ ***If the red and green wavy lines distract you, you can turn them off:***

- Choose Tools Options from the menu bar. The Options dialog box appears.
- Click the Spelling & Grammar tab.
- Un-check the Check Spelling as You Type or Check Grammar as You Type so the check box so that it is empty.
- Click OK.

✓ Don't forget to use Spell and Grammar Check!

Did You Know?

Have you ever realized after typing a long paragraph that you accidentally left the Caps Lock on and all your letters are in Upper Case? Fortunately, you will not have to re-type the text to correct this mistake. Word offers a quick solution by allowing you to either **select** the Upper Case text and pressing Shift + F3 **or** clicking **Format** on the menu bar and selecting **Change Case**. Choose the correct option from the **Change Case Dialog Box**.

Challenge!

- Open the personal letter document.
- Use the **Spelling and Grammar** feature to check the document.
- Save and close the document.

Congratulations! If you have completed these challenges, then you have completed your first personal letter in Word 2003.

Word 2003 Basics

By the end of this lesson, learners should be able to:

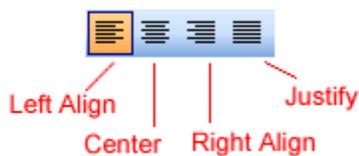
- Use alignment buttons to align text

Aligning Text

Aligning text can be invaluable when trying to format your document to meet certain standards. Most documents have text that is left aligned. However, if you were creating a greeting card or advertisement, you might need to know how to center align, right align or justify your text.

Align Text Using the Alignment Buttons:

- Select the text you want to align.
- Click the Align Left, Center, Align Right, or Justify button on the Formatting toolbar.



Read on to view examples of aligned text.

Lesson 7: Align Text

Aligning Text

Below you will view examples of text that are aligned using the left, right, center, and justified alignment buttons.

Left-aligned

Left-align text: Left-align is the default in Word. All selected items (text, numbers and inline objects) are aligned to the left hand margin with a ragged right edge.

This text is **left-aligned**. Notice how each line is a different length. In most cases your documents will be **left-aligned**.

Centered

Center text: All selected items (text, numbers and inline objects) are aligned in the center, leaving space on both sides.

This text is **centered**. Each line of text is **centered** between the margins. Centered text is very useful for aligning text in document titles, advertisements, or flyers.

Right-aligned

Right-align text: All selected items (text, numbers and inline objects) are aligned to the right hand margin with a ragged left edge. This text is **right-aligned**. Notice how each line is a different length.

Right-aligned text can be useful in some situations, such as columns or numbers, but it can also be very distracting to use for text.

Justified

Justify text: All selected items (text, numbers and inline objects) are aligned to both the left and right margins. Justifying text gives the selected items a straight edge margin on both the right and left sides.

This text is **justified**. Although **justified** text looks neat and tidy, the extra spaces between words can get distracting in long paragraphs. Books, however, always used justified margins.

Challenge!

- Download and save the **Cover Letter** Word document to complete challenges 7 through 13. Need help? [How to Download a file.](#)
- Open the cover letter document.
- **Left align** the entire letter.
- **Delete** the placeholder information and type the proper information for the Date, Address Block, and the Signature.
- Save and close the document.

Lesson 8: Set Line and Paragraph Spacing

Set Line and Paragraph Spacing

- Set line spacing
- Set paragraph spacing
- **Line Spacing**
- Document text can be formatted to show a number of line spacing options. The most common spacing options are **single-spaced** and **double-spaced**.

Line spacing is measured in lines or points.

When line spacing is measured in points, it is referred to as **leading** (rhymes with wedding). When you reduce the leading you automatically bring the lines of text closer together, sometimes making it difficult to read. Increasing the leading will space the lines out, allowing for improved readability. For example, the 10 point font usually uses 12 point leading. This is the **default** and, in general, should be used.

To Format Line Spacing:

- **Select** the text you want to format.
- Choose **Reveal Formatting** on the **Task Pane** and click on any of the blue links under the Paragraph heading.

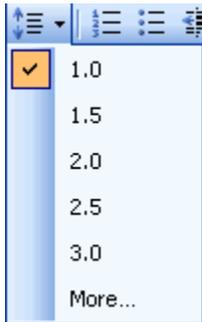
OR

- Click **Format** on the menu bar.
- Select **Paragraph**. The Paragraph dialog box appears.
- Click on the **Indents and Spacing tab**.
- In the Line spacing drop down menu, you may select single, 1.5, or double spacing. The default is single spacing.
- Click **OK**.

OR

- **Select** the text you want to format.
- Click on the **Line Spacing** button on the **Formatting Menu**.

- Select an option from the drop-down menu.



Single-spaced Text

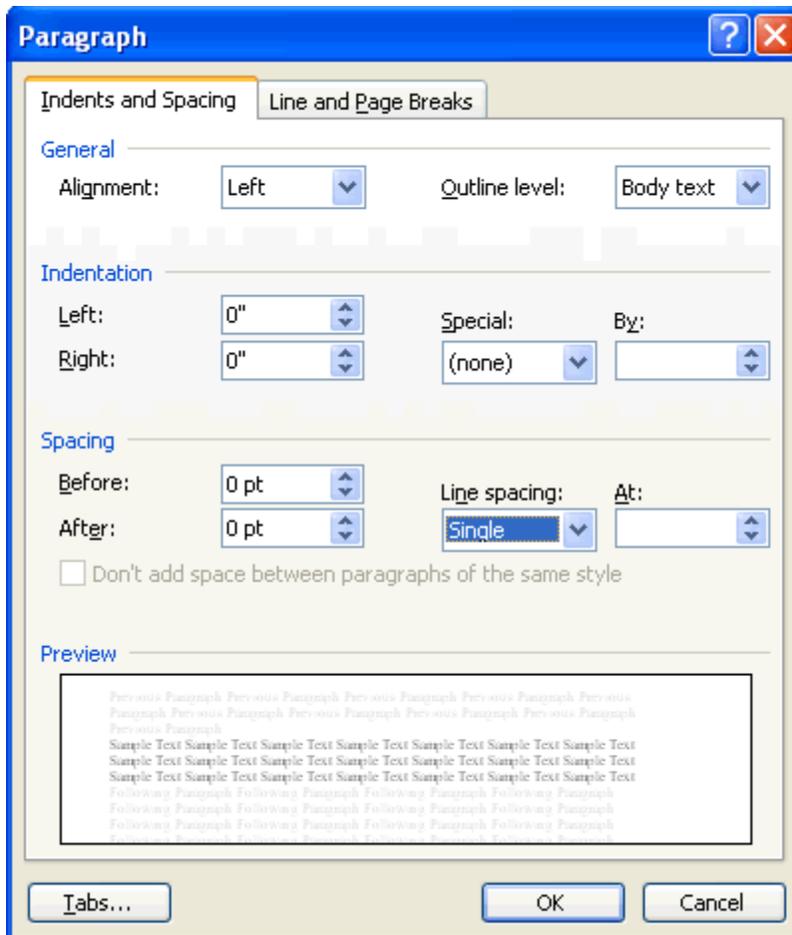
This is text that has been single-spaced. Most documents are either single-spaced or double-spaced. Single-spaced text is usually reserved for body text because of its easy readability.

Double-spaced Text

This is text that has been double-spaced. Most documents are either single-spaced or double-spaced. Double-spaced text is great to use when there is a possibility of someone proofreading your work. The extra space allows more room for comments.

Paragraph Dialog Box

You can use the At Least, Exactly and Multiple options in the **Paragraph Dialog Box** to customize your line spacing. If you select one of these options you will need to use the At: box to further define your selection.



✓ When you make a line spacing change, it affects only the text in a paragraph that contains the insertion point.

Paragraph Spacing

Just as you can add spacing between lines in your document, you can also choose spacing options between each paragraph. Typically, extra spaces are added between paragraphs, headings, or subheadings. Extra spacing between paragraphs adds emphasis and makes a document easier to read.

Choose extra space:

- Before each paragraph.
- After each paragraph.
- Or, before and after each paragraph.

To Specify Paragraph Spacing:

- **Select the text you want to format.**
- Choose **Reveal Formatting** on the **Task Pane** and click on any of the blue links under the Paragraph heading.

OR

- Click **Format** on the menu bar.
- Select **Paragraph**, The **Paragraph dialog box** appears.
- Click the **Indents and Spacing** tab.
 - Alignment: Choose left, right, center, or justified.
 - Indentation: Adjust the left and right margins by clicking the up and down arrows. Use the **Special** drop-down menu to select the first line as having the indent or to create a hanging indent.
 - Spacing: To emphasize a block of text, click the up and down arrows.
 - Preview: Gives an idea how your text will look.

Title
2X (Double-Space)
The Body of the document typically will be single-spaced. Single-spaced text is easy to read and is less straining on the eyes. To separate out different ideas, subjects, or information, you should add a double-space between paragraphs.
2X (Double-Space)
Make sure that you select the space between paragraphs to specify the paragraph-spacing. You should add extra space before each paragraph, after each paragraph, or before and after each paragraph.
2X (Double-Space)
Closing

Challenge!

- Open the cover letter document.
- **Select** the text in paragraph 1 and change the **line spacing** from 1.5 lines to single space.
- Use the **line spacing** and **paragraph spacing** features to practice how the features can change your document.
- Be sure to use the **Undo** feature (from **Edit** on the main menu or the **Undo arrow** on the toolbar) to undo any of the changes you may have made while exploring these features.
- Save and close the document.

Lesson 9: Margins

By the end of this lesson, learners should be able to:

- Use Page Setup Dialog Box
- Adjust Margins using the Page Setup Dialog Box

Using Page Setup to Specify Margins

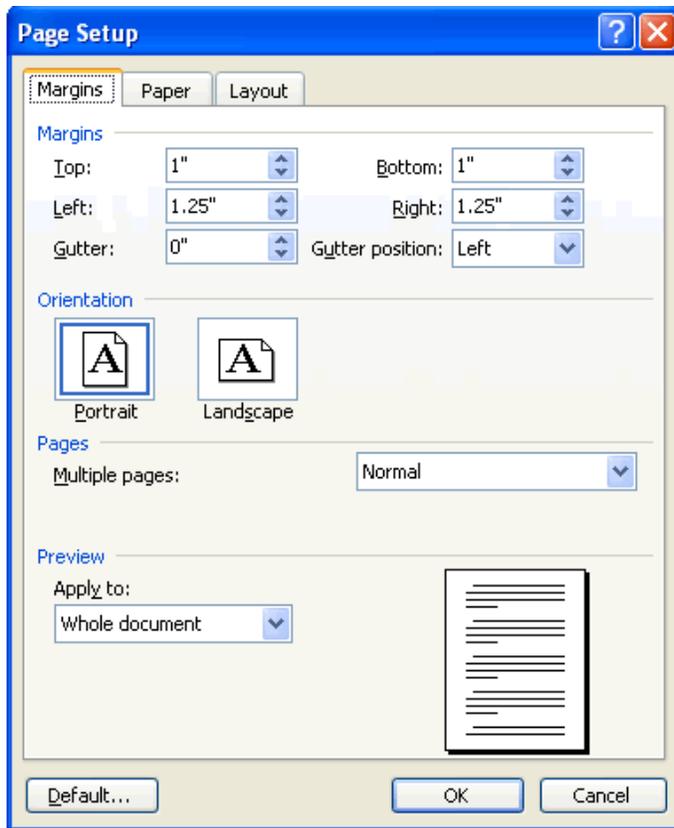


In order to change the margins (space along the top, left, right and bottom) in your document, you will need to access the **Page Setup dialog box**.

- Click **File** on the menu bar.
- Select **Page Setup**.
- Select **Margins** tab in the Page Setup dialog box.

OR

- Choose **Reveal Formatting** on the **Task Pane** and click on the blue link, **Margin**, under the Section heading.
- You can change the margin in precise steps by clicking on the up or down arrows next to the margin that you wish to change or you may type a number in the text box next to the margin you wish to change.
- Click **OK**.



More Options on the Page Setup Dialog Box

The Page Setup dialog box gives you several other options for controlling the look of your document. Not only can you control how your document looks on screen, but you can also manage how your document will be printed. The Margins, Paper and Layout Tab all contain valuable tools.

Margins Tab

1. Click the **Default** button in the lower left corner of the **Page Setup dialog box** to set (or reset) Word's **default** margins.
2. You can choose to apply these new margins to the **whole document** or **from this point forward** by using the drop-down menu, **Apply to:**.
3. Change the **Page Orientation** by clicking on either the **Portrait** box (8.5 x 11) or the **Landscape** box (11 x 8.5).

Paper Tab

The default paper size is 8.5 x 11, but you can change the paper size entirely. You can even customize the paper size to include note cards, envelopes, photo paper, index cards, and much more.

Layout Tab

The **Layout Tab** includes options to customize page numbering, borders, and headers/footers. A nice feature on the Layout Tab is creating a **Title Page** for your document.

To Create a Title Page for Your Document:

- Enter the text you want on your title page.
- Click **File** on the Standard toolbar.
- Select **Page Setup** from the menu bar.
- Click the **Layout** tab.
- Under Vertical Alignment, you will find the following options:
 - Top: Default. Text lines up with top margin.
 - Center: Text on page is centered between the top and bottom margins.
 - Justified: Text is spread out so each line is same distance apart.
 - Bottom: Text lines up with the bottom page.

Challenge!

Adjust the margins in a document.

- Open the cover letter document.
- Set the **margins** so the top margin is **2 inches** and all other margins are **1 inch**.
- Verify that the **Page Orientation** is set to **Portrait**.
- Change the **Paper Size** of the document to be 8.5" x 11".
- Save your changes and close the document.

Lesson 10: Indent Text

By the end of this lesson, learners should be able to:

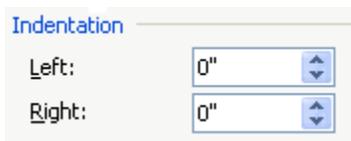
- Indent text
- Create Hanging Indent

Indent Text

An **indent** is the space between your margin and your text. Don't confuse the margin and the indent. The indent feature is often used to set a first-line indent for paragraphs.

To Indent One or More Lines of Text:

- You can use the **Paragraph dialog box** or select the blue **Indentation** link under Paragraph on the **Task Pane**. This method allows for a great amount of precision for setting left and right indents. Indenting is measured in inches. You can change the indent in tenths of inches.



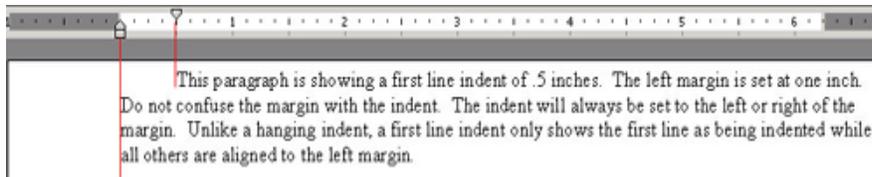
- In the **Indentation section**, you can click the increment arrows to enter the amount of indentation.

OR

- Use the **Increase/Decrease Indent buttons** on the **Formatting toolbar**.



✓ Clicking the Increase/Decrease Indent buttons is the most convenient way of setting a left or right indent. Each time you click the Increase or Decrease Indent button your text is moved by the default .5 inches.



Remember, there is a difference between **indents** and **tabs**. If you set a tab, only one line of text is indented. If you click one of the **indent buttons** or **set an indent** in the **Paragraph dialog box**, all of the text you type afterwards will be indented.

Hanging Indents

When all the lines in a paragraph are indented except the first line, a **hanging indent** is created. **Hanging indents** are not standard in documents such as business letters, but you may see examples of the hanging indent on web pages, newsletters, and often on bibliographic entries. Hanging indents are used for the MLA bibliographic format.

This paragraph is formatted using a **hanging indent**. Hanging indents are **not standard** in documents such as business letters, but you may see examples of the hanging indent on web pages, newsletters, PowerPoint presentations, etc.

To Create a Hanging Indent:

- Choose **Reveal Formatting** on the **Task Pane**.
- Click the blue link, **Indentation**, under the **Paragraph heading**.

OR

- Click **Format** on the menu bar.
- Select **Paragraph**.
- In the Indentation section, you will see a **Special:** drop down menu with some options.
- Select the **Hanging Indent** option in the Special: drop down menu.
- You may specify the amount of indentation in the **By: box** by clicking on the increment arrows. These increments are measured in **inches**.



Challenge!

- Open the cover letter document.
- Place the **insertion point** at the **end of the first paragraph**.
- Select **Enter** twice.
- Write a paragraph stating the skills you have that qualify you for the job.
- Select **Format** from the menu.
- Select **Paragraph**
- .
- Select the **Hanging Indent** option in the **Special:** drop down box, which is located in the **Indentation** section of the dialog box.
- In the **By:** drop down menu, click the increment arrow until it read .8".
- Click OK.
- Watch the **ruler** at the top of the document and you will see the **.8" hanging indent**
- .
- Open **Edit** on the main menu and select **Undo** to cancel the change you made. This challenge was done simply so you could view how the Indent feature works.
- Save and close the document.

Lesson 11: Using the Ruler

By the end of this lesson, learners should be able to:

- Format text using the ruler

The Ruler

You can adjust the width of margins, tabs, and indents in your document using Word's **Ruler**.

The **Ruler** is helpful when you need to create several columns, show column placement, or the distance between columns.

Hiding and Displaying the Ruler:

- Click **View** on the menu bar.
- Select **Ruler**.
- The Ruler will appear at the top of the document.



If you switch to **Print Layout View** (Choose **View** → **Print Layout View**), a vertical ruler displays along the left hand side of the screen. To hide this vertical ruler, switch to a different layout view.

Setting Tabs, Indents and Margins using the Ruler

The ruler provides a visual tool that allows you to quickly view, create and change your documents tabs, margins and indents.

Tabs

Click on the small gray box to the left of the ruler to move through the five different **Tab Settings**.

- Left tab : Moves text toward the right edge of the page as you type.
- Center tab : Centers text around the tab.
- Right tab : Moves text toward the left edge of the page as you type.

- Decimal tab : Aligns decimal numbers using the decimal point.

789.234
43.789
1.7890

For example:

- Bar tab : Draws a vertical line on the document.
- Indent : Inserts the indent marking anywhere along the ruler
- Hanging Indent : Inserts a hanging indent anywhere along the ruler

To Place a Tab or Indent On The Ruler:

- Click the cursor anywhere in the block of text you want to format.
- Click the **tab selection button** (upper left of the ruler).
- Click the Ruler where you want your tab or indent to be set.
- If you set up a new tab, press the **tab key** to move your text to the new tab.
- If you set up a new indent, place the cursor at the new indent location.

Adjusting Tabs and Margins on the Ruler

To Move an Existing Tab or Indent on the Ruler:

- Point the mouse on the tab or indent that you want to move.
- Click and hold the left mouse button until a dotted line appears below the tab.
- Drag the mouse to move the tab or indent to a new location.
- Release the left mouse button.

To Remove a Tab from the Ruler:

- Point the mouse on the tab you want to remove.
- Click and hold the left mouse button until a dotted line appears below the tab.
- Drag the mouse off the Ruler.
- Release the left mouse button.

To Adjust a Margin using the Ruler:

- Point the mouse on the margin that you want to move.

- Click and hold the left mouse button once a double arrow appears over the margin until a dotted line appears below.
- Drag the mouse to increase or decrease the margin.
- Release the left mouse button.

✓ Remember you can also increase or decrease your Indents by using the Increase/Decrease Indent buttons on the Formatting toolbar.

Lesson 12: Formatting Text

By the end of this lesson, learners should be able to:

- Change the Type Style of text
 - Bold
 - Italics
 - Underline
 - Color
- Adjust Font Size

Formatting Toolbar

The **Formatting Toolbar** contains buttons that allows you to change the appearance of your text. The formatting toolbar contains buttons for font size, font style, colors and other options. There are many different types of fonts. Some fonts are better used for business correspondence while others are great for fun projects like birthday cards. Your computer probably has twenty or more different fonts installed.

To View the Formatting Toolbar:

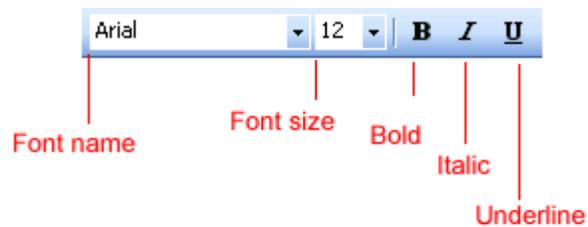
- Click **View** on the Menu Bar.
- Select **Toolbars** and then **Formatting** from the cascading menu.

Bold, Italics and Underline

Any text you type in Word, can be further customized by using the bold, italicized or underlined options. You can even do a combination of all three options!

To Change the Type Style of Text:

- **Select** the text you want to change.
- Choose one or more of the following options: (to stress emphasis you might want to try using the **bold** option)
 - Click the **Bold** button on the Formatting toolbar. Ctrl + B
 - Click the *Italic* button on the Formatting toolbar. Ctrl + I
 - Click the Underline button on the Formatting toolbar. Ctrl + U
 - Word automatically displays your changes.



To avoid frustration, remember to select text before you apply style. If you choose a type style without selecting any text, Word uses your chosen styles on whatever text you type next.

Font

Names

To select a font, you can scroll through the Font list. The list shows you all the fonts that are available on the computer you are using.

As you scroll through the many different font names, take notice of those fonts that have TT beside their name. These **TrueType** fonts will look the same on both the computer screen and when you print them on paper.

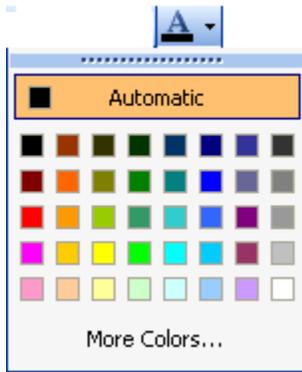
Using Color

The use of color can add emphasis to your words and make your document easier to read.

If you own a color printer, you can print documents in different colors. If you do not own a color printer, your document will only appear in color on the screen.

To Change the Color of Text:

- **Select** the text you want to change.
- Click the downward-pointing arrow on the **Font Color** button on the **Formatting** toolbar. A **color palette** appears.
- Click the color you want to apply.
- Word changes the color of your text.



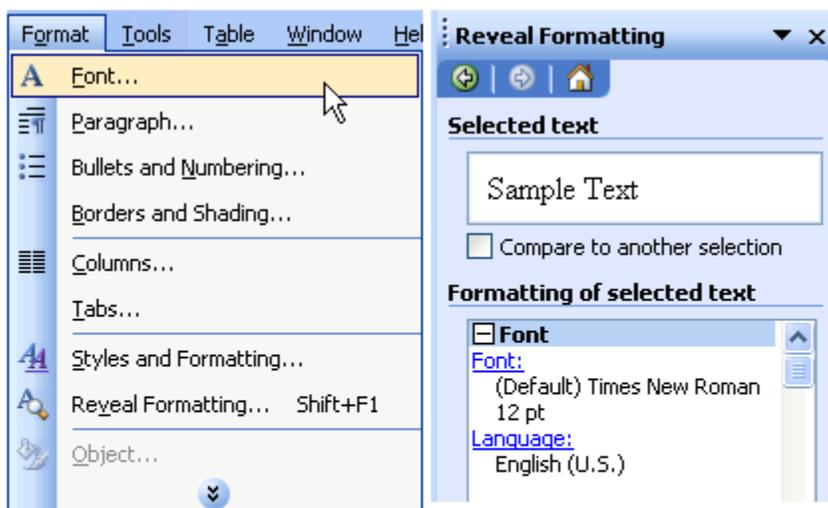
If you would like to see more color options, Click the **More Colors** button at the bottom of the **color palette**. You can choose from a list of **Standard Colors** or **Customize** your own color by clicking the **Customize Tab**.

Font Dialog Box

The **Font Dialog Box** gives similar options as the Formatting toolbar; however, it also offers more advanced text features. You can use the Font Dialog Box to change your font, font style, size, color and many other font effects.

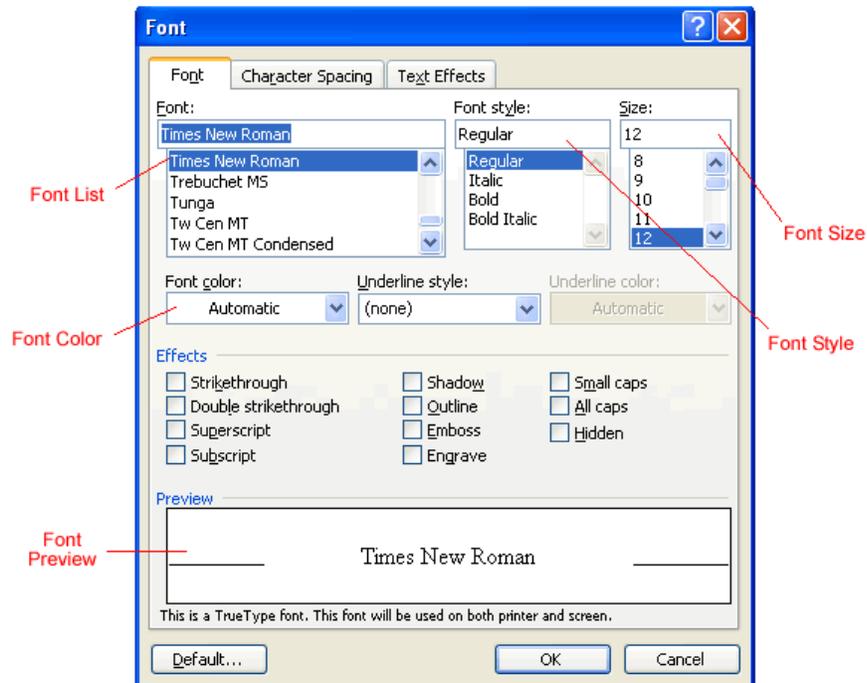
To Open the Font Dialog Box:

- Click **Format** on the Menu Bar.
- Select **Font** from the menu list. **The Font Dialog Box** will appear.



Font Options on the Task Pane

✓ Remember you can also access the **Font Dialog Box** from the **Font menu** on the **Task Pane**.



Font Size

You can change the **Font Size** from both the **Font Dialog Box** and the **Formatting toolbar**. You can use different font sizes to give emphasis to different parts of your document. For example, the title of your document could be displayed larger than the contents of your paper. Font size is commonly expressed in **points**. Font sizes range from 8 point (extremely small) to 72 point (very big). Word allows you to choose sizes smaller than 8 point and larger than 72 point, but you must type these in **manually** in the **Font Size** box.

Arial 10 Point

Arial 12 Point

Arial 20 Point

Arial 30 Point

The standard Font size for most documents is 12 Point. You can preview different font sizes in the Preview window in the Font dialog box.

- Select **Reveal Formatting** on the **Task Pane**.
- Click the blue link, **Font:** under the Font Heading. The **Font dialog box** appears.
- Click on a font from the Font list.
- Select a size from the Font Size list.
- Look at the text in the **preview window** as you try different sizes.

OR

- Click **Format** on the Menu Bar.
- Select **Font** from the menu list. **The Font dialog box** appears.
- Click on a font from the Font list.
- Select a size from the Font Size list.
- Look at the text in the **preview window** as you try different sizes.

✓ Remember you can also change the font size from the **Formatting toolbar**.

Did You Know?

Word offers a variety of Templates that provide you with a pre-formatted document. Instead of having to create formats yourself, you can quickly choose among a variety of Templates.

To Open the Templates Dialog Box:

- Click **File** on the Menu Bar.
- Select **New** from the menu list. The **Task Pane** New Document window appears to the right.
- Select an option under **New from template**.
 - Letter Wizard - assists you in writing a standard letter
 - Contemporary Letter - offers a letter template including artwork
 - General Templates - preformatted documents including faxes, letters, memos, reports, etc.
 - Templates on my Web Sites - allows you to search for templates on other web servers
 - Templates on Microsoft.com - allows you to search among hundreds of templates offered through the Microsoft website

Challenge!

Experiment with Fonts

- Open the cover letter document.
- Modify the document so the text is not **bolded**, *italicized*, or underlined.
- Change the document so all the text is black
- Modify the **font size** from 14 to 12.
- Change the **font style** from **Arial** to **Times New Roman**, or the font of your choice.
- **Read** the document. Are there any words that you should **emphasize**? If so, make those words bold.
- Save and close the document.

Lesson 13: Bulleted and Numbered lists

By the end of this lesson, learners should be able to:

- Create Bulleted Lists
- Create Numbered Lists
- **Bullets and Numbering**
- Word lets you make two types of lists: **bulleted and numbered**. Bulleted and numbered lists help to simplify steps or items to the reader. Teachers often use bulleted lists to highlight important pieces of their lessons. Manuals often include numbered lists to assist the reader in step-by-step instruction.

A **bullet** is usually a black circle but it can be any other symbol used to highlight items in a list. Use bullets to list items that do not have to be in any particular order.

Numbers (or letters) are used when information has to be in a certain order. You can use the **default** Bullets and Numbering settings by clicking on the appropriate button on the **Formatting** toolbar.



•

Create Bulleted and Numbered Lists

To Create a Bulleted List:

- Click the  **Bullets button** on the **Formatting** toolbar.
- Type the first item on your list and press **Enter**.
- The next line will begin automatically with a new bullet.
- Type the next item on your list and press Enter.
- When your list is complete, press the Enter key **twice** to stop the bulleted list.

To Create a Numbered List:

1. Click on the  **Numbering button** on the **Formatting** toolbar.
2. Type the first item on your list and press **Enter**.
3. The next line will begin automatically with the next number.
4. Type the next item on your list and press Enter.
5. When your list is complete, press the Enter key **twice** to stop the numbered list.

Review the following tips that will help you manage your numbered or bulleted lists.

- Remove a **bullet** by placing the **insertion point** to the right of the bullet or number and press **backspace** (you will not be able to place your insertion point to the left of the bullet).
- If you want to **change** a bulleted list to a numbered list (or vice versa), select the entire list and click on the appropriate button.
- To create a **line break** between items in a bulleted or numbered list, place your cursor where you want the line break and press **Shift + Enter**.

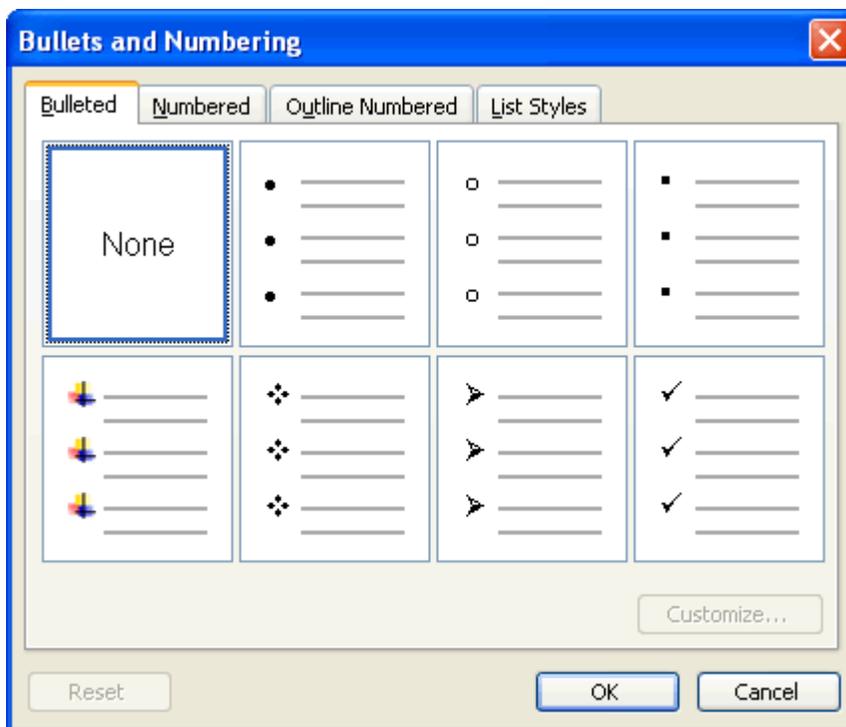
The Bullets and Numbering Dialog Box

Word offers you many other **options** for your bullets and numbers, other than the **default** that you have seen so far.

You can view the type of **bullets and numbers** available to you by opening the **Bullets and Numbering Dialog Box**.

- Select the text you want to turn into a list.
- Click **Format** on the Menu Bar.
- Select **Bullets and Numbering**. The **Bullets and Numbering Dialog Box** appears.
- Click on the **Bulleted Tab** to view all the bullet options and click on the **Numbered Tab** to view all the number options.
- Select what kind of bullets or numbers that you want, and click **OK**.

The Bullets and Numbering Dialog Box also offers you **Outline Numbered** options. By clicking on the **Outline Numbered Tab** you can view templates for creating an outline. The **List Styles Tab** allows you to create your own list style using similar alignment, bullets and characters.



Challenge!

- Open the cover letter document.
- Read your **second paragraph**.
- **Delete** the sentences you wrote that list the skills that qualify you for the job.

- Create an **indented, bulleted or numbered list** of the skills that qualify you for the job.
- Save and close the document.

Congratulations! If you have completed these challenges, then you have finished this cover letter in Word 2003. If you are interested in looking for a new job or learning more about professional development, then you should read our Career Development tutorial for more tips on cover letters, resumes, interviews, and more!

Advanced Formatting

Lesson 14: Insert Symbols

By the end of this lesson, learners should be able to:

- Insert Symbols

Use of Symbols

There are many **Symbols** that you might often see in publications that are not directly available from your keyboard. For example, the Copyright symbol, ©, is not available on the keyboard but can be selected from Word's **Symbol Dialog Box**.

Other commonly used symbols that appear in the **Symbol Dialog Box** are:

- © Copyright
- ® Registration
- ™ Trademark
- ✓ Checkmark
- -- Em Dash

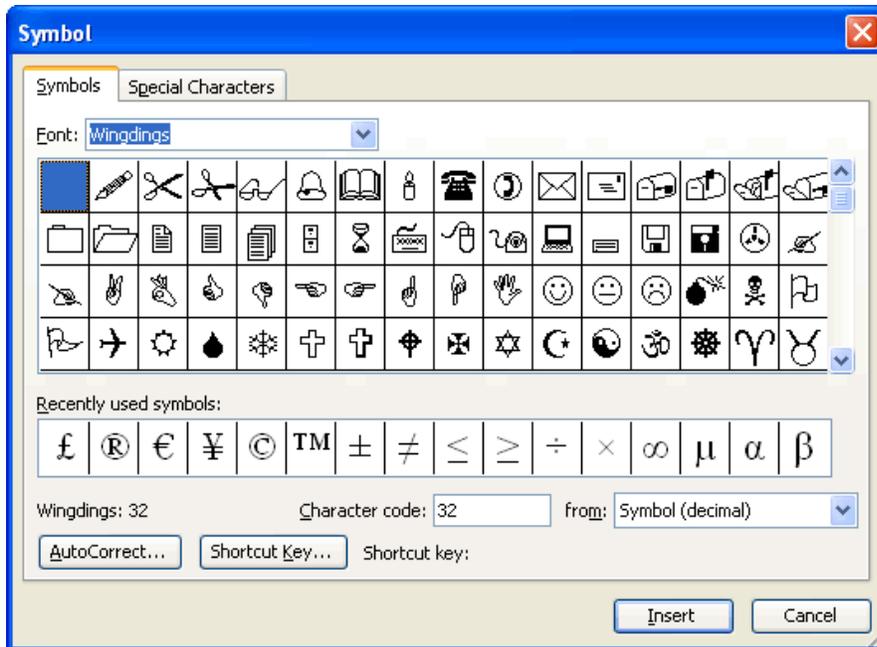
Insert Symbols

To Insert Symbols into your Document:

- Click **Insert** on the Menu Bar.
- Select **Symbols**. The **Symbols Dialog Box** appears.
- Click the **Symbols Tab** to select a symbol from a Font type.

OR

- Click the **Special Characters Tab** to view other commonly used symbols.
- Click on the **Symbol or Special Character** you would like to select and then Click **Insert**.
- The Symbol or Character will show up in your document.
- Click Close.



✓ The available symbols will depend on which **fonts** you have installed on your machine. Word comes with pre-installed symbols for you use, but other fonts such as, **Wingdings**, will also offer numerous symbol options.

Before You Start the Challenge...

During the challenges for these lessons, you will create a newsletter or flyer. Before you begin, decide which topic you would like to write about.

- Do you want to design a flyer that advertises a room for rent?
- Perhaps you want to develop a flyer that promotes a service, such as piano or guitar lessons?
- Do you want to develop a newsletter for an organization you are a member of?

There are many templates in Microsoft Word 2003 that can help you create these documents, but for this tutorial you will find it more educational if you complete the assignment without using the template feature. Make a decision about what you want your document to be about and we'll get started!

Challenge!

- Open Word and create a **New** document.
- **Insert** a **Symbol** into the document. Do not worry about placement in the document - you'll move the symbol around as you learn more about Word.
- Save and close Word.

Lesson 15: Headers and Footers

By the end of this lesson, learners should be able to:

- Insert Headers and Footers on a page
- Delete Headers and Footers from a page

Insert Headers and Footers

The **Header and Footer** usually contain title and author information, dates, and page numbers. The **Header** appears at the top of the page and the **Footer** appears at the bottom of the page.

To Insert a Header and Footer:

- Click **View** on the Menu Bar.
- Select **Header and Footer**.
- The document will appear grayed out with a dotted Header and Footer box showing at the top and bottom of the page.

Locate the Header and Footer Toolbar on the page.



- Type inside the dotted boxes to insert your Header and/or Footer.
- Click **Close** on the Header and Footer Toolbar when you are finished.



AND

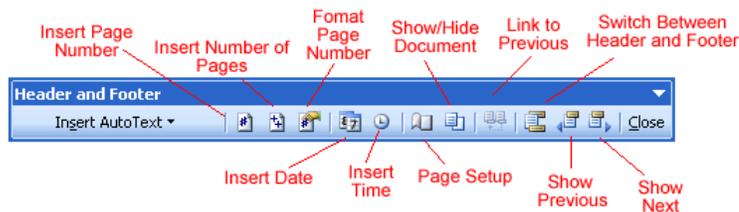


Header and Footer Toolbar

The **Header and Footer Toolbar** contains buttons that can help you automatically enter important information in your header and footers.

Some of the useful features located on the Header and Footer Toolbar are:

- **Insert Auto-Text** - drop-down menu showing commonly used header and footer information, including, author, page number and date.
- **Insert Page Numbers** - inserts the page numbers.
- **Insert Number of Pages** - inserts the number of pages in the entire document.
- **Format Page Number** - opens the **Page Number Format Dialog box** so that you can format your page number in the header and footer.
- **Insert Date.**
- **Insert Time.**
- **Page Setup** - opens the **Page Setup Dialog box** so that you can adjust the location of the header and footer.
- **Switch between Header and Footer** - allows you to jump quickly between the header and footer on a page.
- **Close** - closes the Header and Footer Toolbar.



Delete Header and Footer

If you choose to delete your Header or Footer, Word will automatically delete the Header or Footer within the entire document.

To Delete the Header or Footer:

- Click **View** on the Menu Bar.
- Select **Header and Footer**.
- **Highlight** the text within the Header or Footer (whichever text you would like to delete).
- Press **Delete**. The text is now removed.

- Click **Close**.

✓ You can delete the Header and Footer on just the first page of the document by choosing File - Page Setup. On the Page Setup Dialog Box, choose the Layout Tab and place a checkmark next to Different First Page under Headers and Footers, then click OK.

Challenge!

- Open your document.
- Type your name into the **Header**.
- Modify the text in your Header so that it is **10-point Times New Roman** font.
- Put the date and time in the **Footer**.
- Modify the text in your Footer so that it is **10-point Times New Roman** font.
- Save and close the document.

Lesson 16: Formatting

By the end of this lesson, learners should be able to:

Use Reveal Formatting

Why display non-printing characters?

Non-printing characters are automatically inserted into your document as you type. You will not see these characters unless you choose to show the formatting marks. So why display these characters? Showing the document formatting can assist you when editing. Non-printing characters such as spaces, tabs, and hard returns (created when you press the Enter key), will now be visually displayed on your page.

For example:

A document that was created with numerous tabs could be quite difficult to edit if you needed to delete all the tabs. However, if you display your non-printing characters, you will be able to quickly see where all the tabs exist. The **tab symbol** will appear as an arrow pointing to the right, →. Place the insertion point to the right of the tab symbol and press the **Backspace** key to quickly delete these tabs.

To Reveal Formatting Marks:

- Click the **Show/Hide button** on the Standard Toolbar.

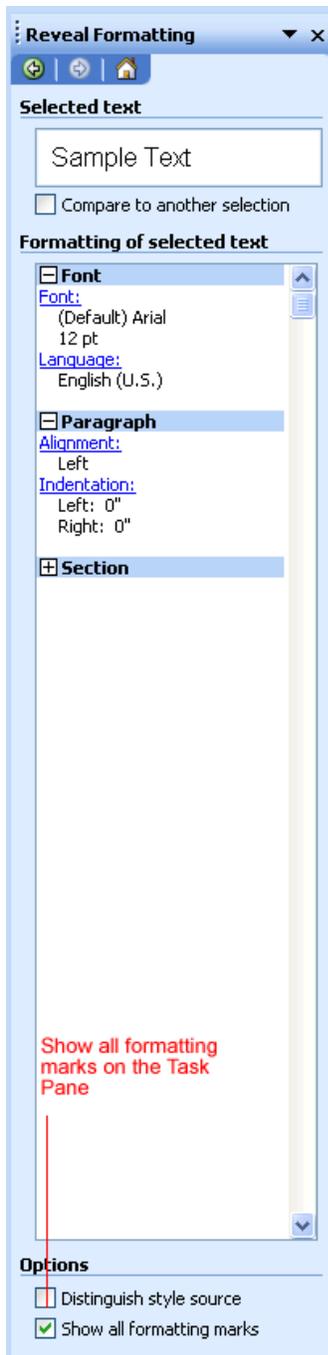
OR

- Select the **Reveal Formatting Menu** from the **Task Pane**.
- Check the **Show all formatting marks** checkbox at the bottom of the Menu



Show/Hide Button on Standard Toolbar

under Options.



When you select the **Show/Hide button**, codes for paragraph marks ¶, tabs →, and spaces . are visible in your document. If you prefer to display non-printing characters when formatting your document, these symbols will not appear in your printed document.

Challenge!

- Open your document.
- Select the **Show/Hide Codes** button.
- Notice how the **non-printing** characters appear in your **Header and Footer**

.

- Save any changes you have made and close your document.

Note: If you would like to look at the **nonprinting characters** in more detail, open one of the letters from a previous challenge.

Lesson 17: Text Boxes

By the end of the lesson, students should be able to:

- Create a text box
- Move and Resize a Text Box

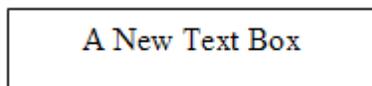
Create a Text Box

Placing text inside of a **Text Box** helps focus the reader's eye on the page content. Newsletters, flyers, reports, announcements, school projects, or other types of publications, often use Word's text box feature.

Text boxes can be formatted with shadings, color, borders, and graphics, making for an impressive display of your Word skills.

To Create a Text Box:

- Click **Insert** on the Menu Bar.
- Select **Text Box** from the menu list.
- The mouse pointer becomes a +crosshair and a drawing canvas appears.
- Place your insertion point where you want your text box.
- **Left click and drag** the text box until it is the appropriate size. Release the left mouse button when ready.
- The text box will by default contain a white background color and a thin black border.



Note: When you create a text box in Word 2003, the drawing canvas appears by default. The canvas helps you arrange and resize the objects you are working with.

To Insert Text into the Text Box:

- Click once inside the text box.
- The box is selected and a blinking insertion point appears inside the box.
- Begin typing.

- Format text (change font, font size, style, etc) in the usual manner. (Select text first, make changes later.)

Moving and Resizing Text Boxes

To Resize a Text Box:

- Click once on one of the box's borders. The box is now highlighted.



- Sizing handles (small circles) appear. Hover the mouse pointer over any of the sizing handles (small circles) until it turns into a diagonally pointing arrow.



- Click and drag the sizing handle until the box is the desired size.

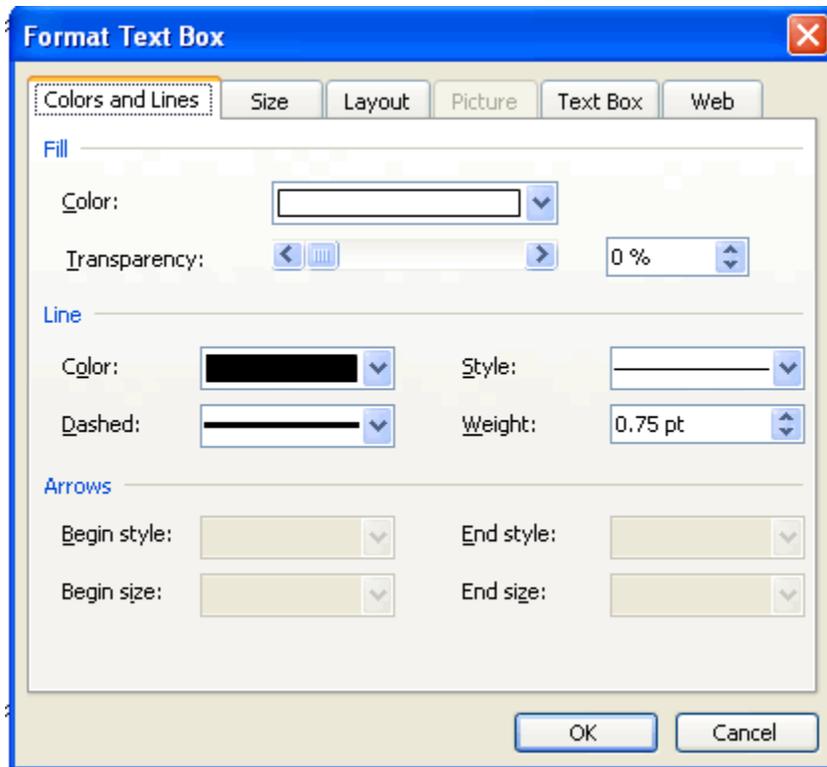
To Move a Text Box:

- Click once on the text box's border.
- Hover your mouse pointer over the border until it becomes a crosshair with arrows.
- Using this crosshair, click and drag the box until it is in the desired location.



The Format Text Dialog Box

As mentioned earlier, the **default** for the text box in Word is a white background with a thin, black border. Using the **Format Text Box dialog box**, you can choose different fill colors and lines, size, layout, and textbox.



To Use the Format Text Box Dialog Box:

- Double click on a text box border. The Format Text Box dialog box appears.

OR

- Right-click on the text box border and select Format Text Box. The Format Text Box dialog box appears.

You can access the Text box feature from the Drawing toolbar.

- Click View on the Menu Bar.
- Select Toolbar and then Drawing from the cascading menu. The **Drawing** toolbar appears at the bottom of your document.
- Click the Text box button . Don't confuse this button with the **Rectangle button**. You cannot insert text using the **Rectangle button**.

Drawing Toolbar



- The Text Box Dialog Box offers you several tabs to choose from:
 - Color and Lines: Fill text box with color, define the border colors, styles and weight

- Size: Define a specific size
- Layout: Text wrap and alignment
- Textbox: Internal margins

Challenge!

- Open your document.
- Insert a **text box** or **text boxes** with the information you want to display on your flyer.
- Make decisions about your text box.
 - Do you want the line to be visible?
 - If so, what color do you want the line?
 - What type of line style do you want?
- Try to create text boxes that look similar to the ones displayed below, as well as creating your own.
- Practice using different font styles and sizes within the text boxes that you create.



- Save and close the document.

Note: If you are not sure what you would like for your flyer/newsletter, try many options. Remember, you can always click on the **Undo** feature if you change your mind.

Lesson 18: Working with Columns

By the end of this lesson, learners should be able to:

- Change Column Structure
- **Working with Columns**
- Displaying information in **columns** gives the writer more options for displaying different types of information on a page while remaining easy for the viewer to read. Certain kinds of information are best displayed using columns. Newspaper, newsletters, flyers, reports, announcements, school projects, or other types of publications, often use Word's column feature.

Below is an example of a Newsletter using columns and a graphic:

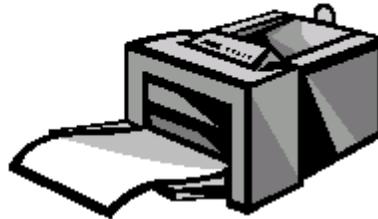
Lead Story Headline

This story can fit 175-225 words.

The purpose of a newsletter is to provide specialized information to a targeted audience. Newsletters can be a great way to market your product or service, and also create credibility and build your organization's identity among peers, members, employees, or vendors.

First, determine the audience of the newsletter. This could be anyone who might benefit from the information it contains, for example, employees or people interested in purchasing a product or requesting your service.

You can compile a mailing list from business reply cards, customer information sheets, business cards collected at trade shows, or membership lists. You might consider purchasing a mailing list from a company.



Caption describing picture or graphic.

If you explore the Publisher catalog, you will find many publications that match the style of your newsletter.

Next, establish how much time and money you can spend on your newsletter. These factors will help determine how frequently you publish the newsletter and its length. It's recommended that you publish your newsletter at least quarterly so that it's consid-

ered a consistent source of information. Your customers or employees will look forward to its arrival.

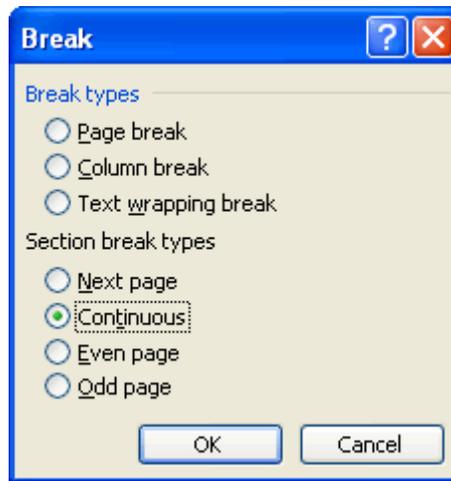
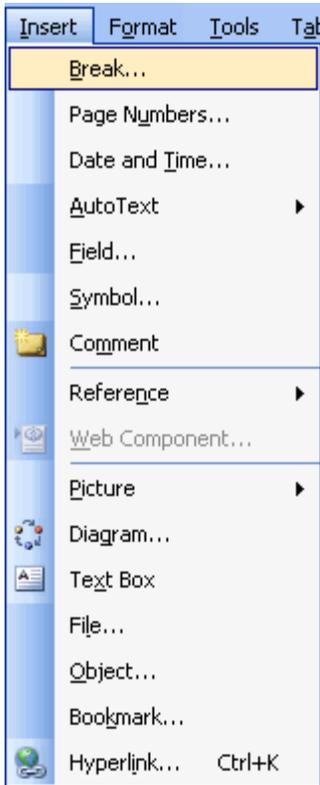
- Working with columns can be challenging, but with practice, you'll have columns mastered in no time. An approach we will first try will be to enter text into a single column and then convert it into multiple columns.

Create Columns Using the Columns Button:

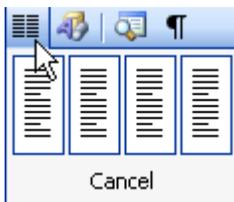
- Switch to **Print Layout View**



- To make equal columns, move the insertion point to the end of the text and insert a continuous section break by choosing **Insert > Break > Continuous**.



- **Select the text** you want to change to columns.
- Click the **Columns Button** on the Standard Toolbar.
- The Columns Button will expand to give you **four** column options:



- Choose one of the options to format your text into columns.

You can adjust the spacing and alignment of the columns by using the **ruler**. **Drag** the Right Margin, Left Margin and Right Indent using your mouse until the columns appear the way you want.



To Enter a Title that Spans a Column:

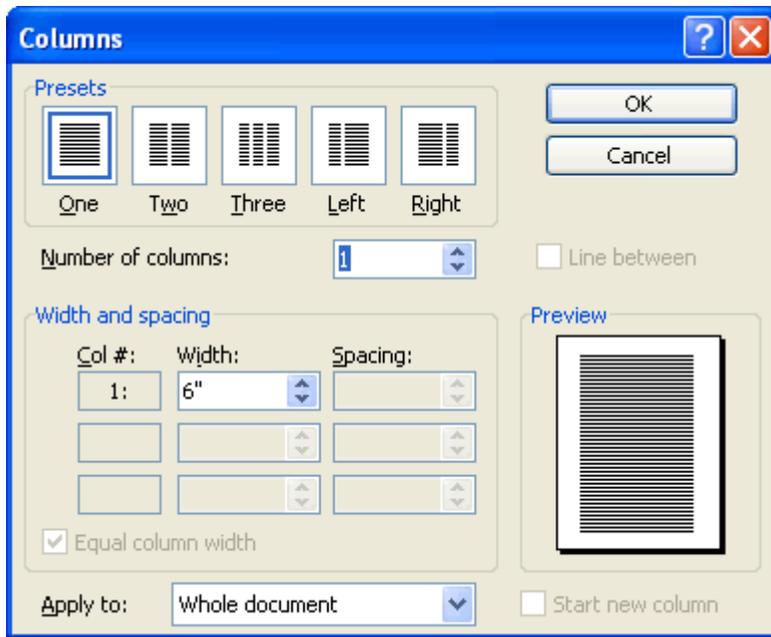
- Enter the title at the beginning of the first column.
- Select the title.
- Click the Columns button on the Standard toolbar, and drag to select number of columns.

Creating Columns Using the Columns Dialog Box

Using the **Column Dialog Box** versus the **Columns Button** will give you much more control and precision over your column structure. The Columns Dialog Box will also give you a few more column options, including Left and Right columns as well as the ability to create up to eight columns per page.

Using the Column Dialog Box:

- Switch to **Print Layout View**.
- To make equal columns, move the insertion point to the end of the text and insert a continuous section break by choosing **Insert Break Continuous**.
- Select the text you want to change to columns.
- Click **Format** on the Menu Bar.
- Select **Columns** from the menu list. The **Columns Dialog Box** appears.



The Column Dialog Box gives you the following options:

- Presets - Click a box to choose a preset number of columns
- Number of Columns - Use the up and down arrow keys to select between one and eight columns
- Line Between -Places lines between your columns
- Width and Spacing - Offers features that allow you to specify an exact number for the height and width of your columns, as well as the spacing between your columns.
- Equal Column Width - Check this checkbox if you want columns to be the same width
- Apply to: - Allows you to create columns out of the selected text, the selected section, this point forward, or the entire document
- Select your options and Click OK.

To Move Text into the Next Column:

- Move the insertion point in front of the text you want to move.
- Choose Format ➤ Columns. The **Columns dialog box** opens.
- Choose "**From this point forward**" in the **Apply to:** control.
- Click the **Start New Column** check box to move the text to the next column.

Challenge!

Now that you've learned about columns, do you see a need for them in your document? If you are designing a newsletter, you will almost certainly want to use them. Columns can make your newsletter look very professional. If you are designing a flyer, you may or may not want columns.

- Open your document.
- Add **columns** if you would like to.
- Save and close Word.

Lesson 19: Working with Tables

By the end of this lesson, learners should be able to:

- Construct Tables
- Enter Text and Numbers into Tables
- **Working with Tables**
- **Tables** allow large amounts of text and/or numbers to be presented in an organized and easy to read fashion. Student roll books, sport statistics, address books, math formulas, menus and many other documents often incorporate tables to share information.

Similar to **columns**, Tables can be challenging at first. Word has created an entire menu to help assist you in creating your first Table.

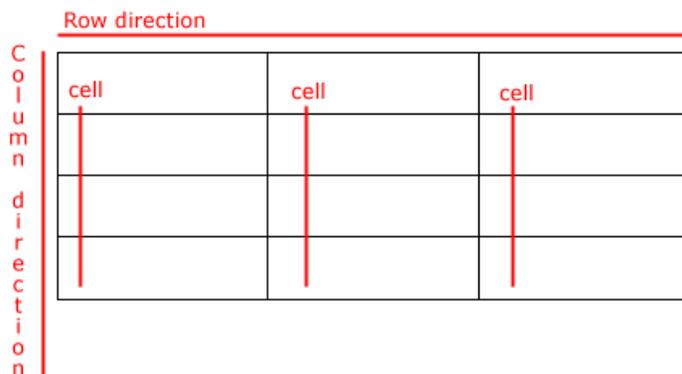
A few **important terms** to know before you begin creating tables are:

Row - A row runs horizontal in a table and is divided by borders.

Borders - Separating lines in the table.

Column - A column runs perpendicular in a table and is divided by borders.

Cell - A cell is the box that is created when your rows and your columns intersect each other. The cell contains your data or information.



Creating Tables Using the Insert Table Dialog Box:

- Click **Table** on the Menu Bar.

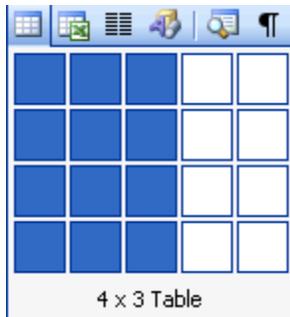
- Select **Insert** and then **Table** from the cascading menu. The **Insert Table dialog box** appears.
- Determine the number of columns and rows you need in your table. You can add more later, but save yourself some work. You can always add rows by pressing **Tab** at the end of a row.
- To create a table as wide as your page, leave the **Fixed Column Width** setting on **Auto**.
- Click **OK**. A table is inserted into your document.



Another automated way to create a quick table is by using the **Insert Table Button** on the **Standard toolbar**.

Creating Tables Using the Insert Table Button:

- Click the **Insert Table Button** .
- Now, **drag** the number of columns and rows you want in your table.

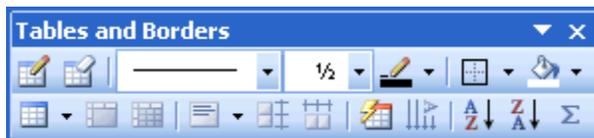


Custom-Made Tables

The **Insert Table Dialog Box** and **Insert Table button** offer a quick solution to making tables. If you would like to **custom create** your table by drawing it yourself, you can use the **Draw Table button**.

Creating Tables Using the Draw Tables Button:

- Open the **Tables and Borders** toolbar by clicking **View** on the Menu Bar, Select **Toolbars** and then **Tables and Borders** from the Cascading Menu. The **Tables and Borders toolbar** will appear.
- Click the **Draw Tables button** on the Tables and Borders toolbar. The mouse pointer turns into a pencil.



- Drag the pencil to create a rectangle about the size of the table you want.
- Release the mouse button. The border of the table appears in your document.
- Use the pencil again to draw in column and row borders.
- Click the **Draw Table** button again to change the pencil back into an I-beam.

If you make a mistake while drawing your table, you can erase both rows and columns by using the Eraser on the Tables and Borders toolbar. Once you select the Eraser, the pointer will change to resemble the Eraser Button.  Drag the Eraser over parts of the table you wish to erase. When you are finished erasing, click the Eraser button again to put the Eraser away.

Entering Text

Click inside any table cell to begin entering text or numbers.

Type here		

Moving Around in a Table:

- Use the **Tab** key or **right arrow key** to move right.

- Use **Shift + Tab** or the **left arrow key** to move left.
- The up and down arrow keys will move the insertion point above or below its current location.

Selecting Text in Tables:

A cell: triple click inside cell.

A row: Move mouse to left of margins, point to the row, and click.

Multiple rows: Select the first row, click and drag the number of rows desired.

A column: Move the mouse above the column. It turns into a downward pointing arrow. Click once.

Multiple columns: Select the first column, click and drag the number of columns desired.

Entire Table: Choose Table and Select Table from the menu bar.

Challenge!

- Open your document.
- **Think** about your flyer/newsletter and what type of information you can convey in a table.
- **Insert** a **table** into your document using one of the methods described in the lesson.
- Enter text into your table.
- Save and close your document.

Lesson 20: Edit Tables

By the end of this lesson, learners should be able to:

- Edit Tables

Editing Tables

Once you have created your table, you may find that you need to format text within your table, insert or delete rows and columns, or perhaps just change the appearance of your table so that it is more visually appealing.

Formatting Text in Tables

Fortunately, whatever you do to format text in a paragraph (make it bold green, for example), you can do to text in a table cell. Formatting text within a table can be accomplished through a variety of means, including the **Formatting menu**, the **Tables and Borders toolbar**, the **Task Pane** and **keyboard shortcuts**.

Rotating Text in Tables

Many advertisements, for sale signs, menus, and other creative documents use Word's text direction feature to change typical horizontal text to eye-catching vertical text. You can rotate text so it runs vertically, facing either the right or the left.

To Rotate Text in a Table Cell:

- **Select** the cell(s) you want to rotate.
- Click the **Change Text Direction** button : on the **Tables and Borders** toolbar.
- Clicking the Change Text Direction button **once** turns text to the **vertically left**, the **second click** turns text to **vertically right**, and the **third click** will bring your text back to a **horizontal position**.

Right	Left	Horizontal
-------	------	------------

Click Once

Click Twice

Click Three Times

✓ The insertion point rotates when entering vertical text, but editing vertical text is really no different than editing horizontal text.

Inserting and Deleting Columns and Rows

Estimating how many rows and columns you will need in a table is not always easy. Therefore, it is important to know how to insert and delete rows and columns in your existing table.

To Add Rows to Your Table:

- Move the insertion point to the last cell in the table and press **Tab**.

To Insert Rows in the Middle of the Table:

- Place the insertion point anywhere in the table.
- Choose Table → Insert → Rows above OR Rows below.

To Delete Rows:

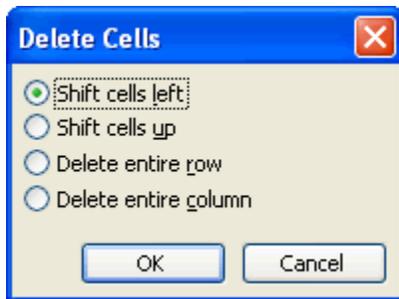
- Select the row(s) you want to delete.
- Choose Table → Delete → Rows.

OR

- Right-click and choose Table → Delete → Rows from the shortcut menu.

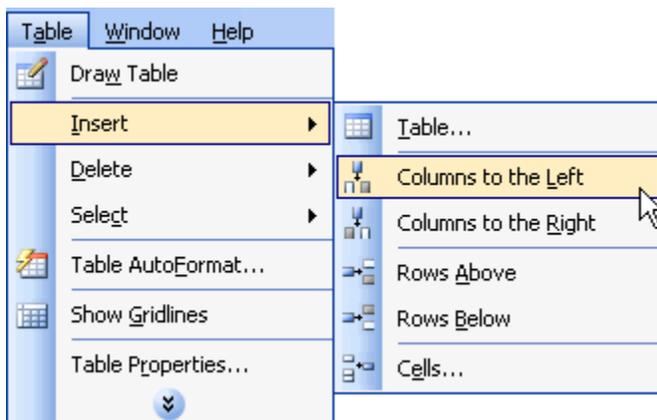
To Delete Single Table Cell:

- Place the insertion point inside the cell you wish to delete.
- Choose Table → Delete → Cells from the menu bar. The **Delete Cells dialog box** appears.
- Click Shift cells left, Shift cells up, Delete entire row, or Delete entire column.



To Insert a Column:

- Position the mouse pointer where you want column to be located.
- Choose Table → Insert → Insert Columns to the Right or Insert Columns to the Left.



Resizing Tables

You may need to adjust the size of columns, rows, and cells.

To Adjust Columns, Rows, and Cell Size:

- **Hover** the insertion point over any line in your table that borders the area you want to change.
- The insertion point changes to a **double-headed arrow**.
- **Drag** the border either left or right **OR** up and down.

Monday	Tuesday	Wednesday	Thursday
1	2	3	4
5	6	7	8
9	10	11	12

Double-headed arrow

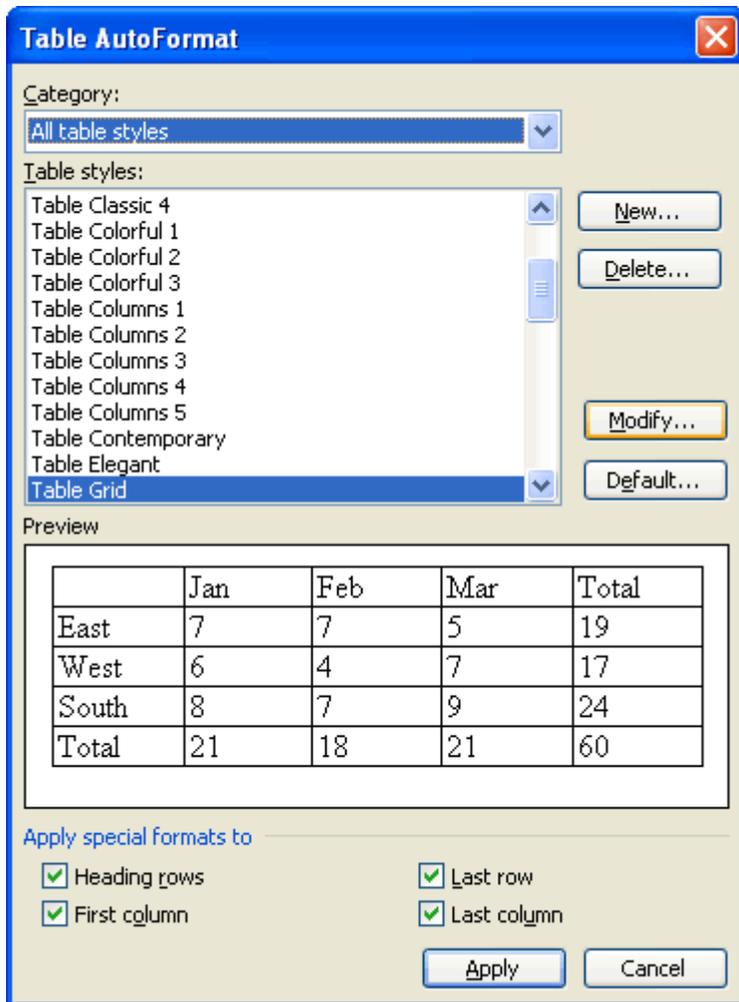
✓ To automatically adjust the size, select the entire Table and then choose Table
 → AutoFit → AutoFit to Contents.

AutoFormat

Just as Word offers document templates for memos, faxes, reports and other items; Word also offers templates for Tables.

To use AutoFormat:

- Create your table.
- Click anywhere in the table and choose **Table** and then **Table AutoFormat**. The **Table AutoFormat dialog box** appears.
- Scroll through the **Table Styles** until you find a table you like. You can preview the Table Style in the **Preview Box**.
- Check and uncheck the options in the **Apply special Formats to:** sections to slightly change parts of your table. Check out your changes using the Preview box.
- Click the **New** button to customize your own Table Style.
- Click the **Modify** button to change parts of an existing Table Style.
- Click OK.



Adding Borders

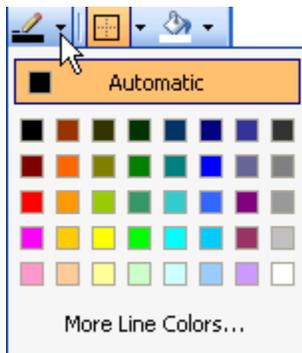
Many of the tables in the **AutoFormat Dialog Box** use unique borders and shading options. To add these special features to your own table, you can use the **Tables and Borders toolbar**.

To Change Line Style or Line Weight on an Existing Table:

- Click the drop down arrows (next to the buttons) to view and select from the list of choices.
- The mouse pointer turns into a pencil 
- **Trace** the line(s) you want to change.
- Click anywhere outside the table to change to pencil back into the I-beam.

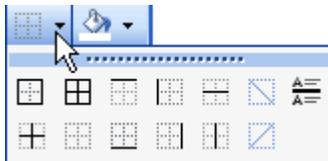
To Change the Border Color on an Existing Table:

- Click the drop down arrow next to the **Border Color button**. A color menu appears.
- Select a color. The I-beam becomes the pencil.
- Using the pencil, trace the border(s) that you want to color.



To Apply a Border:

- Select the Line Style, Line Weight, and Border Color you would like.
- Select the cells you want bordered.
- Click the **Outside Border button** drop down menu and choose the **location** of your border.



Add Shading

To Apply Shading:

- Select or place the insertion point inside the cell(s) you want shaded.
- Click the **Shading Color button** drop down arrow. A shading color menu appears.
- Click on a color. Your cell(s) are automatically shaded.

	Day 1	Day 2	Day 3	Day 4
Jan	2	33	4	5
Feb	66	1	22	55
March	64	23	41	22

Did You Know?

You can access many of the features from the Table and Borders Dialog box on the **Task Pane**. Choose the **Reveal Formatting Menu** and look for the **Table and Cell Headings**.

Challenge!

- Open your document.
- **Edit** the text, if necessary. Ask yourself:
 - Is it the right font and size?
 - What direction do I want the text?
 - How do I want it aligned?
- **Delete** any unnecessary rows or columns.
- **Add** any needed rows or columns.
- Resize the table, if needed.
- Modify the color and thickness of the lines, if needed.
- Apply **shading** to the table, if needed.
- Save and close the document.

Lesson 21: Working with Objects

By the end of this lesson, learners should be able to:

- Edit Objects

Introduction to Word Graphics

Now that you are comfortable adding and formatting text, headers and footers, columns, and tables, let's learn to enhance your documents by adding objects and pictures.

The **Drawing Toolbar** offers many options for including lines, lines with arrows, and many types of shapes into your document.

Drawing objects include:

1. AutoShapes: including Lines, Curves, and Textboxes
2. WordArt drawing objects

Drawing Objects

To Draw Lines and Shapes:

- Open the **Drawing toolbar** by clicking **View** on the Menu Bar, Select **Toolbars** and then **Drawing** from the Cascading Menu.

OR

- **Right-click** on any toolbar and select drawing.

OR

- Click the **Drawing button** on the **Standard toolbar**.
- The Drawing toolbar will appear.



Drawing button

Drawing Toolbar



- Choose an **AutoShape** from the **AutoShape drop down menu**.

OR

- Click any of the drawing tools in the first group of buttons.
 - Line Tool - 
 - Arrow Tool - 
 - Rectangle Tool - 
 - Oval Tool - 
- The mouse pointer changes to a crosshair $\+$.
- **Drag** the crosshair from a starting point until the object is the desired size.
- Release the mouse button to end the drawing object and turn off the Drawing tool.

✓ Hold the **Shift key** down to create straight lines, perfect circles, or perfect squares.

✓ **AutoShapes** are inserted (on their own layer) with the In front of text wrapping style applied.

WordArt Drawing Objects

Also included on the Drawing toolbar is the **WordArt Feature**. Using WordArt, you can create text graphics that bend, slant, and appear metallic or wooden and much, much more. WordArt can even be shadowed, skewed, rotated, and stretched.

Here are just a few examples of what WordArt allows you to do:

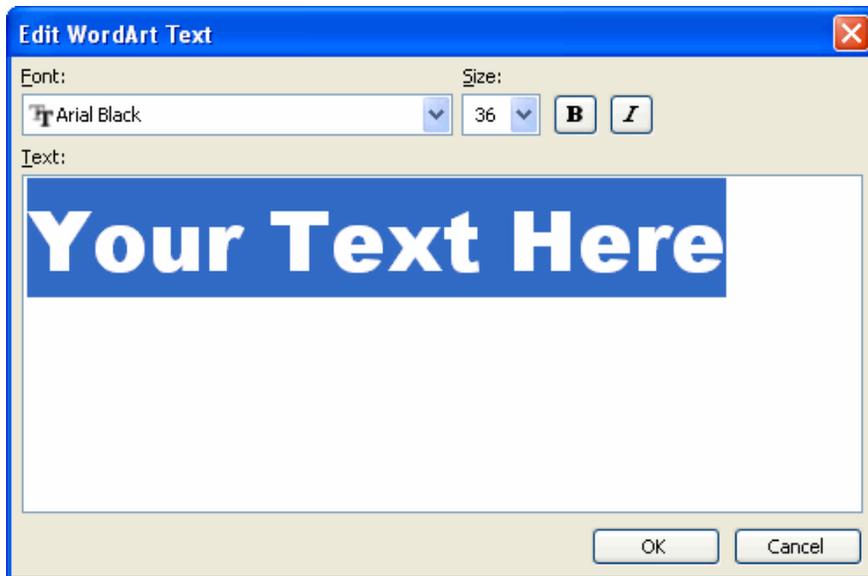


To Insert WordArt:

- Place the insertion point where you would like to insert WordArt.
- Click the WordArt button on the Drawing toolbar . The **WordArt gallery** opens.



- Choose (click) a WordArt style.
- The **Edit WordArt Text dialog box** appears.
- Edit the font, size, and style.
- Click **OK**.



Formatting Drawing Objects

Use the Drawing toolbar to format AutoShapes and WordArt.

	To select several objects hold down the Shift key and click on each object, or use the Select Objects tool.
	Fill color allow you to color all selected drawing objects. No fill is the color white.
	Change the line color of a selected object.
	Changes the text color of a selected object.
	Changes the line style of a selected object.
	Changes the line style of a selected object. Includes solid and dotted lines.
	Changes the style of arrow.
	Gives selected object some depth.
	Gives selected object a 3D effect .

Challenge!

- Open your document.
- Using both **AutoShapes** and **WordArt**, create an image for your flyer.
- Edit the image.
- Save and close the document.

For example, if you wanted to create a stop sign you would select the Octagon shape under AutoShapes and Basic Shapes and select any of the WordArt designs for the text.



Lesson 22: Working with Pictures

By the end of this lesson, learners should be able to:

- Insert Pictures
- Edit Pictures

Inserting Clip Art

Word comes bundled with hundreds of **Clip Art** images that are copyright free and available for your personal use. The clip art images that are available through Word cover many different categories and can really help enhance your pages. If you have never inserted clip art before, Word will ask if you would like to catalog all of the available resources (clip art, sound and video files) on your computer. It is a good idea to go ahead and catalog all of these free resources.

To Insert Clip Art:

- Place the insertion point where you want to insert the clip.
- Click **Insert** on the Menu Bar.
- Select **Picture** and then **Clip Art** from the cascading menu. The **Insert Clip Art** menu opens on the **Task Pane**.
- Type a **keyword** in the **Search Text:** field.
- Click **Search**.

AND

- Specify your search by using the **Other Search Options**.
 - **Search in:** - specifies where Word will search for clip art. As long as the check box for **Everywhere** is checked, Word will search through **All Collections**.
 - **Results should be:** - specified what type of file Word will search for (video, audio, photographs, clip art). As long as the check box for **All Media Types** is checked, Word will search through **All Media Files**.
- Double-click the clip art or picture to add to the document.



✓ To change your **Search For text**: Click the Modify button below the clip art results

Modify

✓ To preview video and sound clips, click the appropriate tab and click the Play button to preview the file.

To Delete a Picture:

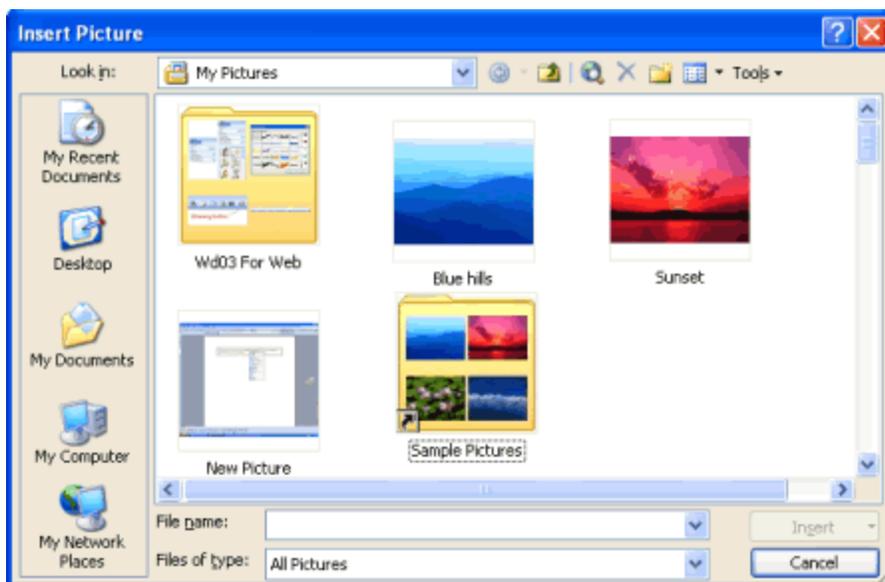
- **Select** the image (click on it).
- Press the delete key on your keyboard.

Inserting Pictures from your Computer

A picture doesn't have to be in the Clip Gallery in order for you to insert it into your document. The Clip Gallery is just an easy place to store clips you want to use again and again.

To Insert a Picture that is NOT in the Clip Gallery:

- Click **Insert** from the Menu Bar.
- Select **Picture and From File** from the cascading menu. The **Insert Picture dialog box** opens.
- **Locate** and select the file to insert the selected picture into your document.



Moving Clips

Once you have inserted a graphic into your document you can re-position the graphic until it is in the appropriate location.

By default, when a picture is imported into Word, it is aligned to the left margin. However, just as you would text, you can change the alignment so the graphic is right-aligned or centered. You can also drag the image anywhere on the page.

To Move a Clip:

- Select the clip.
- Use your mouse to drag a selected clip to any position on the page.
- The I-beam turns into a white pointer with a little box under it as you move the picture.

OR

- Use the **Alignment buttons** on the Formatting toolbar.

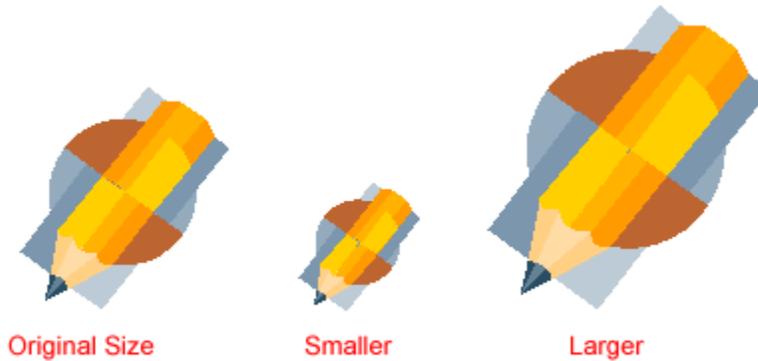


Sizing Handles

You have two options when sizing your graphics. If it is important to maintain proportions, which will prevent the image from looking skewed, then you should use the corner handles to re-size the image. If you do not need to maintain the graphic's proportions, you can use the top, bottom or side handles.

Changing Size While Maintaining Proportions:

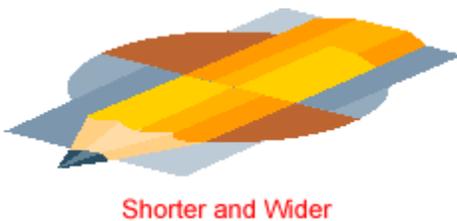
- Click the image you want to re-size.
- Place the cursor over one of the corner handles. The cursor will change into a double-headed arrow.
- Drag the handles until the image is the size you need.



✓ To keep the center of an object in the same place, hold down the CTRL key while dragging the mouse.

Changing Size While Not Maintaining Proportions:

If any of the middle handles are dragged (top, bottom, right, or left handles), only the height and width changes, thus changing the proportion, or scale, of the picture.



✓ Be careful; using only the sizing handle can make your pictures blurry and distorted.

Changing the Appearance of your Pictures

Sometimes you may need to not only adjust the sizing of your pictures, but you may notice the picture is too dark or too bright for your liking. You can adjust your picture using the **Picture** toolbar.

To use the Picture Toolbar:

- **Right-click** the picture.

- Choose **Show Picture Toolbar** from the shortcut menu.

✓ **Crop, Recolor Object, and Set Transparent Color** buttons are used with areas of the picture. All other buttons affect the entire picture.



Name of Button:	Use it to:
 Insert Picture from File	Insert another picture
 Color	Automatic, Grayscale, Black & White, or Watermark
 More Contrast	Increase color intensity
 Less Contrast	Decrease color intensity
 More Brightness	Add white to lighten all colors
 Less Brightness	Add black to darken the color
 Crop	Cut the sides of an image
 Rotate Left	Each click turns the image by 90 degrees to the left
 Line Style	Customize the border of an image
 Compress Pictures	Changes the Resolution of your image
 Text Wrap	Set how text wraps around the image
 Format Picture	Displays the Format Picture Dialog Box
 Set Transparent Color	Use eyedropper to make areas of the picture transparent (mainly for web graphics)
 Reset Picture	Return picture to original format

Challenge!

- **Open** your document in Word.
- **Insert** a clip art or image from a file on your computer into your document.
You may insert multiple images.

- Resize, modify, and/or move the image to the location you want it to be in your document.
 - To re-position the image, practice clicking and dragging, centering, right-alignment, etc.

This is your **final challenge** for Microsoft Word 2003. Does your flyer look the way that you want it to? It probably does not look quite like you imagined. You should take the time now to move around the symbols, text boxes, tables, columns, etc. Add any new components that you would like.

You have learned about the **Word 2003 features**. Now spend a little time now making this flyer look the way you would like it to be. Some of these features are a little difficult to learn, but the more you practice, the easier it becomes.

Advanced Word Topics

Lesson 23: Working with Diagrams and Charts Video

By the end of this module, learners should be able to:

- Insert a diagram or chart into a Word document
- Modify a diagram or chart

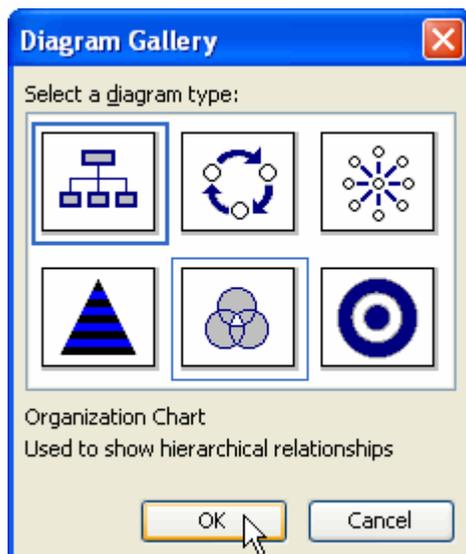
Creating and Modifying Diagrams and Charts

Watch the video! (2:33 min) - [Tips](#) for watching our videos.

Word allows you to create basic diagrams using the templates in the **Diagram Gallery**. The six diagram types are: Organization Chart, Cycle Diagram, Radial Diagram, Pyramid Diagram, Venn Diagram, and a Target Diagram. A description of each type of diagram is included in the Diagram Gallery to help you decide which template will best meet your needs.

To Insert a Diagram From the Diagram Gallery:

- Select **Insert** → **Diagram** from the main menu.
- Select a diagram.
- Click **OK**. The diagram will appear in your Word document.



To Modify a Diagram:

Since each diagram is completely different, the modifications you can make will differ depending on the diagram you insert. However, the tools you use to modify the diagrams are the same.

You can:

- Right-click any **shape** or **text box** within the diagram to modify or delete it. The menu will change depending on the item you select.

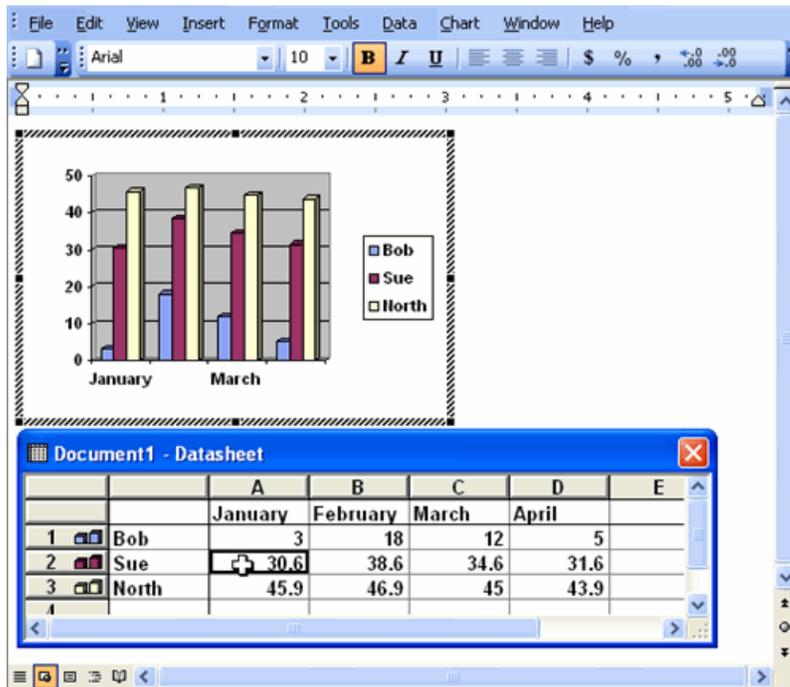
OR

- Modify the diagram using the **Diagram Toolbar**. The **drop-down menus** on the Diagram Toolbar will differ depending on the type of diagram you choose.

To Insert a Chart:

- Select **Insert** from the main menu.
- Select **Picture** → **Chart** from the cascading menu. A chart and datasheet will appear in your document.
- Delete the existing data in the datasheet.

- Enter your own data in the datasheet.



- Close the datasheet. All of your changes will appear in the chart.
- Save and close the document.

Challenge!

- Open a new, blank Word document.
- **Insert an Organization Chart** using the **Diagram Gallery**.
- Enter the necessary data in the diagram.
- Modify the appearance of the diagram.
- Save and close the document.

Lesson 24: Inserting Hyperlinks

By the end of this module, learners should be able to:

- Insert a hyperlink into a Word document

➤ Go to the next page to watch the video or skip to the [text](#) version.

✓ [Learn](#) how to use our video modules.

Insert a Hyperlink

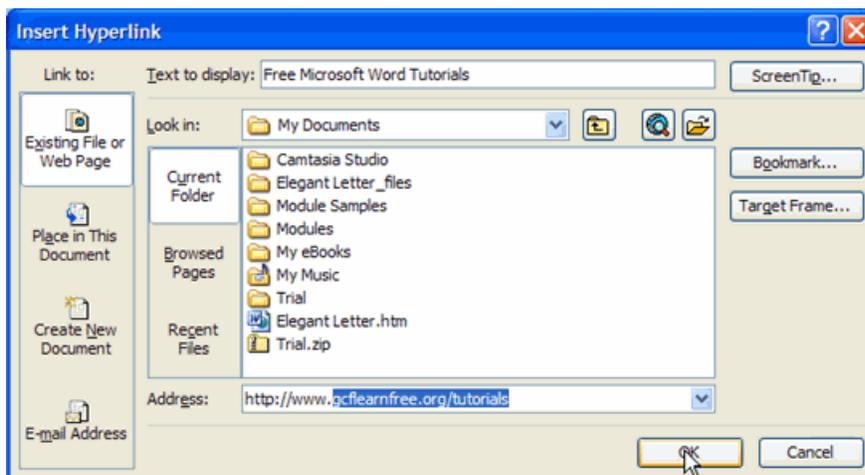
Watch the video! (1:34 min) - [Tips](#) for watching our videos.

You can insert hyperlinks to websites or documents within your Word document.

To Insert a Hyperlink:

- Select **Insert** → **Hyperlink** from the main menu. The Insert Hyperlink dialog box will appear.
- Enter the text you wish to display as your link in the **Text to display:** field.

Enter the web address in the **Address:** field.



- Click **OK**.

Challenge!

- Open a new, blank Word document.
- Open the **Insert Hyperlink** dialog box.
- Insert a hyperlink to **www.gcflearnfree.org** that displays the text **Free Computer Training**.
- Save and close the document.

Lesson 25: Using AutoText

By the end of this module, learners should be able to:

- Use AutoText features to insert commonly used words into a Word document
- Add new words and phrases to the AutoText list

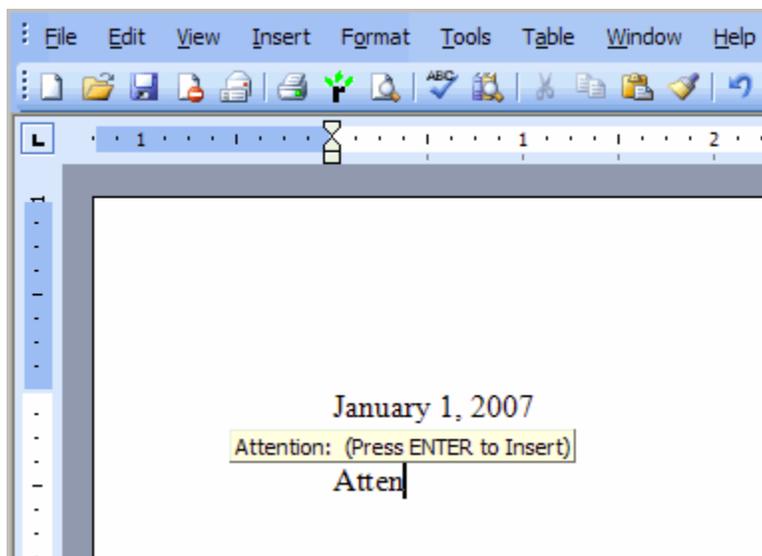
Using AutoText

[Watch the video!](#) (1:29 min) - [Tips](#) for watching our videos.

AutoText is a feature that recognizes commonly used words and phrases as you type them. The AutoText feature can save you a great deal of time.

To Insert a Word Recommended by AutoText:

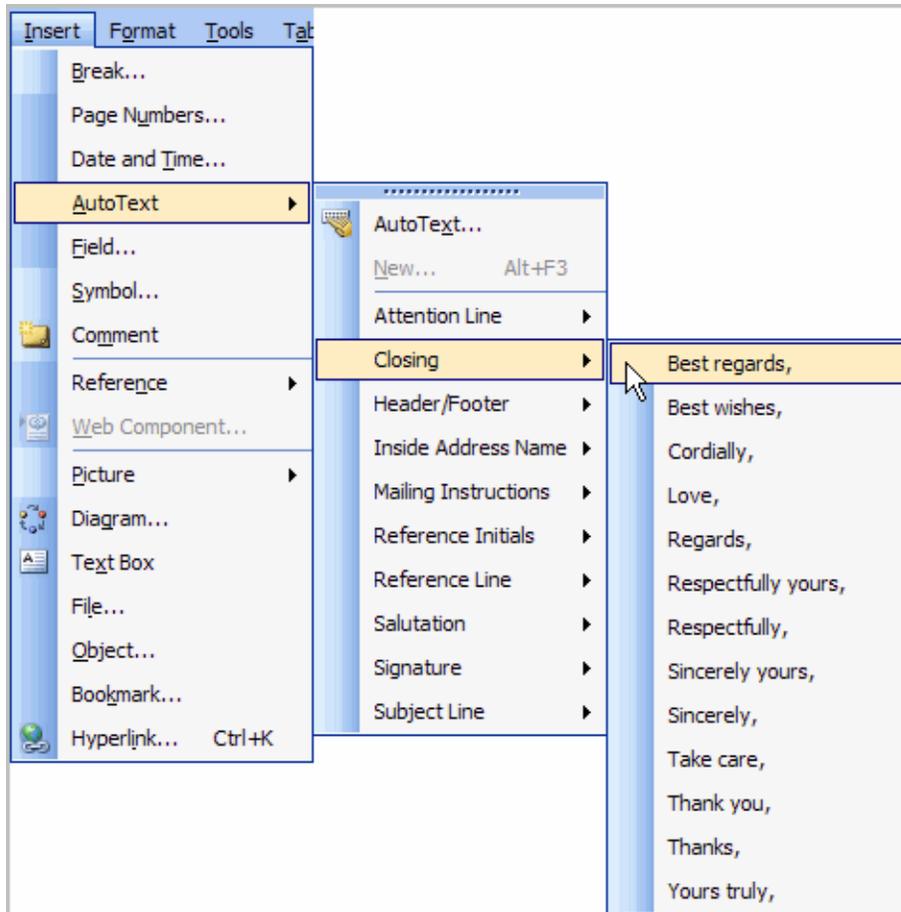
- Type text into your document. If AutoText recognizes a word or phrase, a suggestion box will hover over the word.
- Press **Enter** to accept the AutoText suggestion.



To Insert Predefined Text from the AutoText List:

- Select **Insert** → **AutoText** from the main menu.

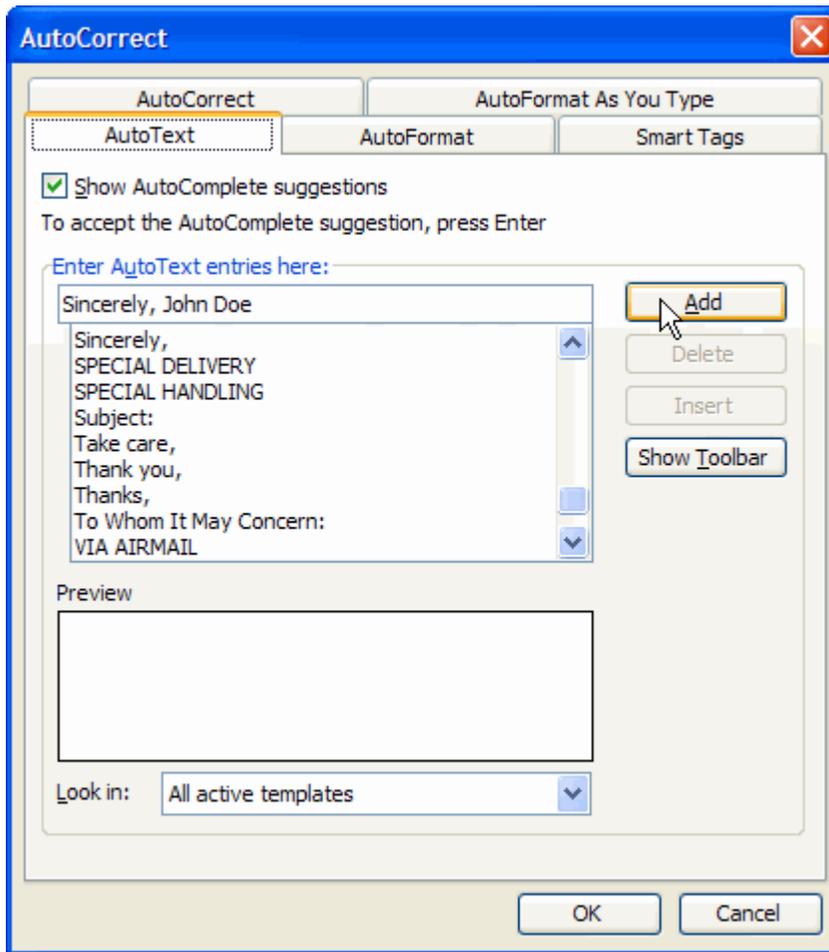
Choose the text you wish to insert from the predefined list of words and phrases.



To Insert a New Word or Phrase into the AutoText list:

- Select **Insert** from the main menu.
- Select **AutoText** → **AutoText...** from the cascading menu. The AutoCorrect dialog box will appear.
- Select the **AutoText** tab.

Enter the word or phrase in the **Enter AutoText entries here:** field.



- Click **Add**.
- Click **OK**.

Challenge!

- Open a new, blank Word document.
- Type today's date.
- Press Enter twice.
- Type a short letter to a friend.
- Press Enter twice.
- Add the phrase **Sincerely, Your Name** in the AutoText list of words and phrases.
- Save and close the document.

Lesson 26: Printing Envelopes

By the end of this module, learners should be able to:

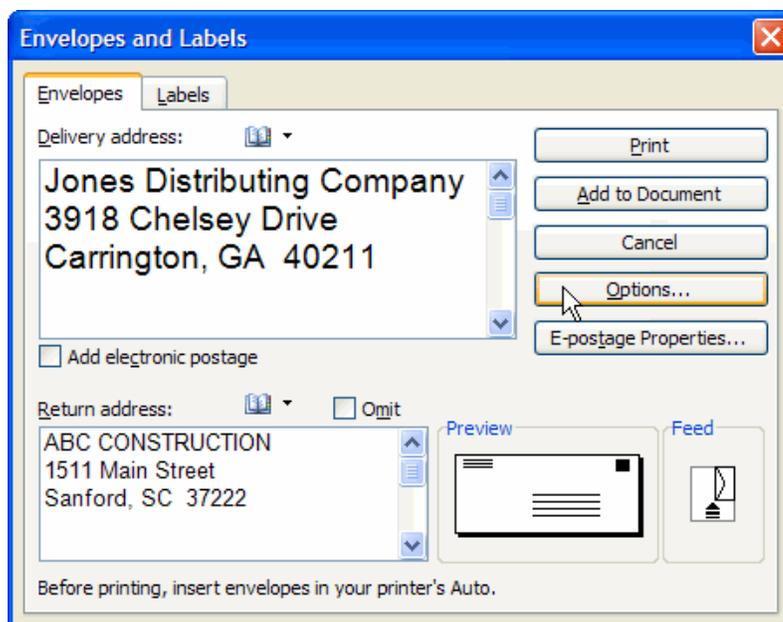
- Print envelopes

Printing Envelopes

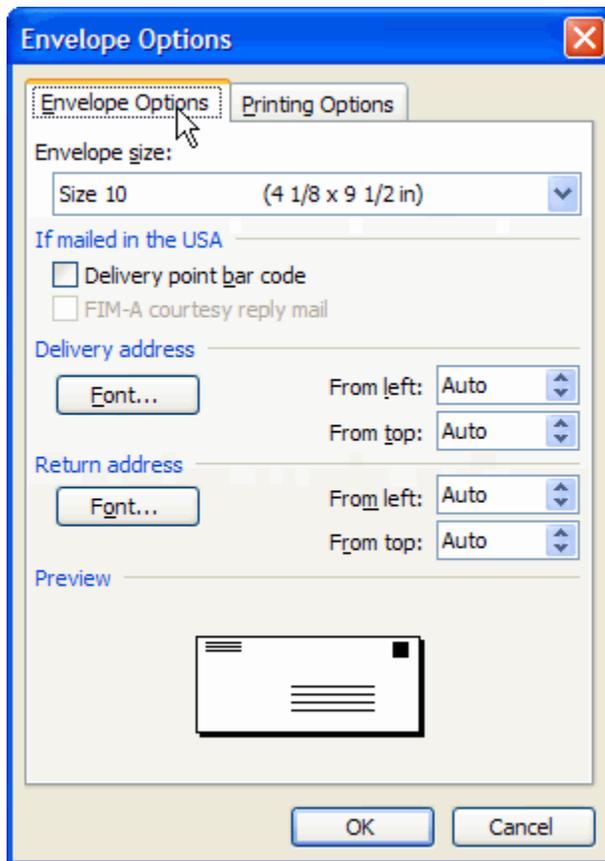
Watch the video! (2:24 min) - [Tips](#) for watching our videos.

To Address and Print Envelopes:

- Select **Tools** from the main menu.
- Select **Letters and Mailings** → **Envelopes and Labels** from the cascading menu. The Envelopes and Labels dialog box will appear.
- Enter the **Delivery Address**. This will appear automatically if you are working with a letter at the same time.
- Enter the **Return Address**.
- Click **Options** to set the envelope and printing options. The Envelope Options dialog box will appear.



- Click the **Envelope Options** tab.
- Make any changes to the envelope size or font.



- Click the **Printing Options** tab.
- Choose the correct **feed method** for your printer.
- Click **OK**.
- Click **Add to Document** if you are working with a letter. This will display a version of the completed envelope.

OR

- Click **Print** to just print the envelope.

Challenge!

Download and save the [Envelopes and Labels](#) document to complete this Challenge.

Need help? [How to Download a File](#)

- Open the **Envelopes and Labels** document.
- Create a size 10 envelope with a delivery address and a return address.
- Close the document.

Lesson 27: Printing Labels



By the end of this module, learners should be able to:

- Format mailing labels
- Select the correct mailing label product
- Print a full sheet of mailing labels
- Print a single mailing label

Printing Labels

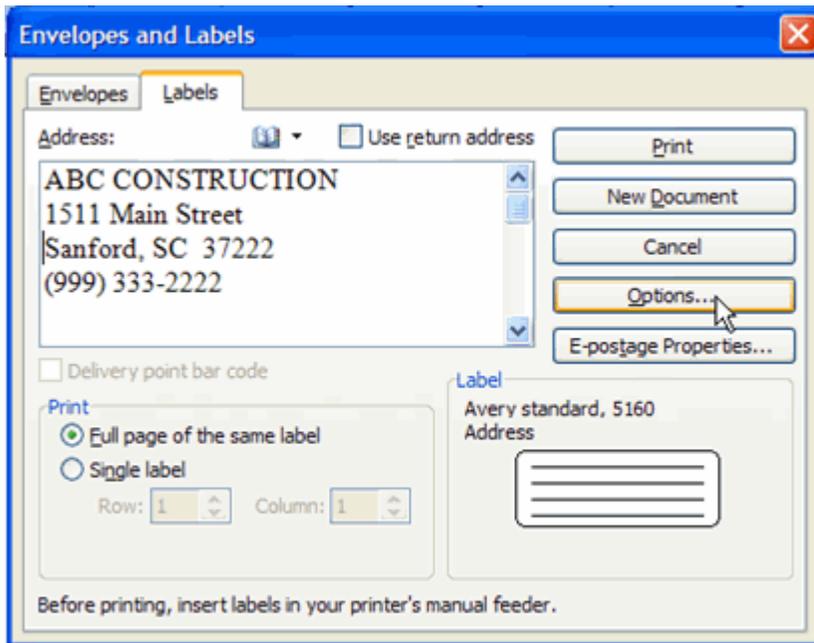
[Watch the video!](#) (2:08 min) - [Tips](#) for watching our videos.

Word allows you to print a single mailing label or a full sheet of mailing labels.

To Print Mailing Labels:

- Select **Tools** from the main menu.
- Select **Letters and Mailings** → **Envelopes and Labels** from the cascading menu. The Envelopes and Labels dialog box will appear.
- Select the **Labels** tab.
- Enter the address in the **Address:** field.

- Select **Full Page of same label** or **Single label**.



- Click **Options**. The Labels Options dialog box will appear.
- Select the product number for the labels you are using.
- Select the printing tray.
- Click **OK**.
- Click **New Document** to view the labels in a new document.

OR

- Click **Print** to just print the labels.

Challenge!

If you have not already done so in a previous Challenge, download and save the **Envelopes and Labels** document. Need help? [How to Download a File](#)

- Open the **Envelopes and Labels** document.
- Create a full page of address labels for ABC Construction.
- Close the document.

Lesson 28: Tracking Changes

By the end of this module, learners should be able to:

- Insert corrections or make changes to a document

Tracking Changes

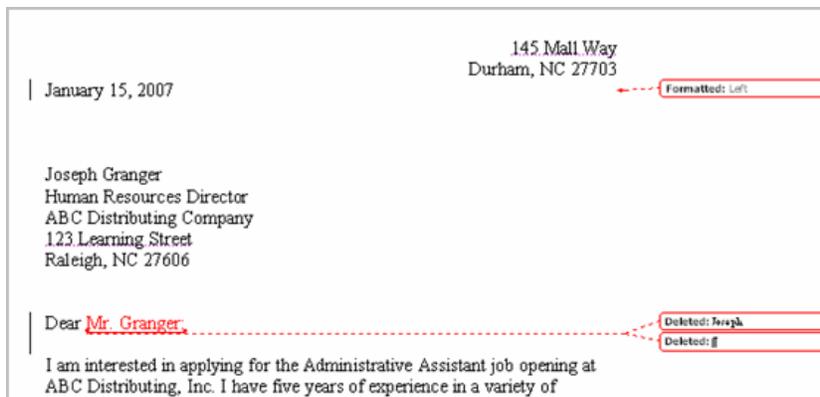
Watch the video! (0:43 min) - [Tips](#) for watching our videos.

The **Track Changes** feature of Word allows multiple people to work on a document, and for suggested changes to be tracked.

To Track Changes to a Document:

- Select **Tools** → **Track Changes** from the main menu. The **Track Changes** feature will be active.

Change the document formatting or edit the text. Notice how the changes are documented on the screen.



Challenge!

Download and save the [Cover Letter](#) document to complete this Challenge. Need help? [How to Download a File](#)

- Open the **Cover Letter** document.
- Turn on the **Track Changes** feature.
- Insert a new paragraph.
- Delete a sentence.
- Save and close the document.

Lesson 29: Accepting and Rejecting Changes

By the end of this module, learners should be able to:

- Use the Previous and Next buttons to review changes
- Use the Accept Change button
- Use the Reject Change button

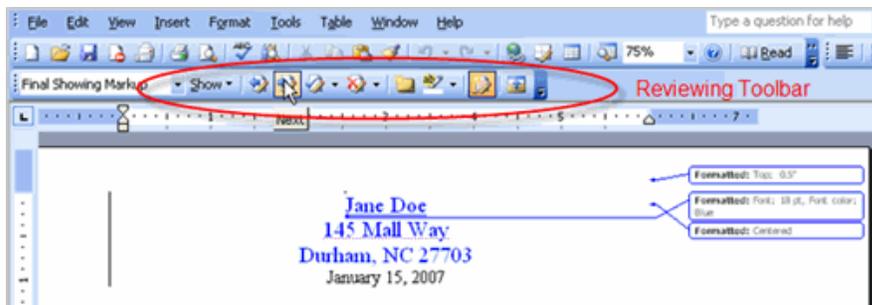
Accepting and Rejecting Changes

Watch the video! (1:21 min) - [Tips](#) for watching our videos.

When you receive a Word document that has been edited using the **Track Changes** feature, you will need to decide whether you want to **accept** or **reject** each of the changes.

To Accept or Reject Changes:

- Select **View** from the main menu.
- Select **Toolbars** → **Reviewing**. The Reviewing Toolbar will appear.
-



- Position your cursor next to the first proposed change.
- Click the **Accept Change** or **Reject Change** button.
- Use the **Next** and **Previous** buttons to navigate through each proposed change. Choose to accept or reject each change.

Challenge!

If you have not already done so in a previous Challenge, download and save the **Cover Letter**. Need help? [How to Download a File](#)

- Use the **Next** and **Previous** buttons to review the changes.
- Use the **Accept Changes** button to accept several proposed changes.
- Use the **Reject Change** button to reject several proposed changes.
- Save and close the document.

Lesson 30: Inserting Comments

By the end of this module, learners should be able to:

- Insert comments into a Word document

Inserting Comments

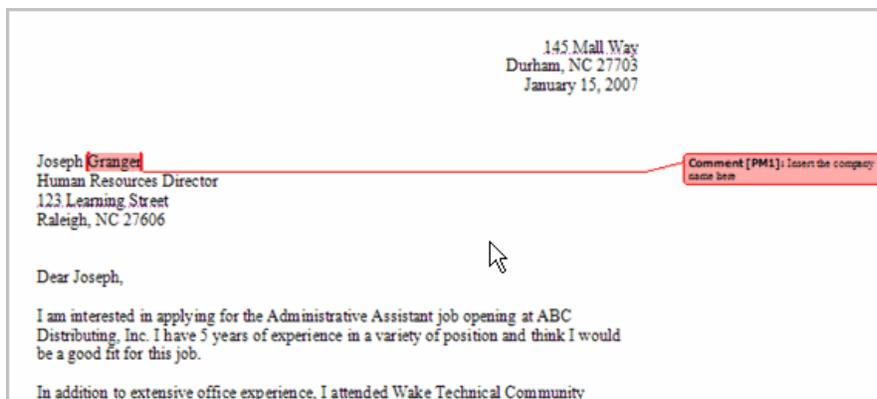
Watch the video! (1:39 min) - [Tips](#) for watching our videos.

Microsoft Word provides several tools for **document collaboration**. One of these features allows you to **insert comments** into a document and provide suggestions to the document's author without changing the original text.

To Insert a Comment:

- Position your cursor next to the word where you would like to insert a comment.
- Select **Insert** → **Comment** from the main menu. The Reviewing toolbar will appear at the top of the page and a **comment balloon** will appear in the margin.
- Type your comment in the balloon.

Click outside the balloon.



Challenge!

- Open any Word document on your computer.
- Insert at least three comments.
- Save and close the document.

Lesson 31: Viewing and Editing Comments Video

By the end of this module, learners should be able to:

- View comments inserted by another person
- Edit comments inserted by another person

Viewing and Editing Comments

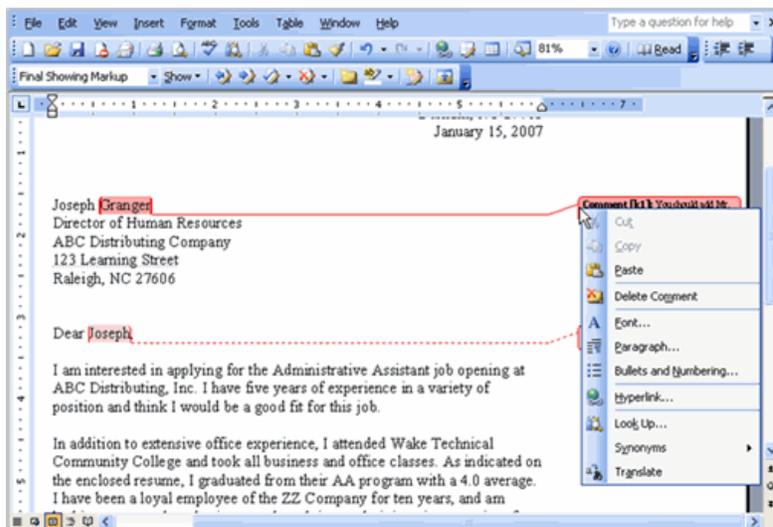
Watch the video! (1:10 min) - [Tips](#) for watching our videos.

Word provides you with several document collaboration tools. One of these tools allows a person to **insert comments** into a document, and a different person to **view and edit** those comments.

To View and Edit Comments:

- Select **View** → **Markup** from the main menu.
- View the comments in each **comment balloon** and decide whether to modify the document based on the comment.

Right-click each comment balloon after reviewing the commen



- Select **Delete Comment**.
- Click the **Next Tool** on the Reviewing Toolbar to move to the next comment in the document.

Challenge!

- Open any Word document on your computer.
- **Insert** at least three comments.
- Save and close the document.
- Open the same document.
- **View** each comment balloon.
- Edit the document, as necessary.
- Delete all the comments in the document.

Lesson 32: Comparing and Merging Documents Video

By the end of this module, learners should be able to:

- Compare two Word documents
- Merge two documents into one document
- View suggested changes in the new, merged document

Compare and Merge Feature

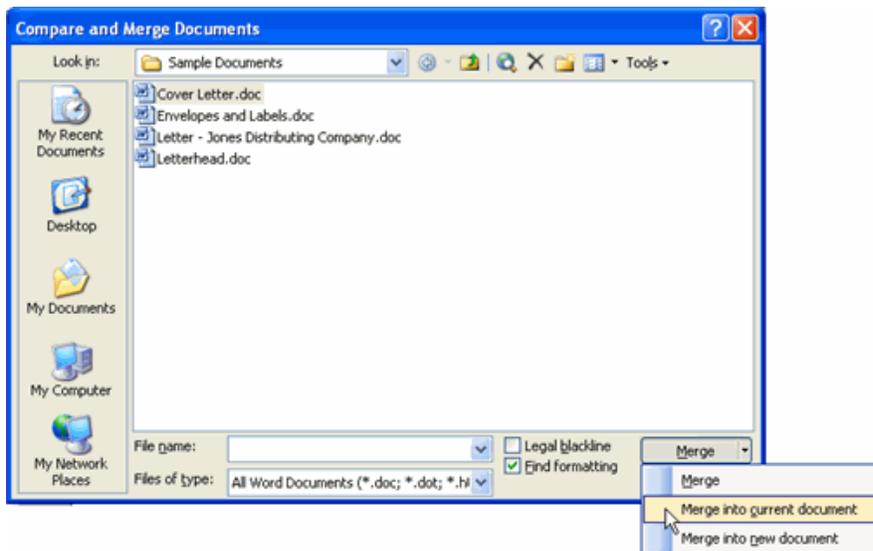
[Watch the video!](#) (1:38 min) - [Tips](#) for watching our videos.

The Compare and Merge feature of Microsoft Word allows you to **compare** two documents and **merge** them into one document.

To Compare and Merge Two Documents:

- Open one of the files you would like to compare and merge.
- Select **Tools** → **Compare and Merge Documents...** from the main menu. The Compare and Merge Documents dialog box will appear.
- Select the document you wish to work with.
- Click the drop-down arrow on the **Merge** button.

Select **Merge into current document** to merge the two documents you selected into one document.



- Use the **Reviewing toolbar** to either accept or reject each proposed change.

Challenge!

If you have not already done so in a previous Challenge, download and save the **Cover Letter** document. Also, please download and save another version of the Cover Letter document, **Cover Letter2**.
Need help? [How to Download a File](#)

- Open the **Cover Letter** document in Word.
- Compare and Merge this document with **Cover Letter2**.
- Save and close the new, merged document.

Lesson 33: Creating New Documents Using Templates

By the end of this module, learners should be able to:

- Create new documents using the templates feature

. Lesson 34: Using Mail Merge

Creating New Documents Using the Templates Feature

[Watch the video!](#) (1:53 min) - [Tips](#) for watching our videos.

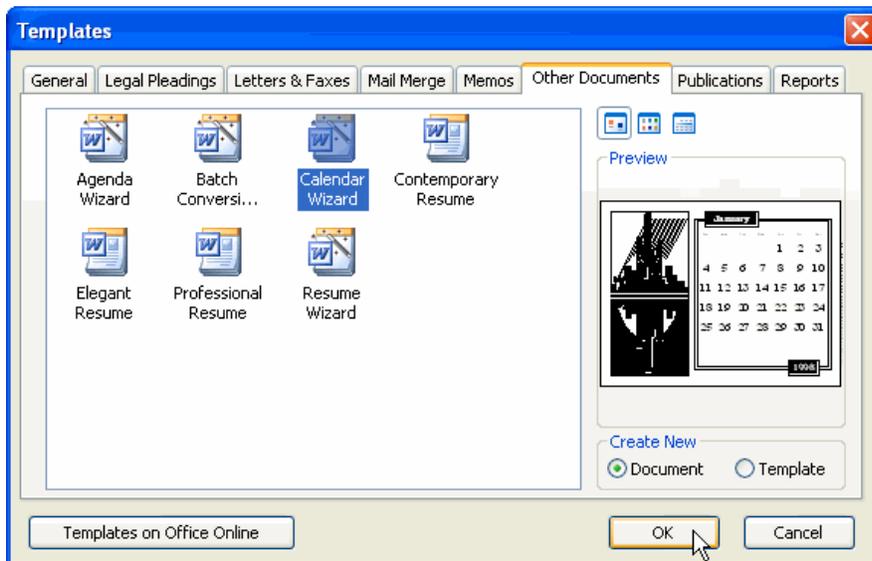
Microsoft Word provides several ways to create a new document. You can start with a new, blank document or you can use a predefined **template**. A template is a sample document, or pattern, that you can personalize.

To Use a Template:

- Select **File** → **New** from the main menu. The New Document task pane will appear.
- Look in the **Templates** section of the New Document task pane. You can access templates from three locations:
 - Templates on Office Online
 - On my computer
 - On my websites
- Select **On my computer** to view templates that are preloaded on your computer.
- Click one of the eight **category** tabs:
 - General
 - Legal Pleadings
 - Letters & Faxes
 - Mail Merge

- Memos
- Other Documents
- Publications
- Reports

Select one of the templates to view it in the **Preview** section.



- Click **OK**. The template will appear in your Word window.
- Insert **your text** into the template.
- Save and close the document.

Challenge!

- Open Word.
- Look at several of the templates on your computer.
- Select one of those **templates**.
- Enter text into the template.
- Save and close the document.

Lesson 34: Using Mail Merge

By the end of this module, learners should be able to:

- Use Mail Merge to create a data source
- Use Mail Merge to create a form letter
- Use the Mail Merge wizard to explore other opportunities for labels, envelopes, etc.

Using Mail Merge

[Watch the video!](#) (4:59 min) - [Tips](#) for watching our videos.

To Use Mail Merge:

- Select **Tools** on the main menu.
- Select **Letters and Mailings** → **Mail Merge**.

The Mail Merge task pane appears and will guide you through the six main steps to complete a mail merge. You will have many decisions to make during the process. The following is an example of how to create a form letter and merge the letter with a data list.

Steps 1-3

- Choose the type of document you wish to create. In this example, select **Letters**.
- Click **Next:Starting document** to move to Step 2.
- Select **Use the current document**.
- Click **Next:Select recipients** to move to Step 3.
- Select the **Type a new list** button.
- Click **Create** to create a data source. The **New Address List** dialog box appears.

To Edit the New Address List:

- Click **Customize** in the dialog box. The **Customize Address List** dialog box appears.

- Select a field and click **Delete**.
- Click **Yes** to confirm that you wish to delete the field.
- Continue to delete any unnecessary fields.
- Click **Rename**. The Rename Field dialog box appears.
- Enter the new name you would like to give the field in the **To:** field.
- Continue to rename any fields necessary.
- Click **OK** to close the Customize Address List dialog box.
- Enter the necessary data in the New Address List dialog box.
- Click **New Entry** to enter another record.
- Click **Close** when you have entered all your data records.
- Enter the file name you wish to save the data list as.
- Choose the location you wish to save the file.
- Click **Save**. The Mail Merge Recipients dialog box appears and displays all the data records in the list.
- Confirm the data list is correct and click **OK**.
- Click **Next:Write your letter** to move to Step 4.

Steps 4-6

[Watch the video!](#) (3:58 min) - [Tips](#) for watching our videos.

- Write a letter in the current Word document. Stop writing when you reach a place in the letter where you wish to enter a field from your data record.

To Insert Data from the Data List:

- Click the **Insert Merge Fields** button. The Insert Merge fields dialog box appears.
- Select the field you would like to insert in the document.
- Click **Insert**. Notice that a placeholder appears where information from the data record will eventually appear.
- Repeat these steps each time you need to enter information from your data record.
- Click **Next: Preview your letters** in the task pane once you have completed your letter.

- Preview the letters to make sure the information from the data record appears correctly in the letter.
- Click **Next: Complete the merge**.
- Click **Print** to print the letters.
- Click **All**.
- Click **OK** in the Merge to Printer dialog box.
- Click **OK** to send the letters to the printer.

➤ The Mail Merge wizard allows you to complete the mail merge process in a variety of ways. The **best** way to learn how to use the different functions in Mail Merge is to try to develop several of the different documents -- letters, labels, envelopes -- using the different types of data sources.

Challenge!

- Open a new, blank Word document.
- Open the Mail Merge task pane.
- Explore the different Mail Merge features until you are familiar with them.

MODULE 4

Introduction to SPREADSHEETS

The following is the Syllabus for Module 4, Spreadsheets, which provides the basis for the practice-based test in this module.

Module Goals

Spreadsheets requires the candidate to understand the concept of spreadsheets and to demonstrate an ability to use a spreadsheet to produce accurate work outputs.

The candidate shall be able to:

- Work with spreadsheets and save them in different file formats.
- Choose built-in options such as the Help function within the application to enhance productivity.
- Enter data into cells and use good practice in creating lists. Select, sort and copy, move and delete data.
- Edit rows and columns in a worksheet. Copy, move, delete and appropriately rename worksheets.
- Create mathematical and logical formulas using standard spreadsheet functions. Use good practice in formula creation and recognize error values in formulas.
- Format numbers and text content in a spreadsheet.
- Choose, create and format charts to communicate information meaningfully.
- Adjust spreadsheet page settings and check and correct spreadsheet content before finally printing spreadsheets.

4.1 Using the Application

4.1.1 Working with Spreadsheets

- Open, close a spreadsheet application. Open, close spreadsheets.
- Create a new spreadsheet based on default template.
- Save a spreadsheet to a location on a drive. Save a spreadsheet under another name to a location on a drive.

- Save a spreadsheet as another file type like: template, text file, software specific file extension, version number.
- Switch between open spreadsheets.

4.1.2 Enhancing Productivity

- Set basic options/preferences in the application: user name, default folder to open, save spreadsheets.
- Use available Help functions.
- Use magnification/zoom tools.
- Display, hide built-in toolbars.
- Restore, minimize the ribbon.

4.2 Cells

4.2.1 Insert, Select

- Understand that a cell in a worksheet should contain only one element of data, (for example, first name detail in one cell, surname detail in adjacent cell).
- Recognize good practice in creating lists: avoid blank rows and columns in the main body of list, insert blank row before Total row, ensure cells bordering list are blank.
- Enter a number, date, text in a cell.
- Select a cell, range of adjacent cells, range of non-adjacent cells, entire worksheet.

4.2.2 Edit, Sort

- Edit cell content, modify existing cell content.
- Use the undo, redo command.
- Use the search command for specific content in a worksheet.
- Use the replace command for specific content in a worksheet.
- Sort a cell range by one criterion in ascending, descending numeric order, ascending, descending alphabetic order.

4.2.3 Copy, Move, Delete

- Copy the content of a cell, cell range within a worksheet, between worksheets, between open spreadsheets.
- Use the autofill tool/copy handle tool to copy, increment data entries.
- Move the content of a cell, cell range within a worksheet, between worksheets, between open spreadsheets.
- Delete cell contents.

4.3 Managing Worksheets

4.3.1 Rows and Columns

- Select a row, range of adjacent rows, range of non-adjacent rows.
- Select a column, range of adjacent columns, range of non-adjacent columns.
- Insert, delete rows and columns.
- Modify column widths, row heights to a specified value, to optimal width or height.
- Freeze, unfreeze row and/or column titles.

4.3.2 Worksheets

- Switch between worksheets.
- Insert a new worksheet, delete a worksheet.
- Recognize good practice in naming worksheets: use meaningful worksheet names rather than accept default names.
- Copy, move, rename a worksheet within a spreadsheet.

4.4 Formulas and Functions

4.4.1 Arithmetic Formulas

- Recognize good practice in formula creation: refer to cell references rather than type numbers into formulas.
- Create formulas using cell references and arithmetic operators (addition, subtraction, multiplication, division).
- Identify and understand standard error values associated with using formulas: #NAME?, #DIV/0!, #REF!.
- Understand and use relative, absolute cell referencing in formulas.

4.4.2 Functions

- Use sum, average, minimum, maximum, count, counta, round functions.
- Use the logical function if (yielding one of two specific values) with comparison operator: =, >, <.

4.5 Formatting

4.5.1 Numbers/Dates

- Format cells to display numbers to a specific number of decimal places, to display numbers with, without a separator to indicate thousands.
- Format cells to display a date style, to display a currency symbol.
- Format cells to display numbers as percentages.

4.5.2 Contents

- Change cell content appearance: font sizes, font types.

- Apply formatting to cell contents: bold, italic, underline, double underline.
- Apply different colours to cell content, cell background.
- Copy the formatting from a cell, cell range to another cell, cell range.

4.5.3 Alignment, Border Effects

- Apply text wrapping to contents within a cell, cell range.
- Align cell contents: horizontally, vertically. Adjust cell content orientation.
- Merge cells and centre a title in a merged cell.
- Add border effects to a cell, cell range: lines, colours.

4.6 Charts

4.6.1 Create

- Create different types of charts from spreadsheet data: column chart, bar chart, line chart, pie chart.
- Select a chart.
- Change the chart type.
- Move, resize, delete a chart.
- Edit
- Add, remove, edit a chart title.
- Add data labels to a chart: values/numbers, percentages.
- Change chart area background colour, legend fill colour.
- Change the column, bar, line, pie slice colours in the chart.
- Change font size and colour of chart title, chart axes, chart legend text.

4.7 Prepare Outputs

4.7.1 Setup

- Change worksheet margins: top, bottom, left, right.
- Change worksheet orientation: portrait, landscape. Change paper size.
- Adjust page setup to fit worksheet contents on a specified number of pages.
- Add, edit, delete text in headers, footers in a worksheet.
- Insert and delete fields: page numbering information, date, time, file name, worksheet name into headers, footers.

4.7.2 Check and Print

- Check and correct spreadsheet calculations and text.
- Turn on, off display of gridlines, display of row and column headings for printing purposes.
- Apply automatic title row(s) printing on every page of a printed worksheet.

- Preview a worksheet.
- Print a selected cell range from a worksheet, an entire worksheet, number of copies of a worksheet, the entire spreadsheet, a selected chart.

Excel Basics

- Lesson 1: Identifying basic parts of the Excel window
- Lesson 2: Create, open and save workbooks
- Lesson 3: Enter, edit and delete data
- Lesson 4: Moving, Copying and Deleting Cell Contents
- Lesson 5: Creating Simple Formulas
- Lesson 6: Creating Complex Formulas
- Lesson 7: Using functions

Worksheet Layout and Management

- Lesson 8: Working with multiple worksheets
- Lesson 9: Inserting and Deleting Rows and Columns
- Lesson 10: Changing Column Width and Row Height
- Lesson 11: Inserting and Deleting Cells
- Lesson 12: Text and Cell Alignments
- Lesson 13: Formatting Numbers
- Lesson 14: Applying Font, Color and Borders to Cells
- Charting, Printing and Page Setup
- Lesson 15: Creating a Chart
- Lesson 16: Moving, Resizing, and Deleting Charts
- Lesson 17: Editing Charts
- Lesson 18: Formatting a Chart
- Lesson 19: Defining Page Setup Options
- Lesson 20: Print Management

Advanced Excel Topics

Lesson 1: Identifying basic parts of the Excel window

Excel 2003 is the spreadsheet software in the Microsoft 2003 Office Suite. It allows you to store, organize, and analyze numerical information.

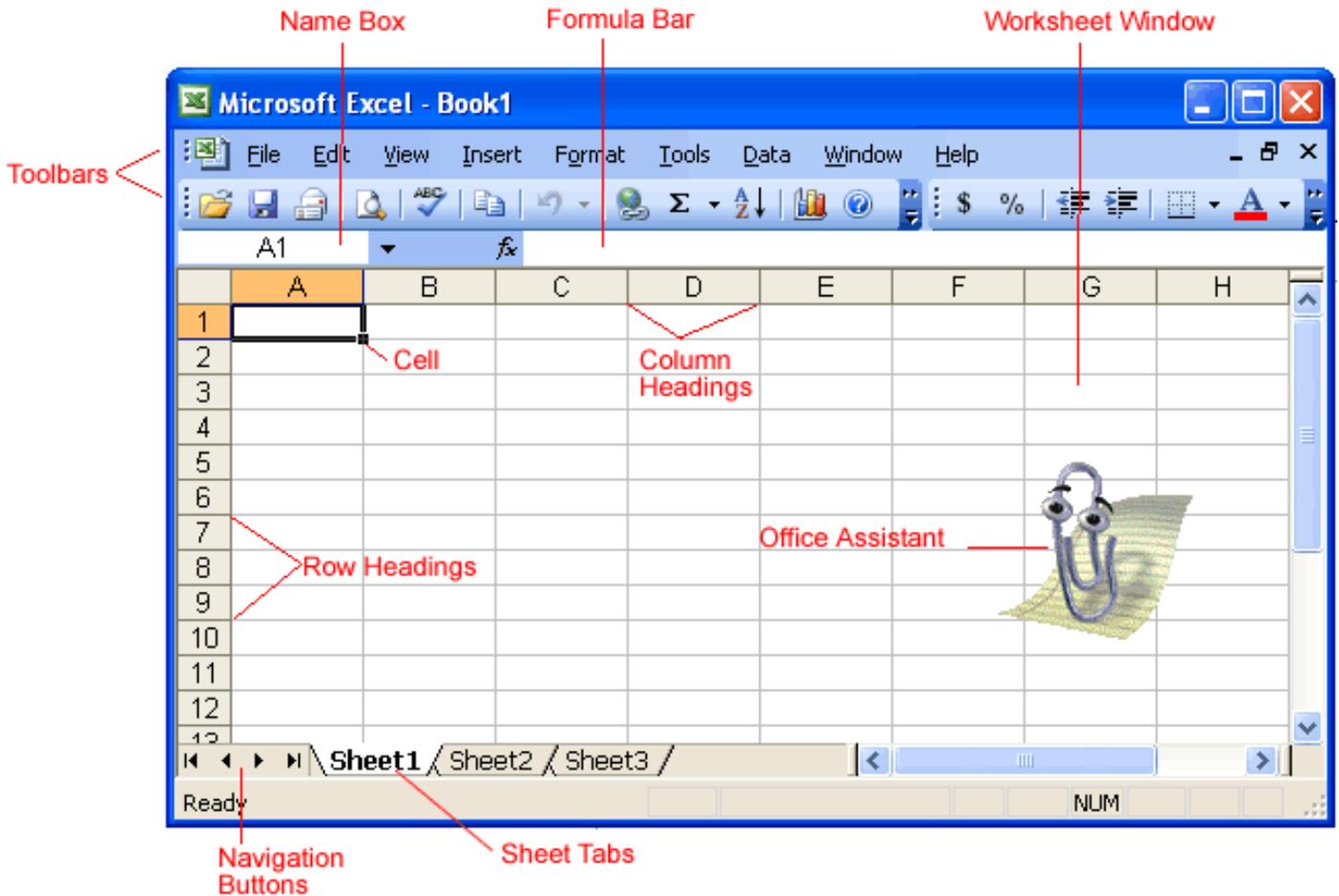
Microsoft Excel 2003 is a spreadsheet application in the Microsoft Office Suite. A spreadsheet is an accounting program for the computer. Spreadsheets are primarily used to work with numbers and text. Spreadsheets can help organize information, like alphabetizing a list of names or ordering records, or calculate and analyze information using mathematical formulas.

By the end of this lesson, students should be able to:

- Identify the parts of the Excel window
- Understand the differences between a Workbook and a Worksheet
- Understand a cell and its importance to Excel
- Move around a workbook

The Excel Window

Many items you see on the Excel 2003 screen are standard in most other Microsoft software programs like Word, PowerPoint and previous versions of Excel. Some elements are specific to this version of Excel.



Workbook

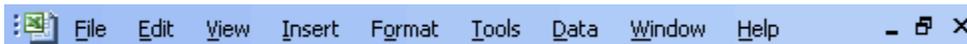
Also called a spreadsheet, the Workbook is a unique file created by Excel.

Title bar



The Title bar displays both the name of the application and the name of the spreadsheet.

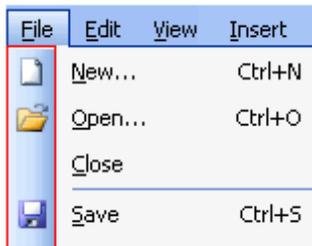
Menu bar



The Menu bar displays all the menus available for use in Excel 2003. The contents of any menu can be displayed by clicking on the menu name with the left mouse button.

Toolbar

Some commands in the menus have pictures or icons associated with them. These pictures may also appear as shortcuts in the Toolbar.

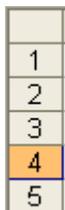


Column Headings



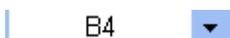
Each Excel spreadsheet contains 256 columns. Each column is named by a letter or combination of letters.

Row Headings



Each spreadsheet contains 65,536 rows. Each row is named by a number.

Name Box



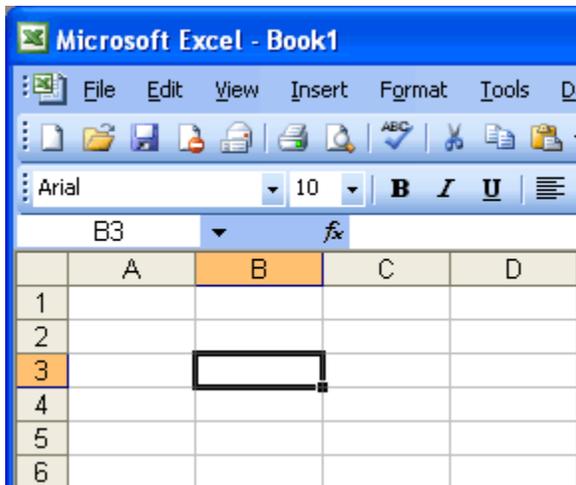
Shows the address of the current selection or active cell.

Formula Bar



Displays information entered-or being entered as you type-in the current or active cell. The contents of a cell can also be edited in the Formula bar.

Cell



A cell is an intersection of a column and row. Each cell has a unique cell address. In the picture above, the cell address of the selected cell is B3. The heavy border around the selected cell is called the cell pointer.

Navigation Buttons and Sheet Tabs



Navigation buttons allow you to move to another worksheet in an Excel workbook. Used to display the first, previous, next or last worksheets in the workbook.

Sheet tabs separate a workbook into specific worksheets. A Workbook defaults to three worksheets. A Workbook must contain at least one worksheet.

Workbooks and Worksheets

A Workbook automatically shows in the workspace when you open

Workbooks and Worksheets

A **Workbook** automatically shows in the workspace when you open Microsoft Excel 2003. Each workbook contains three **worksheets**. A worksheet is a grid of cells, consisting of 65,536 rows by 256 columns. Spreadsheet information--text, numbers or mathematical formulas--is entered in the different cells.

	A	B	C	D	E	F
1						
2						
3						
4						
5						

Column headings are referenced by alphabetic characters in the gray boxes that run across the Excel screen, beginning with the Column A and ending with Column IV.

Rows are referenced by numbers that appear on the left and then run down the Excel screen. The first row is named Row 1 and the last row is named 65536.

➤ Important Terms

- A **workbook** is made up of three worksheets.
- The worksheets are labeled **Sheet1**, **Sheet2**, and **Sheet3**.
- Each Excel worksheet is made up of columns and rows.
- In order to access a **worksheet**, click on the tab that says **Sheet#**.

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	A	B	C	D	E	F
1						
2						
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Moving around the worksheet

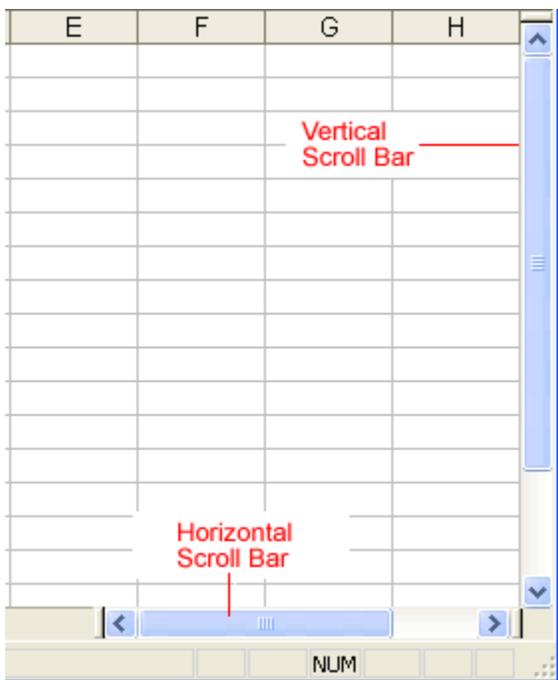
You can move around the spreadsheet in several different ways.

To Move the Cell Pointer:

- To activate any cell, point to a cell with the mouse and click.
- To move the pointer one cell to the left, right, up, or down, use the keyboard **arrow keys**.

To Scroll Through the worksheet:

The **vertical scroll bar** located along the right edge of the screen is used to move up or down the spreadsheet. The **horizontal scroll bar** located at the bottom of the screen is used to move left or right across the spreadsheet.



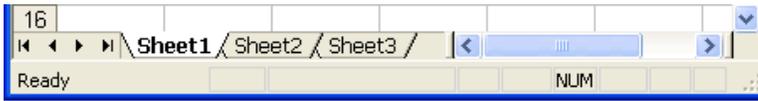
The **PageUp** and **PageDown** keys on the keyboard are used to move the cursor up or down one screen at a time. Other keys that move the active cell are **Home**, which moves to the first column on the current row, and **Ctrl+Home**, which moves the cursor to the top left corner of the spreadsheet or cell A1.

To Move between worksheets

As mentioned, each Workbook defaults to three worksheets. These worksheets are represented by tabs-named Sheet1, Sheet2 and Sheet3-that appear at the bottom of the Excel window.

To Move from one worksheet to another worksheet:

- Click on the sheet tab (Sheet1, Sheet2 or Sheet 3) that you want to display



Challenge!

- Display the contents of every menu in the menu bar and note the icons associated with specific menu choices.
- Try and find the matching pictures or shortcuts in the standard toolbar.
- Click on each of the three worksheet tabs -- Sheet1, Sheet2 and Sheet3 --to practice moving from sheet-to-sheet in the workbook.
- Practice scrolling in the worksheet by using the Page Up (PgUp) and Page Down (PgDn) keys.
- Use the horizontal and vertical scrollbars to practice scrolling up, down, left and right in the worksheet.

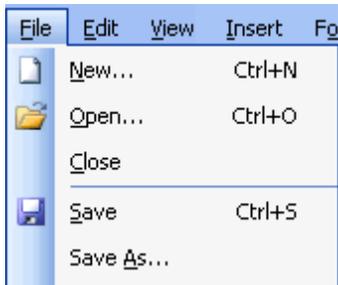
Lesson 2: Create, open and save workbooks

By the end of this lesson, learners should be able to:

- State the differences between New, Open, Close Save and Save As
- Create a workbook
- Save a workbook
- Open a workbook
- Close a workbook

Understanding File Terms

The File menu contains all the operations that we will discuss in this lesson: **New, Open, Close, Save and Save As.**



New

Used to create a new Workbook.

Open

Used to open an existing file from a floppy disk or hard drive of your computer.

Close

Used to close a spreadsheet.

Save As

Used when to save a new file for the first time or save an existing file with a different name.

Save

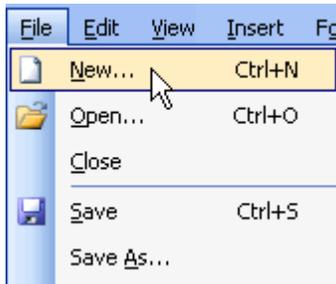
Used to save a file that has had changes made to it. If you close the workbook without saving then any changes made will be lost.

Creating a workbook

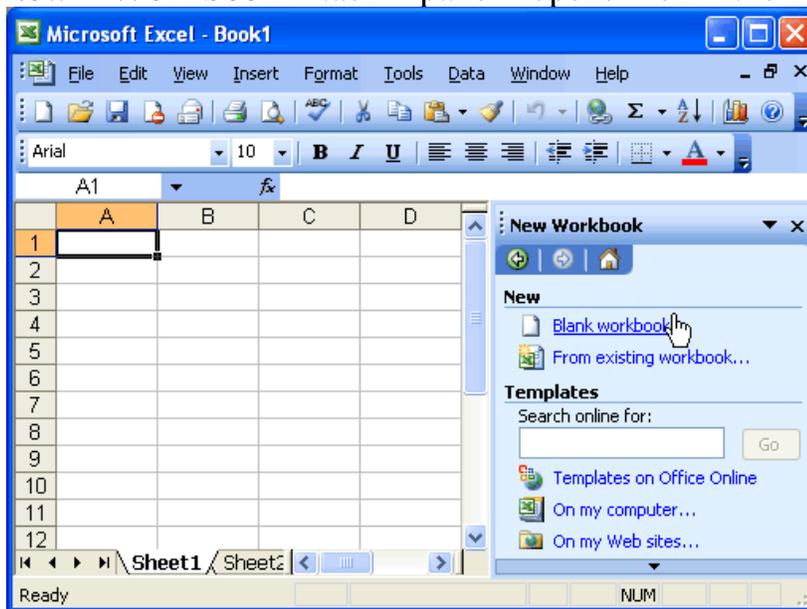
A blank workbook is displayed when Microsoft Excel is first opened. You can type information or design a layout directly in this blank workbook.

To Create an Excel Workbook:

- Choose **File** → **New** from the menu bar.



- The **New Workbook** task pane opens on the right side of the



screen.

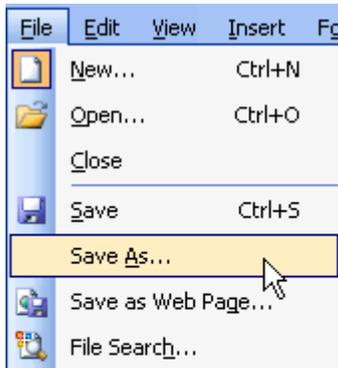
- Choose **Blank Workbook** under the **New** category heading.
- A blank workbook opens in the Excel window. The **New Workbook** task pane is closed.

Saving a workbook

Every workbook created in Excel must be saved and assigned a name to distinguish it from other workbooks. The first time you save a workbook, Excel will prompt you to assign a name through the **Save As** operation. Once assigned a name, any additional changes made to the text, numbers or formulas need to be saved using the **Save** operation.

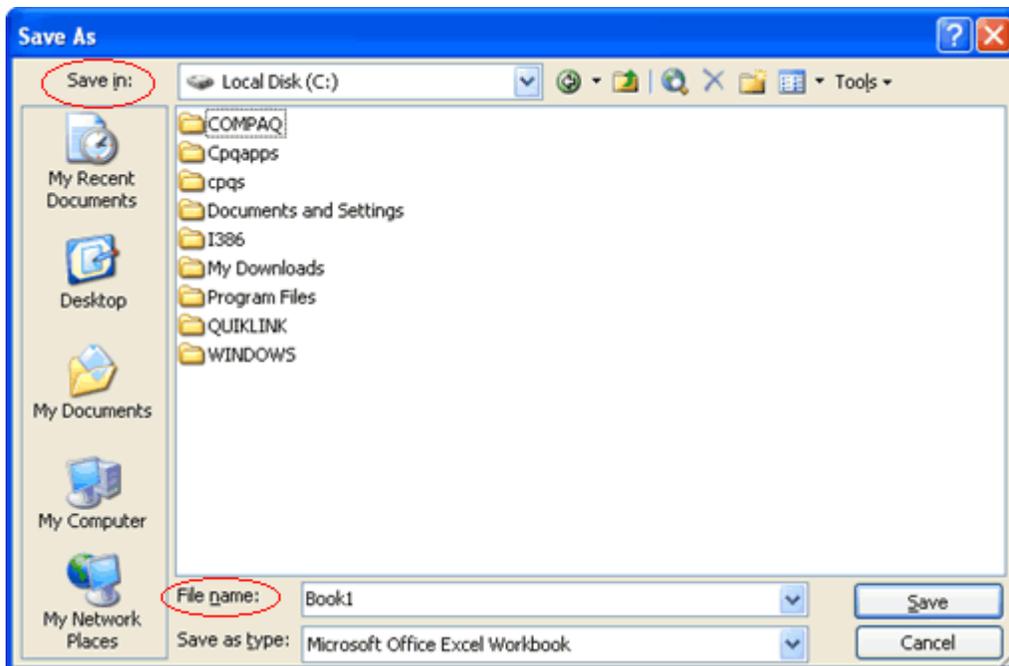
To Save a new Workbook:

- Choose **File** → **Save As** from the menu bar.



Choose the **Save As** command when saving an Excel file for the first time.

- The **Save As Dialog Box** appears.
- Click on the **Save In:** dropdown menu and locate where the file will be saved. Choose **3 1/2 Floppy (A:)** to save the file to a floppy disk or **Local Disk (C:)** to save the file to your computer.
- Type a name for your file in the **File Name:** box.
- Click the **Save** button.



To Save Changes Made to an Existing Workbook:

•Choose **File** → **Save** from the menu bar, or

Click the  Save button on the Standard toolbar.

✓ If you're saving the file for the first time and you do not choose a file name, Microsoft Excel will assign a file name for you.

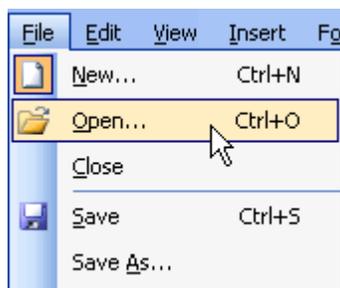
✓ It is a good idea to Save frequently when working in a spreadsheet. Losing information is never fun! You can quickly save your spreadsheet by using the quick-key combination Ctrl + S.

Opening a workbook

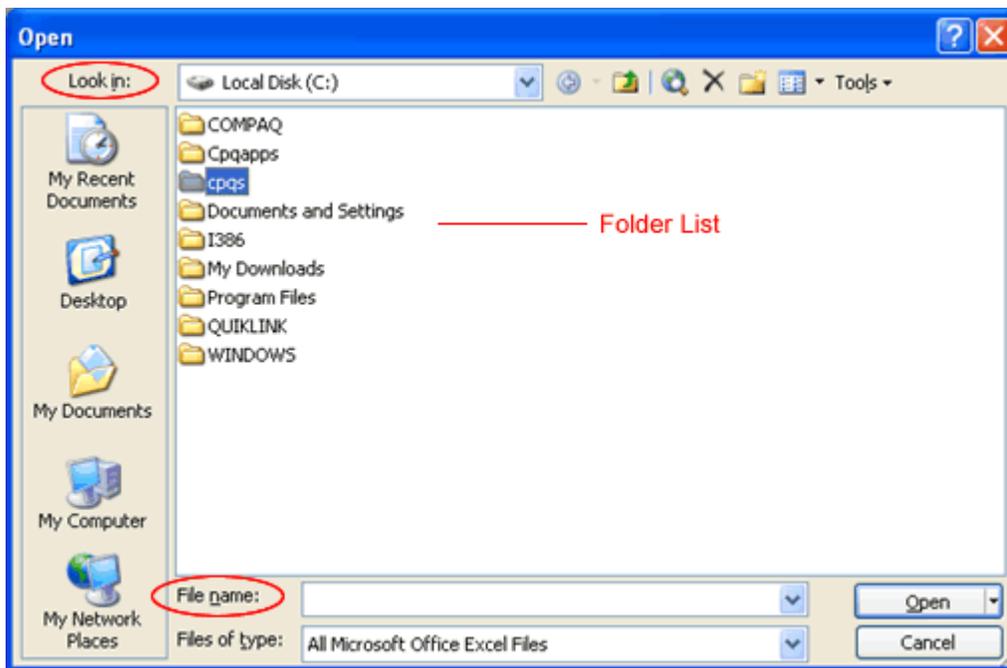
You can open any workbook that has previously been saved and given a name.

To Open an Existing Excel 2003 Workbook:

•Choose **File** → **Open** from the menu bar.



- The **Open** dialog box opens.

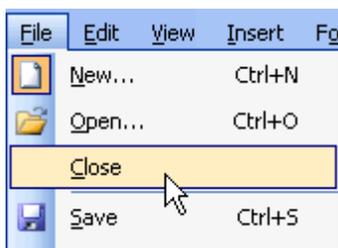


- In the **Look in** list, click the drive, folder, or Internet location that contains the file you want to open.
- In the **folder list**, open the folder that contains the file. Once the file is displayed, click on the file you want to open.
- Click the **Open** button.

Closing a Workbook

To close an existing Excel 2003 Workbook:

- Choose **File** → **Close** from the menu bar. The workbook in the Excel window is closed.



- ✓ Excel 2003 will prompt you to save information if any has been typed between the last save and the time you close the file.

Challenge!

In this challenge you will create a spreadsheet that allows you to track your monthly income and expenses. This file will be used in all of the remaining **Excel 2003 challenges**.

- Create a **new** blank file and save as **Monthly Budget**.
 - Close the blank file.
- ✓ **Important Reminder:** If you are using a public computer, such as one at a library or learning center, you may not be able to use the same computer each time. It is very important to understand the policies on saving documents to public computers. Some places do not allow you to use floppy disks due to the risk of computer viruses. Ask someone in charge of the public computers where you are. If you are unsure how you will keep a recent copy of the assignment, you can always email a copy of the document to yourself when you finish working on the document.

Lesson 3: Enter, edit and delete data

By the end of this lesson, learners should be able to:

- Enter text in a cell
- Edit information in a cell
- Delete information in a cell
- Select multiple cells

Entering Text in a Cell

You can enter three types of data in a cell: **text**, **numbers**, and **formulas**. Text is any entry that is not a number or formula. Numbers are values used when making calculations. Formulas are mathematical calculations.

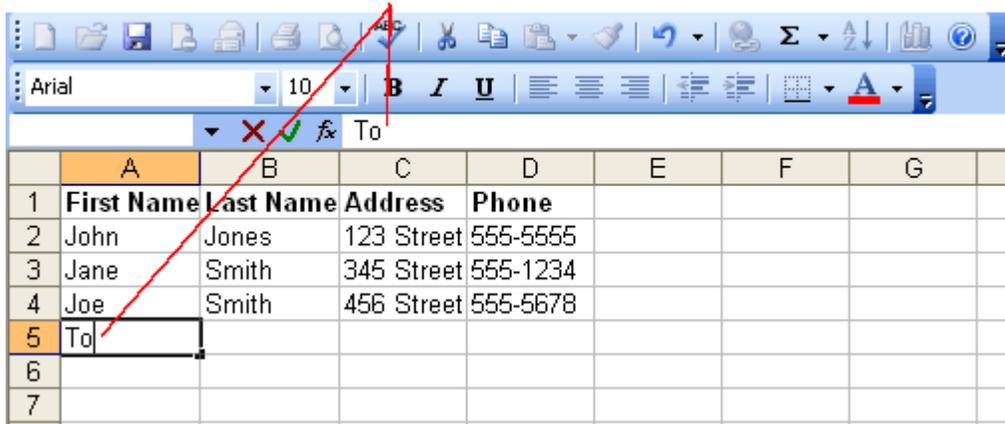
To Enter Data into a Cell:

- Click the cell where you want to type information.
- Type the data. An insertion point appears in the cell as the data is typed.

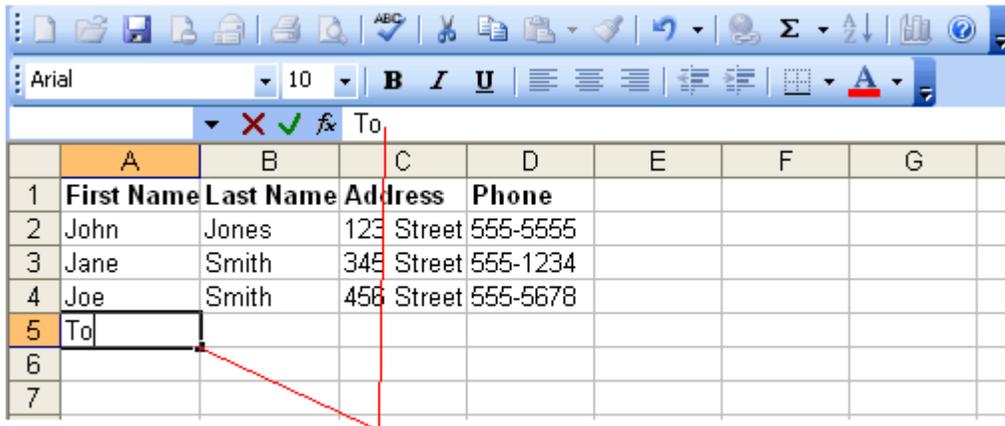
Sue	454 Street
To	555 Street
— Insertion point —	

- The data can be typed in either the cell or the Formula bar.

Text can be entered in the cell or in the Formula bar.

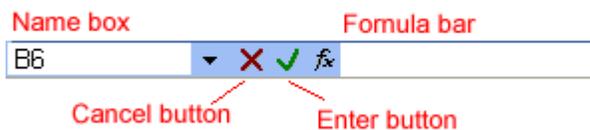


- Data being typed appears in the both **active cell** and in the **formula bar**.



Text appears in both active cell and in the Formula Bar as it is typed.

- Notice the **Cancel** and **Enter** buttons in the formula bar.



- Click the **Enter button**  to end the entry and turn off the formula bar buttons.

✓ Excel's **AutoComplete** feature keeps track of previously-entered text. If the first few characters you type in a cell match an existing entry in that column, Microsoft Excel fills in the remaining characters for you.

Editing Information in a Cell

Information in a spreadsheet is likely to change over time. Information can be changed in either of two ways.

Quick and Easy Method:

- Click the cell that contains the information to be changed.
- Type the new entry. The old entry is **replaced** by the new entry.

If the original entry is long and requires only a minor adjustment (in spelling, for example), then you can directly edit the information in the cell.

To Edit Information in a Cell:

Method 1: Direct Cell Editing

- **Double-click** on the cell that contains the information to be changed.
- The cell is opened for **direct editing**.

	A	B	C	D	
1	First Name	Last Name	Address	Phone	
2	John	Jones	123 Street	555-5555	
3	Jane	Smith	345 Street	555-1234	
4	Joe	Smith	456 Street	555-5678	

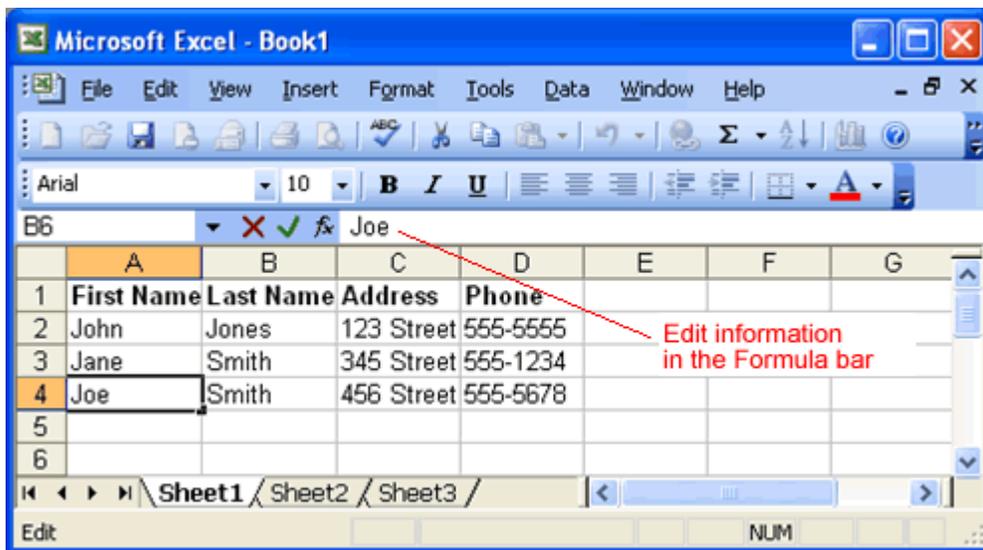
Double-click on the cell and edit information directly in the cell

- Make the necessary corrections.
- Press **Enter** or click the **Enter button** on the Formula bar  to complete the entry.

Method 2: Formula Bar Editing

- Click the cell that contains the information to be changed.

- Edit the entry in the formula bar.

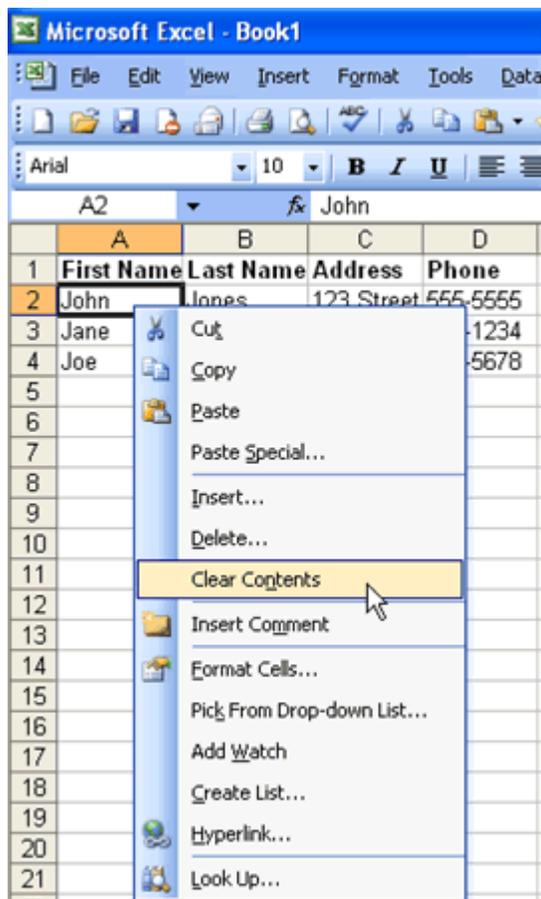


Deleting Information in a Cell

To Delete Data that Already Appears in a Cell:

- Click the cell that contains the information to be deleted.
- Press the **Delete** key, or

- **Right-click** and choose **Clear Contents** from the shortcut menu.



To Delete Data Being Typed But Not Yet Added to the Cell:

- Cancel an entry by pressing the **Escape** key.

Performing Undo and Redo

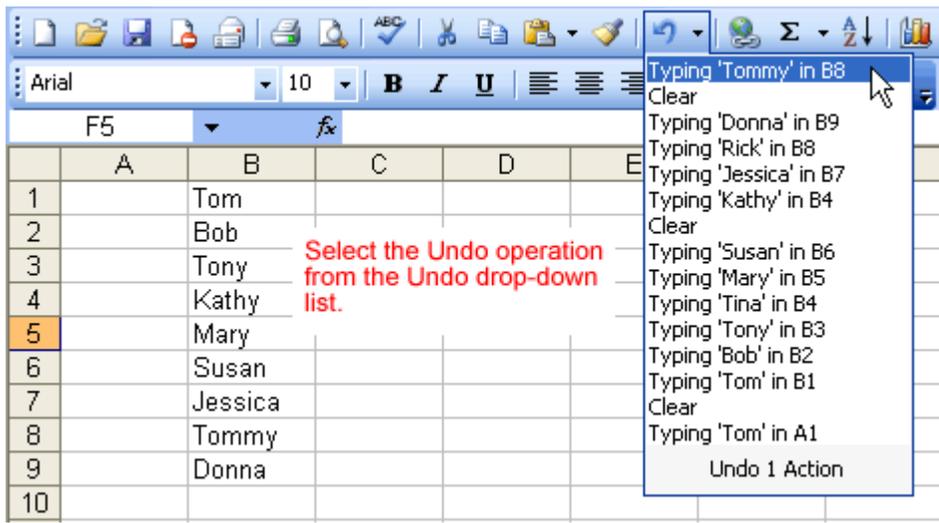
Sometimes, you might do something to a spreadsheet that you didn't mean to do, like type the wrong number in a cell. Excel 2003 allows you to undo an operation. Use the  **Undo** button on the Standard toolbar to recover an error. The last single action is recoverable.

To Undo Recent Actions (typing, formatting, etc), One at a Time:

- Click the  **Undo** button.

To Undo Several Recent Actions at Once:

- Click the arrow next to the **Undo** button.
- Select the desired Undo operation(s) from the list.



- Microsoft Excel reverses the selected action and all actions that appear in the list above it.

An **Undo** operation can be cancelled by applying a **Redo**. This is useful when an Undo operation was mistakenly applied. Remember, a Redo is possible only if you have not changed an Excel spreadsheet since the last Undo operation was completed:

To Redo an Undo Operation:

- Press the  Redo button.

To Redo several recent Undo actions at once:

- Click the arrow next to **Redo** button.
- Select the desired Redo operation from the list.
- Microsoft Excel reverses the Undo operation.

Selecting Multiple Cells

The currently-selected cell in Excel is called the **active cell**. You can also select a group of adjacent cells, or a **cell range**. Many operations can be done against a cell range: move it, copy, it, delete it or format it. A cell range can be defined in different ways: select a specific range of cells, select multiple columns or rows, or select the entire worksheet.

To Select a Range of Cells:

- Move to the **first cell** in the range.
- The mouse pointer becomes a **large cross**.
- Click-and-hold the left mouse button and **drag** left or right, up or down to the last cell you want to select.
- Release the mouse button.
- The cells you selected are shaded.

	A	B	C	D	E
1	First Name	Last Name	Address	Phone	
2	John	Jones	123 Street	555-5555	
3	Jane	Smith	345 Street	555-1234	
4	Joe	Smith	456 Street	555-5678	
5					
6					

To Select All Cells in a Column or Row:

- Click the gray **Column** heading to select the entire column. (Click and drag the cursor across other column headings to select those columns).

	A	B	C	D
1	First Name	Last Name	Address	Phone
2	John	Jones	123 Street	555-5555
3	Jane	Smith	345 Street	555-1234
4	Joe	Smith	456 Street	555-5678
5				
6				
7				

Click on the gray column heading to select the entire column.

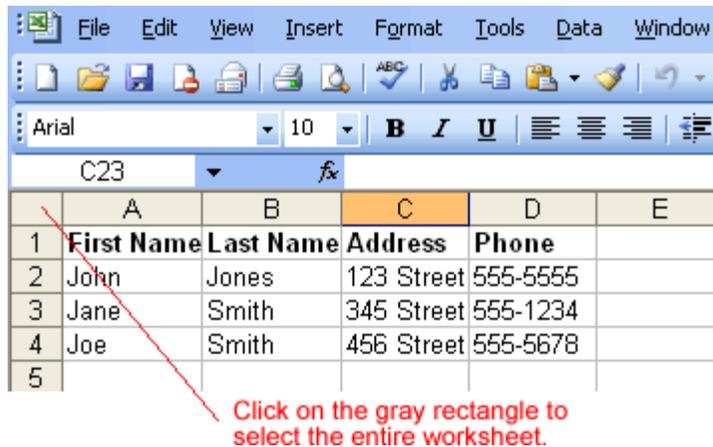
- Click the gray **Row** heading to select the entire row. (Click and drag the cursor down through the row headings to select those rows).

	A	B	C	D	E	F
1	First Name	Last Name	Address	Phone		
2	John	Jones	123 Street	555-5555		
3	Jane	Smith	345 Street	555-1234		
4	Joe	Smith	456 Street	555-5678		
5						

Click on the gray row heading to select the entire row.

To Select the Entire Worksheet:

- Click the **gray rectangle** in the upper left corner to select entire worksheet.



✓ If the cells and columns you want to select are not directly next to one another, select one of the ranges you want to select, and hold down the **Control key** while selecting other ranges.

	A	B	C	D
1	First Name	Last Name	Address	Phone
2	John	Jones	123 Street	555-5555
3	Jane	Smith	345 Street	555-1234
4	Joe	Smith	456 Street	555-5678
5				
6				
7				

Challenge!

- Open your **Monthly Budget** file.
- Type the following data in the spreadsheet:

In cell A1, type **Monthly Budget**.

In cell A2, type **Rent** or **Mortgage**.

In cell A3, type **Car Payment**.

In cell A4, type **Cable**.

In cell A5, type **Power**.

In cell A6, type **Phone**.

In cell A7, type **Insurance**.

In cell A8, type **Credit Cards**.

In cell A9, type **Groceries**.

In cell A10, type **Gas**.

- Type your other monthly bills in Column A, cells A11-A14 (if you have any).
- Type **Total Monthly Expenses** in cell A15.
- Type **Income** in cell A16.
- Type **Savings** in cell A17.

	A	B	C	D
1	Monthly Budget			
2	Rent			
3	Car Payment			
4	Cable			
5	Power			
6	Phone			
7	Insurance			
8	Credit Cards			
9	Groceries			
10	Gas			
11				
12				
13				
14				
15	Total Monthly Expenses			
16	Income			
17	Savings			
18				
19				

- Save and close the **Monthly Budget** file.

Lesson 4: Moving, Copying and Deleting Cell Contents

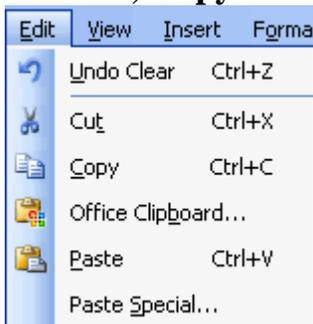
By the end of this lesson, learners should be able to:

- Copy and paste cell contents
- Cut and paste cell contents
- Move cell contents using drag-and-drop
- **Cut, copy, paste defined**
- **Cut, Copy** and **Paste** are very useful operations in Excel. You can quickly copy and/or cut information in cells (text, numbers or formulas) and paste them into other cells. These operations save you a lot of time from having to type and retype the same information.
- The **Cut, Copy** and **Paste** buttons are located on the Standard toolbar.

Cut, Copy, and Paste Buttons on the Standard Toolbar



- The **Cut, Copy** and **Paste** operations also appear as choices in the **Edit** menu:



- The **Cut, Copy** and **Paste** operations can also be performed through shortcut keys:

Cut	Ctrl+X
Copy	Ctrl+C
Paste	Ctrl+V

- To view all content, be sure [Adobe Flash Player](#) is installed.

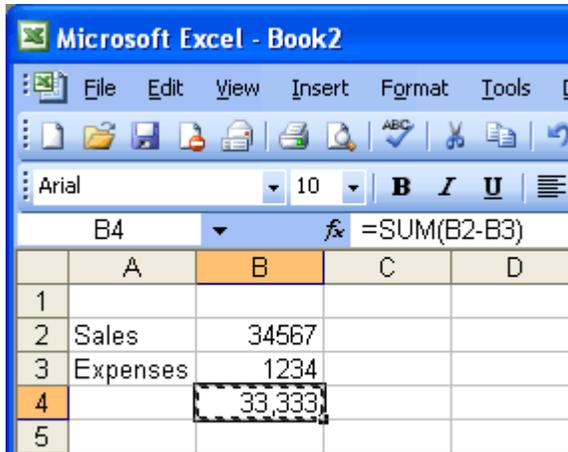
Copy and Paste Cell Contents

The **Copy** feature allows you to copy selected information from the spreadsheet and temporarily place it on the Clipboard, which is a temporary storage file in your

computer's memory. The **Paste** feature allows you to select any of the collected items on the Clipboard and paste it in a cell of the same or different spreadsheet.

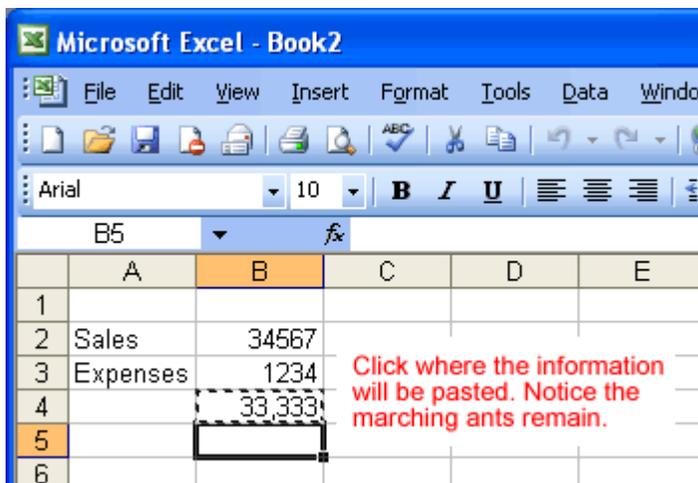
To Copy and Paste:

- Select a cell or cells to be duplicated.
- Click on the  **Copy button** on the **standard toolbar**.
- The border of the copied cell(s) takes on the appearance of marching ants.



Marching ants appear during the copy process

- Click on the cell where you want to place the duplicated information. The cell will be highlighted. If you are copying contents into **more than one cell**, click the **first cell** where you want to place the duplicated information.



- Press the **Enter** key. Your information is copied to the new location.

✓ Be careful if you paste copied cell information into cells that already contain data. If you do, the existing data is overwritten.

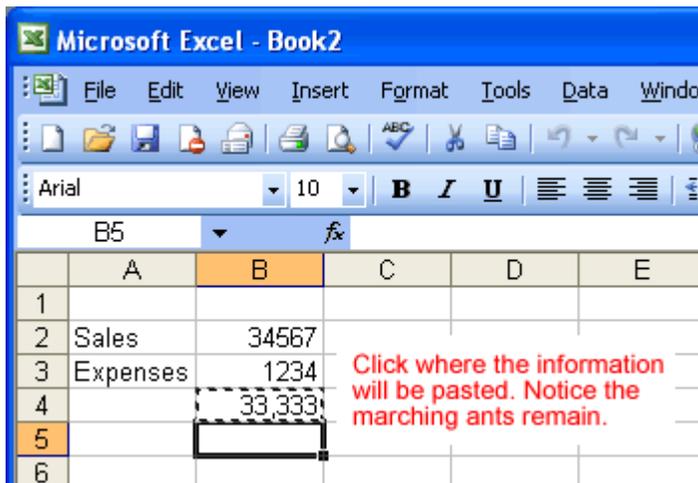
✓ You can copy information from many different sources including Web sites, emails or other Office applications like Word and PowerPoint and paste it into an Excel spreadsheet.

Cut and Paste Cell Contents

The **Cut** feature allows you to remove information from cells in the spreadsheet. Information that is cut can be pasted in another cell, as long as the pasting occurs before you perform another operation. If you don't paste the cut information immediately, it is removed from the Office clipboard.

To Cut and Paste:

- Select a cell or cells to be cut.
- Click on the **Cut**  button on the **Standard toolbar**.
- The information in the cell is deleted.
- The border of the cut cell(s) take on the appearance of marching ants.
- Click on the cell where you want to place the duplicated information. The cell will be highlighted. If you want to paste the contents into **more than one cell**, click the **first cell** where you want to place the duplicated information.



- Press the **Enter** key. Your information is pasted to the new location.

✓ You do not have to paste information that has been cut. You can use Cut to delete information from a cell.

Moving Information Using Drag-and-Drop

Another way to move information from one cell to another is to use the drag-and-drop method. You use the cursor to point to the information to be moved and then drag the cell to its new location.

To Use Drag and Drop:

- Highlight and select the cell(s) you want to **move** to a new location.
- Position the mouse pointer near one of the **outside edges** of the selected cell(s). The mouse pointer changes from a large, white cross and becomes a slender, black cross with arrows at all ends.

	A	B	C
1			
2	Savings	245	
3			
4	Large, white cross		
5			

	A	B	C
1			
2	Savings	245	
3			
4	Slender, black cross with arrows at all ends		
5			

- Keep the mouse pointer on the **outer edge** of the selected cell, click and hold the left mouse button and **drag** the cell(s) to a new location.

	A	B	C	D	E
1					
2	Savings	245			
3					
4					
5					
6					
7					

A dotted rectangular box is drawn around cells C5 and D5, with a mouse cursor pointing to the bottom edge of the box. A small box labeled "C5:D5" is positioned below the dotted box.

- Release the mouse button to move the information to its new location.

Challenge!

- Open your **Monthly Budget** file.
- Move the word **Insurance** from cell A7 to A4 and the word **Cable** from A4 to A7 using the **cut, copy, and paste**, and **drag and drop** features you learned in this lesson.
- Type **January** in C1.
- Type the corresponding amounts for your monthly expenses and income in Column C.
 - In cell C2, type your **rent/mortgage** bill amount.

- In cell C3, type your **Car Payment** amount.
- In cell C4, type your **Insurance** bill amount.
- In cell C5, type your **Power** bill amount.
- In cell C6, type your **Phone** bill amount.
- In cell C7, type your **Cable** bill amount.
- In cell C8, type your **Credit Card** bill amount.
- In cell C9, type your **Grocery/Food** bill estimate.
- In cell C10, type your **Gas** bill estimate.
- In cells C11 - C14, type the amount of any additional bills you have listed.
- In cell C16, type your **Income**.

	A	B	C	D
1	Monthly Budget		January	
2	Rent		400	
3	Car Payment		150	
4	Insurance		44	
5	Power		65	
6	Phone		50	
7	Cable		85	
8	Credit Cards		0	
9	Groceries		200	
10	Gas		100	
11				
12				
13				
14				
15	Total Monthly Expenses			
16	Income		2400	
17	Savings			
18				

- Save and close the **Monthly Budget** file.

Note: Be sure to leave cells C15 and C17 blank.

Lesson 5: Creating Simple Formulas

By the end of this lesson, learners should be able to:

- Understand the parts of an Excel formula
- Create a simple addition formula
- Create a simple subtraction formula using the Point-and-Click Method
- Create simple multiplication formulas
- Create simple division formulas
- **About Formulas**
- In school, you learned formulas used to calculate math problems. Microsoft Excel uses these same **formulas** to perform calculations in a spreadsheet.
- A formula can be a combination of values (numbers or cell references) and math operators (+, -, /, *, =) into an algebraic expression. Excel requires every formula to begin with an equal sign (=).
- The following table illustrates the mathematical operators learned in school and those represented in Excel 2003.

	School	Excel 2003
Addition	+	+
Subtraction	-	-
Multiplication	X	*
Division	/	/
Equals	=	=

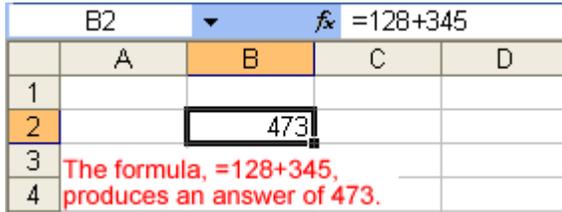
- The result of a formula-the answer to 2+3, for example-displays in the cell on the Excel worksheet. The formula is visible only in the formula bar. A formula's result will change as different numbers are entered into the cells included in the formula's definition.



Creating a Simple Addition Formula

A simple formula in Excel contains one mathematical operation only: one number plus a second number equals a third number. Writing a simple formula is really no more difficult than that: 1+1. The only difference in Excel is that all formulas **must** begin with the **equal sign** (=). It is not enough to type 1+1 in Excel because what will appear in the cell is "1+1." You must begin the equation with an equal sign, or =1+1. This holds true for any formula, simple or complicated, that adds, subtracts, multiplies or divides.

Let's add two numbers to create a third, $128+345=473$. In Excel, this would be expressed by the formula, **=128+345**, as shown below.



	A	B	C	D
1				
2		473		
3	The formula, =128+345, produces an answer of 473.			
4				

To Create a Simple Formula that Adds Two Numbers:

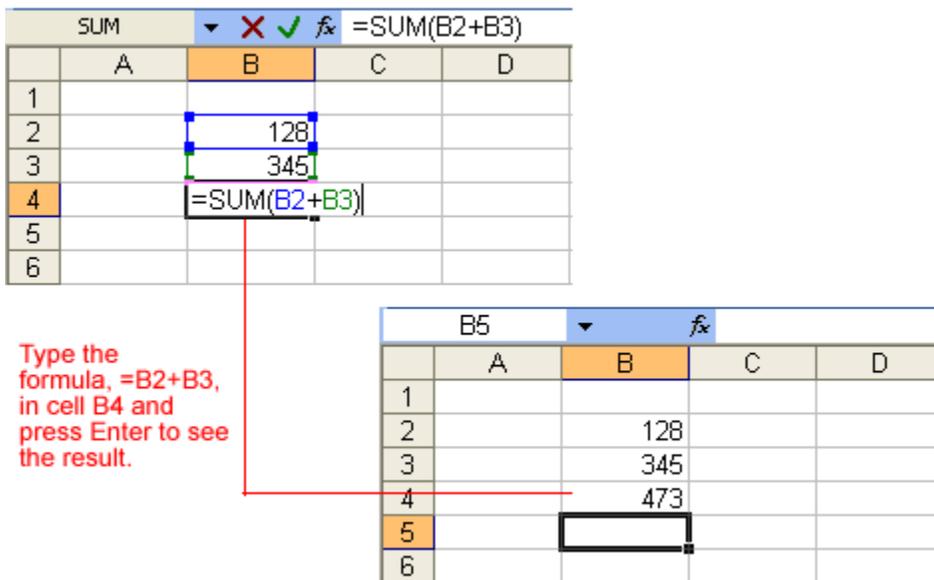
- Click the cell where the formula will be defined.
- Type the equal sign (=) to let Excel know a formula is being defined.
- Type the first number to be added (128, for example)
- Type the **addition sign** (+) to let Excel know that an add operation is to be performed.
- Type the second number to be added (345, for example)
- Press **Enter** or click the **Enter button** on the Formula bar to complete the formula.

Creating a Simple Addition Formula (continued)

But what if a column contains many numbers, each of which regularly changes? You don't want to write a new formula each time a number is changed. Luckily, Excel 2003 lets you include cell references in formulas.

A formula can add the value of two cells-B2 and B3, for example. Type any two values in these two cells and the formula will adjust the answer accordingly.

Using this method to calculate two numbers-128 and 345, for example-requires that you type 128 in cell B2, for example, and 345 in cell B3. The Excel formula, **=B2+B3**, would then be defined in cell B4.

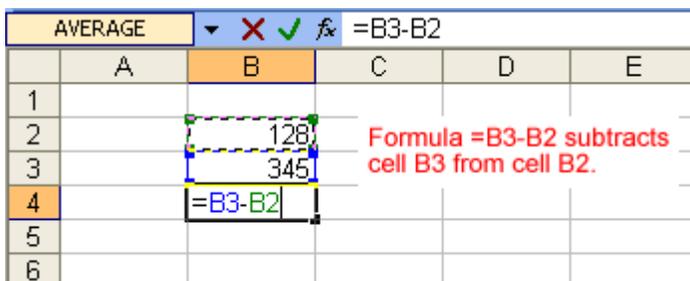


To Create a Simple Formula that Adds the Contents of Two Cells:

- Type the numbers you want to calculate in separate cells (for example, type 128 in cell B2 and 345 in cell B3).
- Click the cell where the answer will appear (B4, for example).
- Type the equal sign (=) to let Excel know a formula is being defined.
- Type the cell number that contains the first number to be added (B2, for example).
- Type the **addition sign** (+) to let Excel know that an add operation is to be performed.
- Type the cell number that contains the first number to be added (B3, for example).
- Press **Enter** or click the **Enter button** on the Formula bar to complete the formula.

Creating a Simple Subtraction Formula Using the Point-and-Click Method

Formulas can be created by using either numbers or cell references in the definition. You can also use the mouse to select the cells to be used in the formula instead of typing the cell number or cell reference. Using this method, we are going to write a simple formula that subtracts one cell from another: `=B3-B2`.



To Create a Simple Formula using the Point and Click Method:

- Type the numbers you want to calculate in separate cells (for example, type 128 in cell B2 and 345 in cell B3).
- Click the cell where the answer will appear (B4, for example).
- Type the equal sign (=) to let Excel know a formula is being defined.
- Click on the **first cell** to be included in the formula (B3, for example).
- Type the **subtraction sign (-)** to let Excel know that a subtraction operation is to be performed.
- Click on the **next cell** in the formula (B2, for example).
- If you include multiple cells in the formula, repeat steps 4 and 5 until the entire formula is entered.
- Press **Enter** or click the **Enter button** on the Formula bar to complete the formula.

Creating Simple Multiplication Formulas

Creating multiplication formulas is very similar to addition and subtraction formulas. To **multiply** two cells the formula, B2 and B3, you would need to insert a multiplication operator * between them, **=B2*B3**.

	A	B	C	D	E
1					
2		128			
3		345			
4		=B2*B3			
5					
6					

Formula =B2*B3 multiplies cell B2 by the cell B3

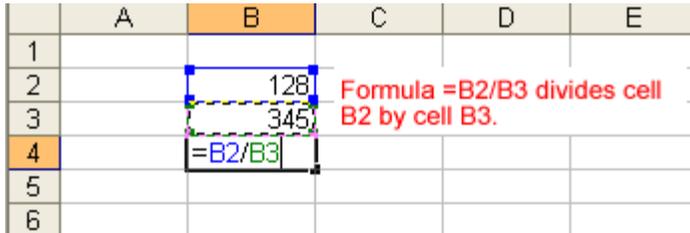
To Create a Simple Formula that Multiplies the Contents of Two Cells:

- Type the numbers you want to calculate in separate cells (for example, type 128 in cell B2 and 345 in cell B3).
- Click the cell where the answer will appear (B4, for example).
- Type =
- Click on the **first cell** to be included in the formula (B2, for example).
- Type a **mathematical operator** (Ex: the multiplication symbol *). The operator displays in the cell and Formula bar.
- Click on the **next cell** in the formula (B3, for example).
- If you include multiple cells in the formula, repeat steps 4 and 5 until the entire formula is entered.
- Press **Enter** or click the **Enter button** on the Formula bar to complete the formula.

Creating Simple Division Formulas

Creating division formulas is very similar to the addition, subtraction and multiplication formulas. To **divide** the contents of cell B2 by cell B3, you would need to insert a division operator / between them, =B2/B3.

To Create a Simple Formula that Divides One Cell by Another:



	A	B	C	D	E
1					
2		128			
3		345			
4		=B2/B3			
5					
6					

- Type the numbers you want to calculate in separate cells (for example, type 128 in cell B2 and 345 in cell B3).
- Click the cell where the answer will appear (B4, for example).
- Type the equal sign (=) to let Excel know a formula is being defined.
- Click on the **first cell** to be included in the formula (B2, for example).
- Type a **mathematical operator** (Ex: the division symbol /). The operator displays in the cell and Formula bar.
- Click on the **next cell** in the formula (B3, for example).
- If you include multiple cells in the formula, repeat steps 4 and 5 until the entire formula is entered.
- **Very Important:** Press **Enter** or click the **Enter button** on the Formula bar. This step ends the formula.

Challenge!

- Open your **Monthly Budget** file.
- Add cells C2 through C10 using a handheld calculator, the calculator on your computer, or pencil and paper.
 - If you included additional monthly bills in cells C11 through 14, add cells C2 through C14 together to get your total monthly expenses.

	A	B	C	D
1	Monthly Budget		January	
2	Rent		400	
3	Car Payment		150	
4	Insurance		44	
5	Power		65	
6	Phone		50	
7	Cable		85	
8	Credit Cards		0	
9	Groceries		200	
10	Gas		100	
11	Add the expenses in C2 through C10 together. If you included extra expenses in C11 through C14, add ALL of these expenses together.			
12				
13				
14				
15	Total Monthly Expenses			
16	Income		2400	
17	Savings			
18				

How long did it take you to add all those numbers? Well, in the next three modules you will learn how Excel can do the math for you!

- Type the total you came up with in cell C15.
- Type a subtraction formula in C17 that subtracts the amount in C15 from the amount in C16.
- Save and close the **Monthly Budget** file.

Lesson 6: Creating Complex Formulas

By the end of this lesson, learners should be able to:

- Create complex formulas
- Fill a formula to another cell
- Copy and paste a formula to another cell
- Revise a formula
- Create an absolute reference

Complex Formulas Defined

Simple formulas have one mathematical operation. **Complex formulas** involve more than one mathematical operation.

The order of mathematical operations is very important. If you enter a formula that contains several operations--like adding, subtracting and dividing--Excel 2003 knows to work those operations in a specific order. The order of operations is:

1. Operations enclosed in parenthesis
2. Exponential calculations (to the power of)
3. Multiplication and division, whichever comes first
4. Addition and subtraction, whichever comes first

Using this order, let us see how the formula **120/(8-5)*4-2** is calculated in the following picture:

$$120/(8-5)*4-2$$

Perform the operation in parentheses first: $8-5=3$

formula becomes

$$120/3*4-2$$

Because the division comes before the multiplication, divide $120/3=40$

formula becomes

$$40*4-2$$

Next, the multiplication takes place before the subtraction: $40*4=160$

formula becomes

$$160-2$$

Finally, $160-2=158$

The final answer is 158

Let's take a look at another example:

$$2*(6-4) = ?$$

Is the answer 8 or 4? Well, if you ignored the parentheses and calculated in the order in which the numbers appear, $2*6-4$, you'd get the wrong answer, 8. You must follow the order of operations to get the correct answer.

To Calculate the Correct Answer:

- Calculate the operation in parenthesis (6-4), where the answer is 2.
- Multiply the answer obtained in step #1, which is 2, to the numeric 2* that opened the equation. In other words, multiply $2*2$.
- The answer is 4.

✓ When using **formulas** with cell references, the results change each time the numbers are **edited**.

✓ Remember: In Excel, never do math "in your head" and type the answer in a cell where you would expect to have a formula calculate the answer.

Complex Formulas Defined (continued)

Before moving on, let's explore some more formulas to make sure you understand the order of operations by which Excel calculates the answer.

5*3/2 Multiply 5*3 before performing the division operation because the multiplication sign comes before the division sign. The answer is **7.5**.

5/3*2 Divide 5/3 before performing the multiplication operation because the division sign comes before the multiplication sign. The answer is **3.333333**.

5/(3*2) Perform the operation in parentheses (3*2) first and divide 5 by this result. The answer is **0.833333**.

5+3-2 Add 5+3 before performing the subtraction operation because the addition sign comes before the subtraction sign. The answer is **6**.

5-2+3 Subtract 5-2 before performing the addition operation because the subtraction sign comes before the addition sign. The answer is **6**.

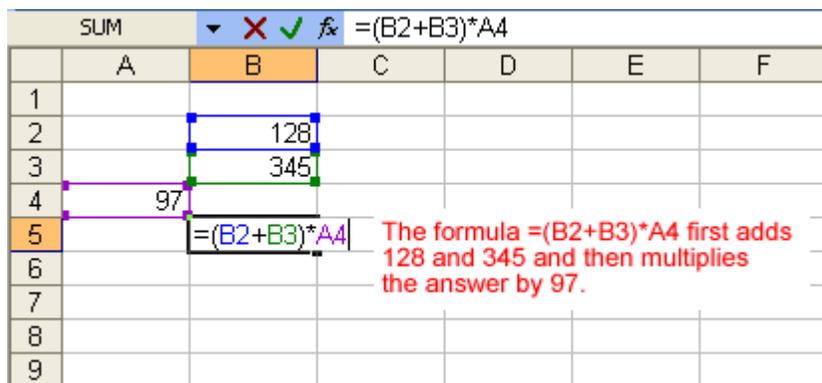
5-2*3 Multiply 2*3 before performing the subtraction operation because the multiplication sign is of a higher order than the subtraction sign. The answer is **-1**.

(5-2)*3 Perform the operation in parenthesis (5-2) first and then multiply by 3. The answer is **9**.

Creating Complex Formulas

Excel 2003 automatically follows a standard order of operations in a complex formula. If you want a certain portion of the formula to be calculated first, put it in parentheses.

If we wanted to add the contents of cell B2 and cell B3, for example, and then take that answer and multiply it by the data in cell A4, then we would need to define the following formula: **=(B2+B3)*A4**.



	A	B	C	D	E	F
1						
2		128				
3		345				
4	97					
5		= (B2+B3)*A4				
6						
7						
8						
9						

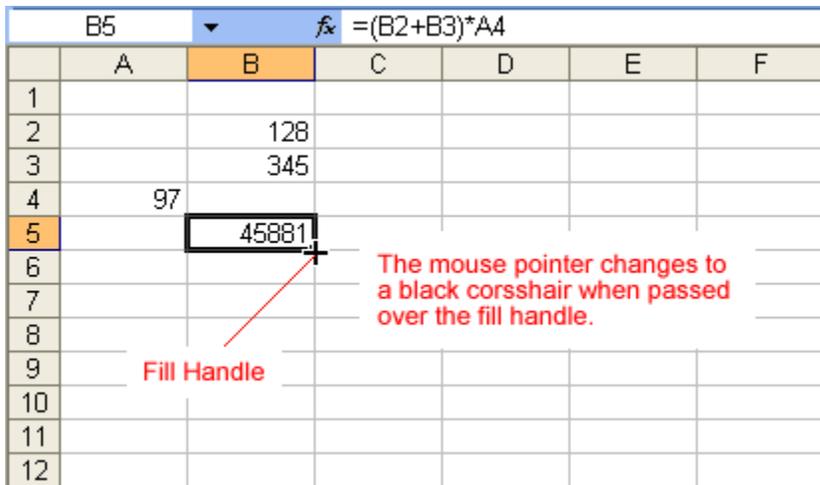
- Enter the numbers you want to calculate.
- Click the cell where you want the formula **result** to appear.
- Type the equal sign (=) to let Excel know a formula is being defined.
- Type an open parenthesis, or (
- Click on the **first cell** to be included in the formula (cell B2, for example).
- Type the **addition sign** (+) to let Excel know that an add operation is to be performed.
- Click on the **second cell** in the formula. The reference B3 displays where you want your result.
- End the B2+B3 operation by adding the close parenthesis, or)
- Type the next mathematical operator, or the **multiplication symbol** (*) to let Excel know that an multiply operation is to be performed.
- Click on the **third cell** to be included in the formula, cell A4.
- **Very Important:** Press **Enter** or click the **Enter button**  on the Formula bar. This step ends the formula.

✓ Try changing one of the values in the formula and watch the answer to the formula change.

Filling Formulas to Other Cells

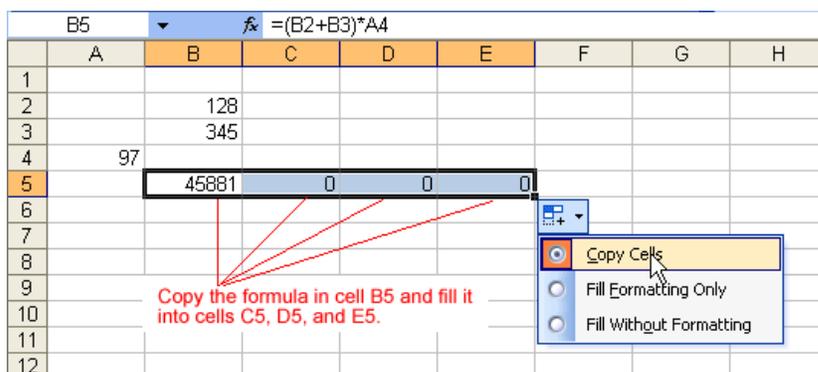
Sometimes, you will write a formula that gets used a lot in different places of a worksheet. For example, a spreadsheet may contain several columns of numbers. Each column will contain a formula that adds all the numbers in it. You could write the formula several times, once in each column. Or you could copy-and-paste it into each column. The **fill formula** method allows you to copy a formula and fill it into many different consecutive cells at the same time.

The mouse pointer changes to a black crosshair when passed over the fill handle, or the square box in the lower right corner of the cell.



To Use the Fill Handle to Copy a Formula to a Surrounding Cell:

- Click on the cell that contains the formula to be copied.
- Position the mouse pointer over the fill handle.
- Click and hold the left mouse button, and then drag the contents to the cell that's to receive the fill formula.
- Release the mouse button.
- Select the **Copy Cells** option in the fill formula drop-down menu.



The cell references in a formula are automatically updated when the formula is copied to other cells in the spreadsheet.

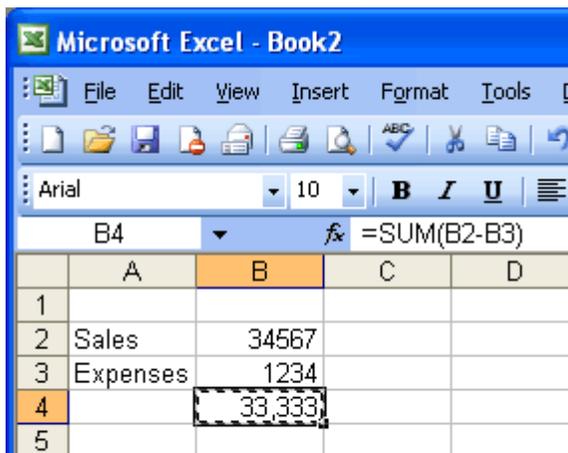
✓ You can also use **copy and paste** to copy a formula to other cells. Click next to learn more about the copy and paste method.

Copy and Paste Formulas

The process to copy and paste a formula is identical to that process used to copy and paste text.

To Copy and Paste a Formula:

- Select the cell that contains the formula to be copied.
- Click the  **Copy** button. Marching "ants" appear around the copied cell(s).



Marching ants appear during the copy process

- Select the cell where the copied formula is to be pasted.
- Press the **Enter** key. The formula is copied to the new location.

Revising Formulas

You can **revise** any formula that was previously written in a worksheet.

To Revise a Formula using the Keyboard:

- Double-click the cell that contains the formula you want to revise.
- The cursor can now move left and right between the values in the formula in cell B5.

SUM		=B2+B3		
	A	B	C	D
1				
2	Sales	34,567.00		
3	Expenses	1,234.00	35,124.00	
4				
5		=B2+B3		
6				
7				
8				
9				
10				
11				

To replace cell B2 with cell C3 in your formula, type C3 where B2 appears and then delete B2.

- Make the necessary changes to the formula.
- Press the Enter key or click the Enter button to accept the new formula.

Creating an Absolute Reference

In earlier lessons we saw how cell references in formulas automatically adjust to new locations when the formula is pasted into different cells.

Sometimes, when you copy and paste a formula, you don't want one or more cell references to change. **Absolute reference** solves this problem. Absolute cell references in a formula always refer to the same cell or cell range in a formula. If a formula is copied to a different location, the absolute reference remains the same.

An absolute reference is designated in the formula by the addition of a dollar sign (\$). It can precede the column reference or the row reference, or both. Examples of absolute referencing include:

- \$A\$2 The column and the row do not change when copied.
- A\$2 The row does not change when copied.
- \$A2 The column does not change when copied.

To Create an Absolute Reference:

- Enter the numbers you want to calculate (e.g., 34,567 in cell B2 and 1,234 in cell B3).

- Then, create a simple formula (=B2+B3).

B5		fx =B2+B3			
	A	B	C	D	E
1					
2	Sales	34,567.00		45,234.00	
3	Expenses	1,234.00		21,543.00	
4					
5		35,801.00			
6					
7					

- To create an absolute reference in the formula just created, insert a \$ value before the B (column reference) and 2 (row reference) in the reference to B2 so the new formula reads, (=\$B\$2+B3)

SUM		fx = \$B\$2+B3			
	A	B	C	D	E
1					
2	Sales	34,567.00		45,234.00	
3	Expenses	1,234.00		21,543.00	
4					
5		= \$B\$2+B3			
6					
7					
8					
9					
10					

Insert a \$ value before the B and 2 to create an absolute column reference (\$B) and absolute row reference (\$2).

- Copy and Paste the formula to another adjacent cell. The formula now includes an absolute reference to B2, (=\$B\$2+D3).

D5		fx = \$B\$2+D3			
	A	B	C	D	E
1					
2	Sales	34,567.00		45,234.00	
3	Expenses	1,234.00		21,543.00	
4					
5		35,801.00		56,110.00	
6					
7					
8					
9					
10					
11					
12					

The pasted cell retains the absolute reference to cell \$B\$2 while the second reference has changed from B3 to D3.

- Challenge!

- • Open your **Monthly Budget** spreadsheet.
- • Fill the formula defined in cell C17 to D17 through N17.
- • Type **Percent Saved** in A18.
- • Write a formula in C18 that divides your monthly Savings amount (C17) by your monthly Income (C16).
- • Save and close the **Monthly Budget** spreadsheet.

Lesson 7: Using functions

By the end of this lesson, learners should be able to:

- Understand definition of a function
- Use Excel 2003 functions in calculations
- Access Excel 2003 functions
- Find the sum of a range of data

Using Functions

A **function** is a **pre-defined formula** that helps perform common mathematical functions. Functions save you the time of writing lengthy formulas. You could use an Excel function called **Average**, for example, to quickly find the average of range of numbers. Or you could use the **Sum** function to find the sum of a cell range. Excel 2003 contains many different functions.

Each function has a specific order, called **syntax**, which must be strictly followed for the function to work correctly.

Syntax Order:

1. All functions begin with the = sign.
2. After the = sign define the **function name** (e.g., Sum).
3. One or more **arguments**-numbers, text or cell references-enclosed by parentheses. If there is more than one argument, separate each by a comma.

An example of a function with one argument that adds a range of cells, B3 through B10:

=SUM(B3:B10)

equal sign function name argument

An example of a function with **more than one argument** that calculates the average of numbers in a range of cells, B3 through B10, and C3 through C10:

=AVG(B3:B10, C3:C10)

equal sign function name argument

Excel literally has hundreds of different **functions** to assist with your calculations. Building formulas can be difficult and time-consuming. Excel's functions can save you a lot of time and headaches.

Excel's Different Functions

There are many different functions in Excel 2003. Some of the more common functions include:

Statistical Functions:

- **SUM** - summation adds a range of cells together.
- **AVERAGE** - average calculates the average of a range of cells.
- **COUNT** - counts the number of chosen data in a range of cells.
- **MAX** - identifies the largest number in a range of cells.
- **MIN** - identifies the smallest number in a range of cells.

Financial Functions:

- **Interest Rates**
- **Loan Payments**
- **Depreciation Amounts**

Date and Time functions:

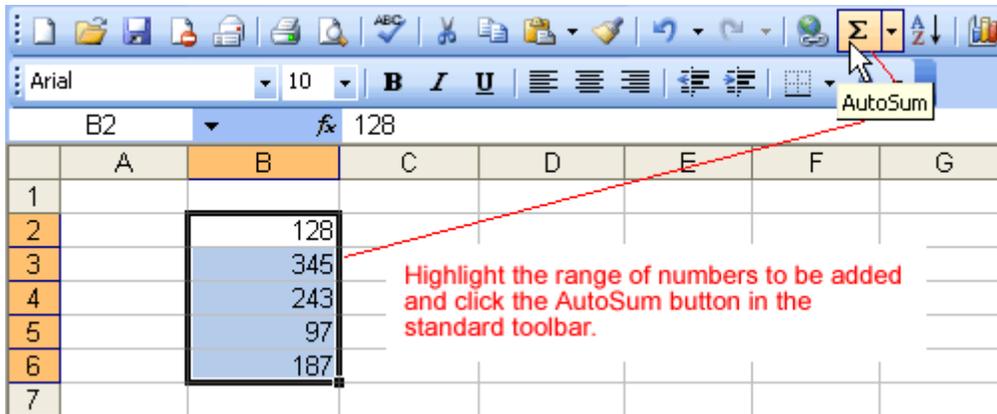
- **DATE** - Converts a serial number to a day of the month
- **Day of Week**
- **DAYS360** - Calculates the number of days between two dates based on a 360-day year
- **TIME** - Returns the serial number of a particular time
- **HOURL** - Converts a serial number to an hour
- **MINUTE** - Converts a serial number to a minute
- **TODAY** - Returns the serial number of today's date
- **MONTH** - Converts a serial number to a month

- **YEAR** - Converts a serial number to a year

✓ You don't have to memorize the functions but should have an idea of what each can do for you.

Finding the Sum of a Range of Data

The **AutoSum** function allows you to create a formula that includes a cell range-many cells in a column, for example, or many cells in a row.



To Calculate the AutoSum of a Range of Data:

- Type the numbers to be included in the formula in separate cells of column B (Ex: type 128 in cell B2, 345 in cell B3, 243 in cell B4, 97 in cell B5 and 187 cell B6).
- Click on the **first cell** (B2) to be included in the formula.
- Using the point-click-drag method, drag the mouse to define a cell range from cell B2 through cell B6.
- On the **Standard** toolbar, click the **Sum** button.
- The sum of the numbers is added to cell B7, or the cell immediately beneath the defined range of numbers.
- Notice the formula, **=SUM(B2:B6)**, has been defined to cell B7.

	A	B	C	D	E
1					
2		128			
3		345			
4		243			
5		97			
6		187			
7		1000			
8					

The AutoSum of cells B2 through B6 is added to cell B7. Notice the formula, =SUM(B2:B6), defined in cell B7.

Finding the Average of a Range of Numbers

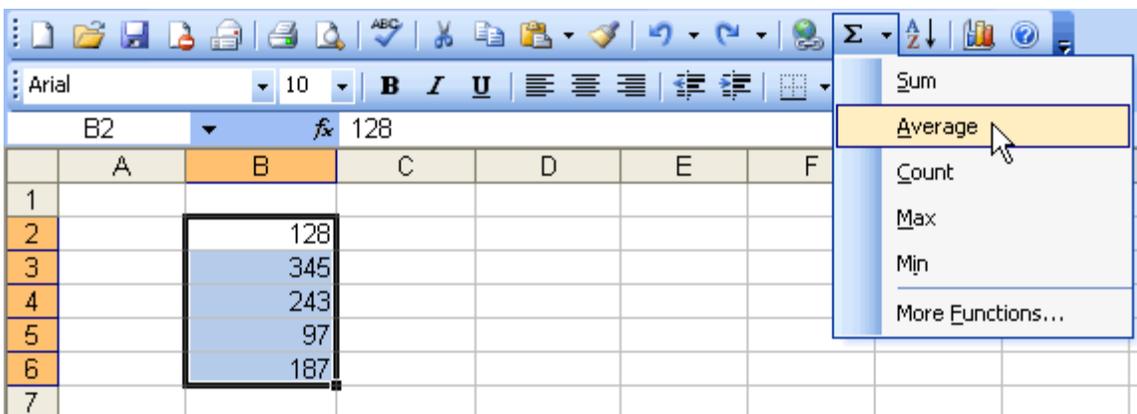
The **Average** function calculates the average of a range of numbers. The Average function can be selected from the AutoSum drop-down menu.

To Calculate the Average of a Range of Data:

- Type the numbers to be included in the formula in separate cells of column B (Ex: type 128 in cell B2, 345 in cell B3, 243 in cell B4, 97 in cell B5 and 187 cell B6).
- Click on the **first cell** (B2) to be included in the formula.
- Using the point-click-drag method, **drag** the mouse to define a cell range from cell B2 through cell B6.
- On the **Standard** toolbar, click on the drop-down part of the **AutoSum** button.

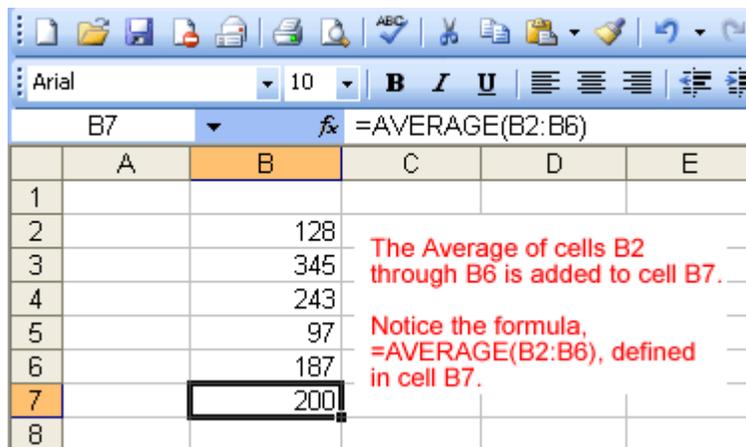


- Select the **Average** function from the drop-down Functions list.



- The average of the numbers is added to cell B7, or the cell immediately beneath the defined range of numbers.

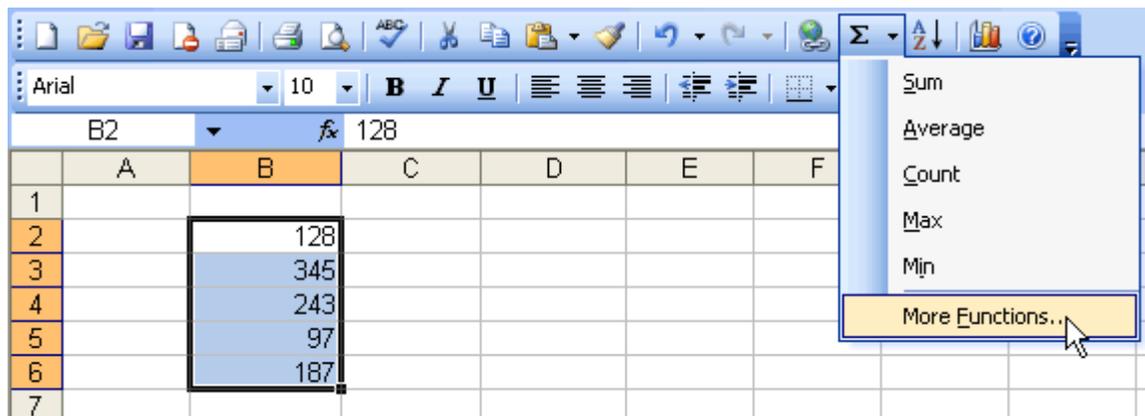
- Notice the formula, **=AVERAGE(B2:B6)**, has been defined to cell B7.



Accessing Excel 2003 Functions

To Access Other Functions in Excel:

- Using the point-click-drag method, select a cell range to be included in the formula.
- On the **Standard** toolbar, click on the drop-down part of the **AutoSum** button.
- If you don't see the function you want to use (Sum, Average, Count, Max, Min), display additional functions by selecting **More Functions**.

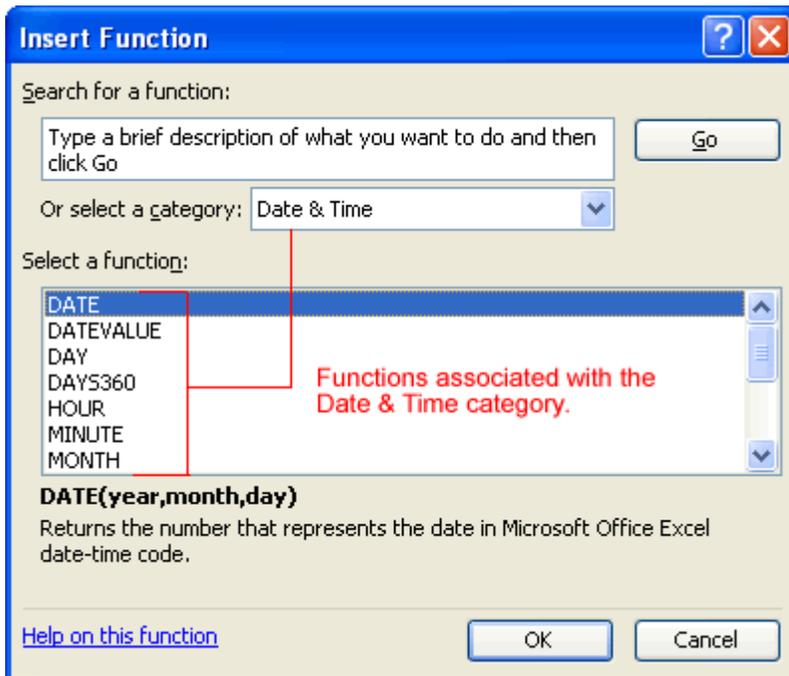


- The **Insert Function** dialog box opens.
- There are three ways to locate a function in the **Insert Function** dialog box:

You can type a question in the **Search for a function box** and click **GO**, or

You can scroll through the alphabetical list of functions in the **Select a function** field, or

You can select a function category in the **Select a category** drop-down list and review the corresponding function names in the **Select a function** field.



- Select the function you want to use and then click the **OK** button.

Challenge!

- Open your **Monthly Budget** file.
- Type the following in Row 1:
 - **February** in D1.
 - **March** in E1.
 - **April** in F1.
 - **May** in G1.
 - **June** in H1.
 - **July** in I1.
 - **August** in J1.
 - **September** in K1.
 - **October** in L1.
 - **November** in M1.
 - **December** in N1.
 - **Total** in O1.
- Type the amount of your expenses in each cell in Column D (cells 2 through 17), just like you did with Column C in a previous challenge.
- Delete the number in C15.

- Type a function in cell C15 that adds the range of cells, C2 through C14.

	A	B	C	D	E	F	G
1	Monthly Budget		January	February	March	April	May
2	Rent		400	400			
3	Car Payment		150	150			
4	Insurance		44	44			
5	Power		65	75			
6	Phone		50	100			
7	Cable		85	85			
8	Credit Cards		0	200			
9	Groceries		200	200			
10	Gas		100	125			
11							
12							
13							
14							
15	Total Monthly Expense		1094				
16	Income		2400				
17	Savings		1306	0	0	0	0
18	Percent Saved		0.544167				
19							

- Fill the formula from C15 to D15 through O15.
- Type your Income for the month of February in D16.
- Type a formula in O17 that adds your savings for the year. Since you have only entered data for the month of January and February, this amount indicates your savings for the two months.
- Save and close the **Monthly Budget** spreadsheet.

Worksheet Layout and Management

Lesson 8: Working with multiple worksheets

By the end of this lesson, learners should be able to:

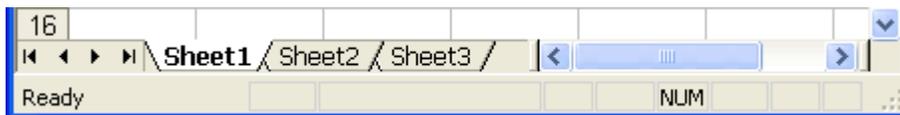
- Name Worksheets
- Insert and Delete Worksheets
- Group and Ungroup Worksheets
- Copy and Move Worksheets

Naming Worksheets

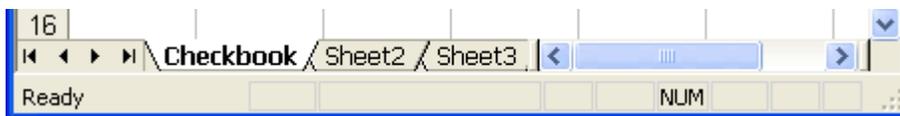
At the beginning of this course, we learned that the tabs displayed at the bottom of the screen are named Sheet1, Sheet2 and Sheet3. These are not very informative names. Excel 2003 allows you to define a meaningful name for each worksheet in a workbook- Checkbook, Reports, Accounts-so you can quickly locate information.

To Name a Worksheet:

- Double-click the **sheet tab** to select it. The text is highlighted by a black box.



- Type a **new name** for the worksheet.



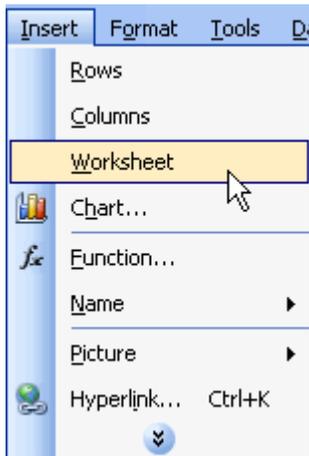
- Press the **Enter** key.
- The worksheet now assumes the descriptive name defined.

Inserting Worksheets

By default, each new workbook in Excel 2003 defaults to three worksheets named Sheet1, Sheet2 and Sheet3. You have the ability to **insert new worksheets** if needed or delete others you no longer want.

To Insert a New Worksheet:

- Choose **Insert** → **Worksheet** from the menu bar.



- A new worksheet tab is added to the bottom of the screen. It will be named Sheet4, Sheet5 or whatever the next sequential sheet number may be in the workbook.

Deleting Worksheets

Any worksheet can be **deleted** from a workbook, including those that have data in it. Remember, a workbook must contain at least one worksheet.

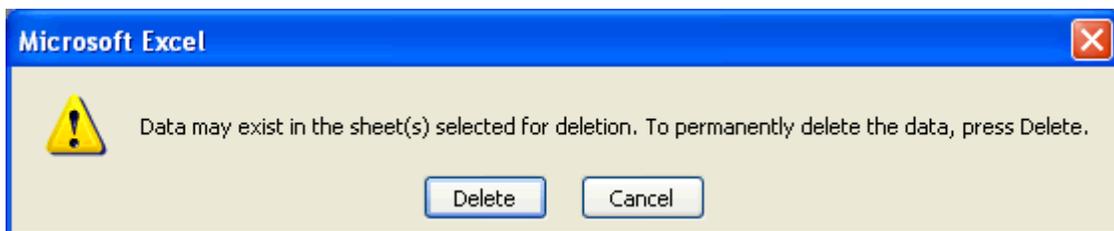
To Delete One or More Worksheets:

- Click on the sheet(s) you want to delete.

- Choose **Edit** → **Delete Sheet** from the menu bar.

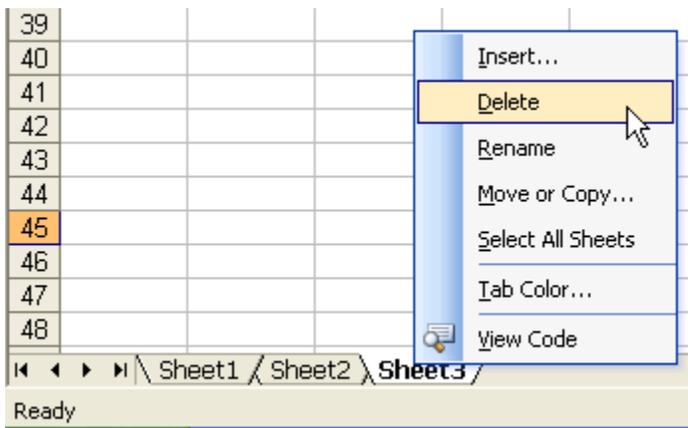


- The following dialog box appears if the sheet being deleted contains information on it.



- Click the **Delete** button to remove the worksheet and all the data in it.

✓ Another way to delete or insert a worksheet is to right-click on the sheet to be deleted and then select **Delete** or **Insert** from the shortcut menu.



Grouping and Ungrouping Worksheets

A **workbook** is a multi-page Excel document that contains multiple **worksheets**. Sometimes you will want to work with the worksheets one at a time as if each is a single unit. Other times, the same information or formatting may need to be added to every worksheet. You can type and retype the same information in each worksheet, or apply identical formatting, or you can group the worksheet and enter the information once.

Worksheets can also be combined together into a group. **Grouping** worksheets allows you to apply identical formulas and/or formatting across all the worksheets in the group. When you group worksheets, any changes made to one worksheet will also be changed in any other worksheets in the group. If many worksheets are to have the same data--regions, departments, quarters, months, weeks and days, for example--then you type it once and it will appear on every worksheet included in the grouping.

	A	B	C	D	E	F
1		January	February	March	April	May
2	Income					
3						
4	Rent					
5	Power					
6	Cable					
7	Phone					
8						
9	Food					
10	Gas					
11	Car Payment					
12	Misc.					
13						
14	Savings					
15						
16	Total Remaining					
17						
18						

To Group Worksheets:

- To select one worksheet, click on the sheet tab.
- To select more than one worksheet, hold the **Control key** down and click on one or more worksheet tabs in the workbook.
- To select all worksheets in a workbook, right-click on any worksheet tab and choose **Select All Sheets** from the shortcut menu.

When finished entering, moving, copying or formatting the data, you will need to **ungroup** worksheets. If you do not ungroup the sheets, any work you do in one sheet will be duplicated in all the others.

To Ungroup Worksheets:

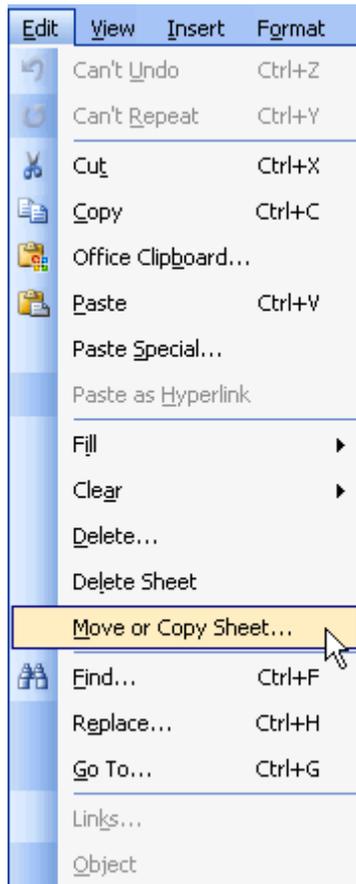
- Right-click on any of the selected worksheet tabs.
- Choose **Ungroup Sheets** from the shortcut menu.

Moving Worksheets

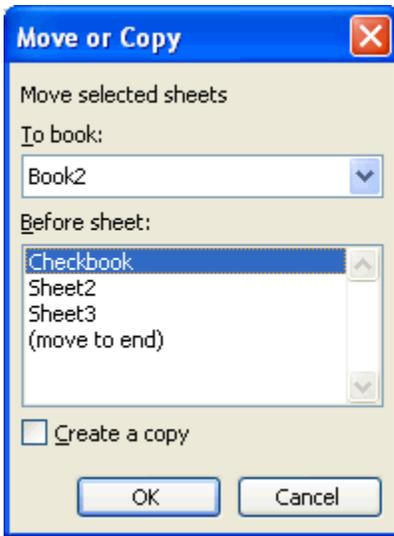
When you **move a sheet**, you are moving it to a new location in this or another workbook.

To Move a Workbook:

- Select the worksheet you want to move/copy.
- Choose **Edit** → **Move** or **Copy** from the menu bar.



- In the **Move or Copy** dialog box, use the drop down boxes to select the name of the workbook you will move the sheet to (the current workbook is the default). Also define where you want the sheet positioned in the workbook.



- Check **Create a copy** to copy it.
- Click the **OK** button to move the worksheet to its new location.

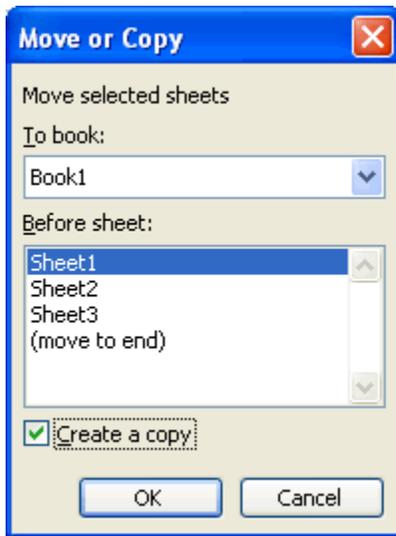
Copying Worksheets

When you **copy** a sheet, you make an exact copy of it.

To Copy a Worksheet:

- Select the worksheet you want to move/copy.
- Choose **Edit** → **Move or Copy** from the menu bar.
- In the **Move or Copy** dialog box, use the drop down boxes to select the name of the workbook you will copy the sheet to (the current workbook is the default). Also define where you want the sheet positioned in the workbook.

- Click the **Create a copy** checkbox.



- Click OK to create an exact copy of the worksheet and move it to the location specified.

Challenge!

- Open your **Monthly Budget** file.
- Rename** Sheet1 to 2005, Sheet2 to 2006 and Sheet3 to 2007.
- Insert** two worksheets and name them 2008 and 2009.
- Move the 2008 and 2009 worksheets so they are immediately following the 2007 sheet.

15	Total Monthly Expens	1094	1379				
16	Income	2400	2400				
17	Savings	1306	1021	0	0	0	
18	Percent Saved	0.544167					
19							
20							

Ready NUM

- Use the **Grouping** feature so that the 2006, 2007, 2008, and 2009 sheets contain the same information as Column A and Row 1 of the 2005 sheet.
- Delete the 2009 sheet.
- Save and close the **Monthly Budget** document.

Challenge!

- Open your **Monthly Budget** file.
- Rename** Sheet1 to 2005, Sheet2 to 2006 and Sheet3 to 2007.
- Insert** two worksheets and name them 2008 and 2009.
- Move the 2008 and 2009 worksheets so they are immediately following the 2007 sheet.

15	Total Monthly Expens	1094	1379				
16	Income	2400	2400				
17	Savings	1306	1021	0	0	0	
18	Percent Saved	0.544167					
19							
20							

Ready NUM

- Use the **Grouping** feature so that the 2006, 2007, 2008, and 2009 sheets contain the same information as Column A and Row 1 of the 2005 sheet.
- Delete the 2009 sheet.
- Save and close the **Monthly Budget** document.

Lesson 9: Inserting and Deleting Rows and Columns

By the end of this lesson, learners should be able to:

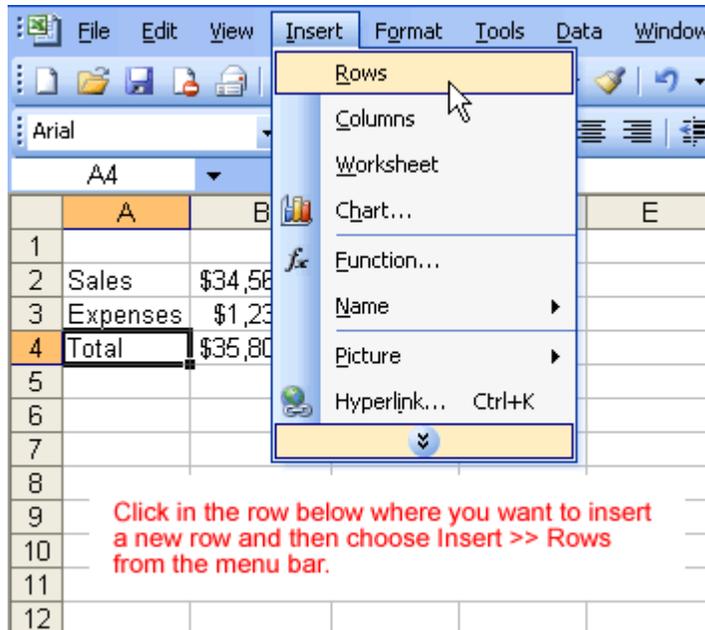
- Insert rows and columns
- Delete rows and columns

Inserting a row

You can insert a **row** in a spreadsheet anywhere you need it. Excel moves the existing rows down to make room for the new one.

To Insert a Row:

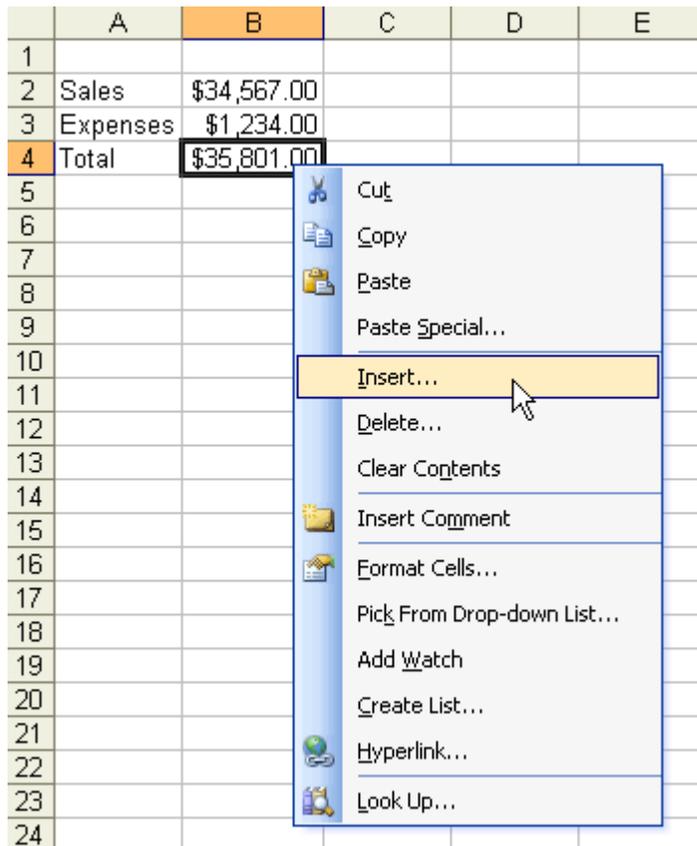
- Click anywhere in the row **below** where you want to insert the new row.
- Choose **Insert** → **Rows** from the menu bar.



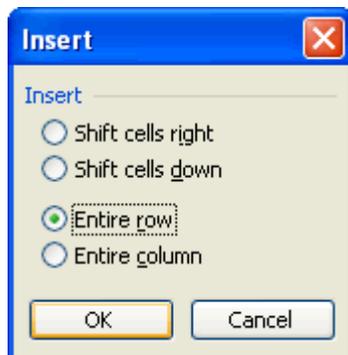
- A new row is inserted above the cell(s) you originally selected.

OR

- Click anywhere in the row **below** where you want to insert the new row.
- Right-click** and choose **Insert** from the shortcut menu.



- The **Insert** dialog box opens.



- Choose the **Entire Row** radio button.
- Click the **OK** button.

- A new row is inserted above the cell(s) you originally selected.

	A	B	C
1			
2	Sales	\$34,567.00	
3	Expenses	\$1,234.00	
4			
5	Total	\$35,801.00	
6			
7	A blank row is inserted between rows 3 and 4.		
8			

- ✓ Select multiple rows before choosing Insert to add rows quickly. Excel inserts the same number of new rows that you originally selected.

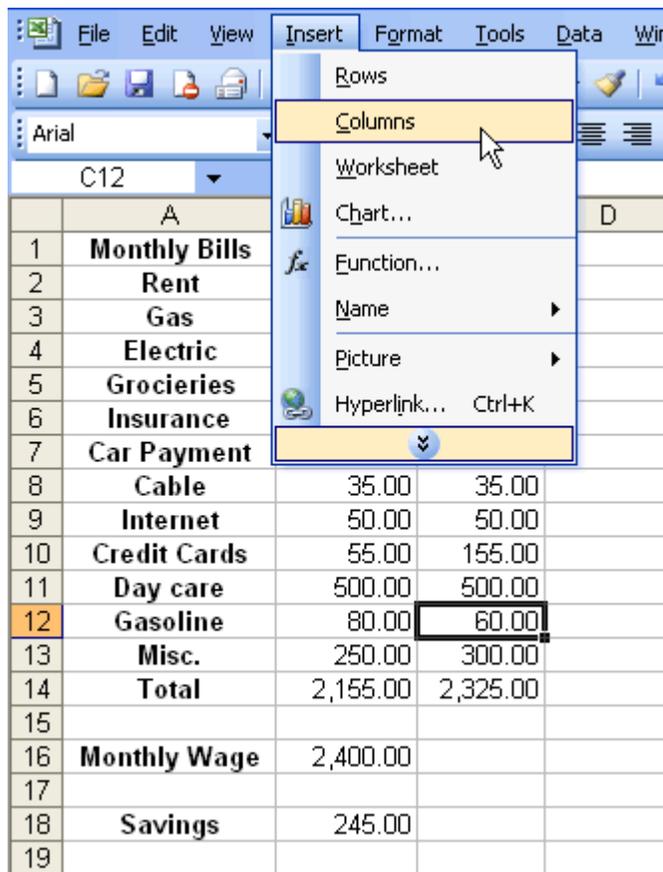
Inserting a column

In Excel, you can insert a **column** anywhere you need it. Excel moves the existing columns to make room for the new one.

To Insert a Column:

- Click anywhere in the column where you want to insert a new column.

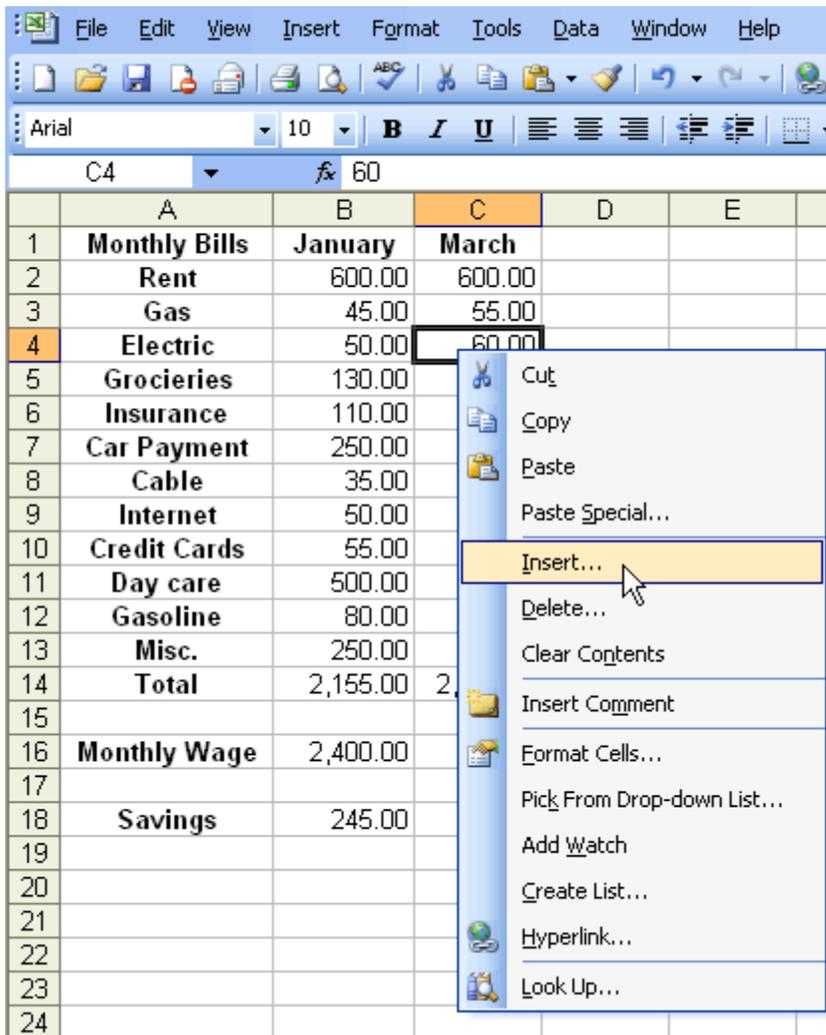
- Choose **Insert** → **Columns** from the menu bar.



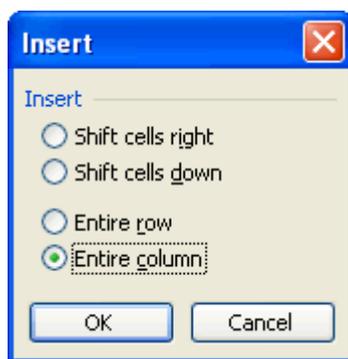
- A new column is inserted to the **left** of the existing column.

OR

- Click anywhere in the column where you want to insert a new column.
- Right-click** and choose **Insert** from the shortcut menu.



•The **Insert** dialog box opens.



- Click the **Entire Column** radio button in the Insert dialog box.
- Click the **OK** button.

- A new column is inserted to the **left** of the existing column.

	A	B	C	D	E
1	Monthly Bills	January		March	
2	Rent	600.00		600.00	
3	Gas	45.00		55.00	
4	Electric	50.00		60.00	
5	Groceries	130.00		150.00	
6	Insurance	110.00		110.00	
7	Car Payment	250.00		250.00	
8	Cable	35.00		35.00	
9	Internet	50.00		50.00	
10	Credit Cards	55.00		155.00	
11	Day care	500.00		500.00	
12	Gasoline	80.00		60.00	
13	Misc.	250.00		300.00	
14	Total	2,155.00		2,325.00	
15					
16	Monthly Wage	2,400.00			
17					
18	Savings	245.00			
19					

A new column is inserted between the January and March columns.

✓ You can also select multiple columns before choosing Insert to add columns quickly. Excel inserts the same number of new columns that you originally selected.

Deleting columns and rows

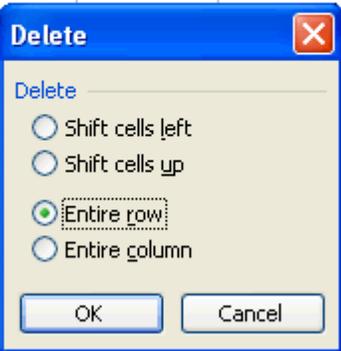
Columns and rows are deleted in much the same manner as inserting columns and rows.

To Delete a Row and All Information in It:

- Select a cell in the row to be deleted.
- Choose **Edit** → **Delete** from the menu bar.

- Click the **Entire Row** radio button in the **Delete** dialog box.

	A	B	C	D
1	Monthly Bills	January	March	
2	Rent	600.00	600.00	
3	Gas	45.00	55.00	
4	Electric	50.00	60.00	
5	Groceries	130.00	150.00	
6	Insuran			
7	Car Paym			
8	Cable			
9	Intern			
10	Credit C			
11	Day ca			
12	Gasoli			
13	Misc.			
14	Total			
15				
16	Monthly Wage	2,400.00		
17				
18	Savings	245.00		
19				



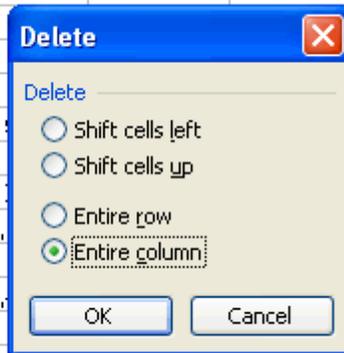
- Click the **OK** button.

To Delete a Column and All Information in it:

- Select a cell in the column to be deleted.
- Choose **Edit** → **Delete** from the menu bar.

- Click the **Entire Column** radio button in the **Delete** dialog box.

	A	B	C	D	E
1	Monthly Bills	January		March	
2	Rent	600.00		600.00	
3	Gas	45.00		55.00	
4	Electric	50.00		60.00	
5	Groceries	130.00		150.00	
6	Insurance	110.00		110.00	
7	Car Payment	250.00		250.00	
8	Cable				
9	Internet				
10	Credit Cards				
11	Day care				
12	Gasoline				
13	Misc.				
14	Total	2,000.00			
15					
16	Monthly Wage	2,000.00			
17					
18	Savings	245.00			
19					



- Click the **OK** button.

Challenge!

- Open your **Monthly Budget** file.
- Delete the blank Column B.

After you delete the blank Column B it may look like this:

	A	B	C	D	E	F
1	Monthly Budget	January	February	March	April	May
2	Rent	400	400			
3	Car Payment	150	150			
4	Insurance	44	44			
5	Power	65	75			
6	Phone	50	100			
7	Cable	85	85			
8	Credit Card	0	200			
9	Groceries	200	200			
10	Gas	100	125			
11						
12						
13						
14						
15	Total Monthly	1094	1379			
16	Income	2400	2400			
17	Savings	1306	1021	0	0	0
18	Percent Saved	0.544167				
19						

- Save and close the document.

Lesson 10: Changing Column Width and Row Height

Adjusting column widths

By default, Excel's columns are 8.43 characters wide, but each individual column can be enlarged to 240 characters wide.

If the data being entered in a cell is wider or narrower than the default column width, you can adjust the **column width** so it is wide enough to contain the data.

	B2	fx	12345678	
	A	B	C	D
1	Monthly Bills	January	March	
2	Rent	#####	600.00	
3	Gas	45.00	55.00	
4	Electric			
5	Groceries			
6	Insurance			
7	Car Payment			
8	Cable	35.00	35.00	

This example shows a case where the number entered in cell B2 is larger than the column width.

✓ You can adjust column width **manually** or use **AutoFit**.

To Manually Adjust a Column Width:

- Place your mouse pointer to the **right side** of the gray column header.
- The mouse pointer changes to the **adjustment tool** (double-headed arrow).

	A	B	C	D	E
1	Monthly Bills	January	March		
2	Rent	600.00	600.00		
3	Gas	45.00	55.00		
4	Electric	50.00	60.00		
5	Groceries	130.00	150.00		
6	Insurance	110.00	110.00		

The mouse pointer changes to the Adjustment tool.

- **Drag** the Adjustment tool left or right to the desired width and release the mouse button.

	A	B	C
1	Monthly Bills	January	March
2	Rent	600.00	600.00
3	Gas	45.00	55.00
4	Electric	50.00	60.00
5	Groceries	130.00	150.00
6	Insurance	110.00	110.00
7	Car Payment	250.00	250.00
8	Cable		
9	Internet		
10	Credit Cards		
11	Day care		

Notice the difference in the width of columns B and C.

To AutoFit the Column Width:

- Place your mouse pointer to the **right side** of the column header.
- The mouse pointer changes to the **adjustment tool** (double-headed arrow).
- Double-click** the column header border.
- Excel "AutoFits" the column, making the entire column slightly larger than the largest entry contained in it.

✓ To access AutoFit from the menu bar, choose **Format → Column → AutoFit Selection**.

Adjusting row height

Changing the **row height** is very much like adjusting a column width. There will be times when you want to enlarge a row to visually provide some space between it and another row above or below it.

To Adjust Row Height of a Single Row:

- Place your mouse pointer to the **lower edge** of the **row heading** you want to adjust.

- The mouse pointer changes to the **adjustment tool** (double-headed arrow).

	A	B	C
1	Monthly Bills	January	March
2	Rent	600.00	600.00
3	Gas	45.00	55.00
4	Electric	50.00	60.00
5	Groceries	130.00	150.00
6	Insurance	110.00	110.00
7	Car Payment		
8	Cable		
9	Internet	30.00	30.00
10	Credit Cards	55.00	155.00

The mouse pointer changes to the Adjustment tool.

- Drag** the Adjustment tool up or down to the desired height and release the mouse button.

	A	B	C
1	Monthly Bills	January	March
2	Rent	600.00	600.00
3	Gas	45.00	55.00
4	Electric	50.00	60.00
5	Groceries	130.00	150.00
6	Insurance	110.00	110.00
7	Car Payment		
8	Cable		
9	Internet	30.00	30.00
10	Credit Cards	55.00	155.00

Notice the difference in height between row 1 and the other rows in the spreadsheet.

To AutoFit the Row Height:

- Place your mouse pointer to the **lower edge** of the **row heading** you want to adjust.
- The mouse pointer changes to the **adjustment tool** (double-headed arrow).
- Double-click** to adjust the row height to "AutoFit" the font size.
- Excel 2003 "AutoFits" the row, making the entire row slightly larger than the largest entry contained in the row.

Challenge!

- Open your **Monthly Budget** file.
- AutoFit the **column width** of Column A.

- Manually adjust the column width for any columns that you need to enlarge. For example, Column J may need to be adjusted so the word **September** fits in the cell.
- Adjust the **row height** of Row 1 to at least double its current width.

	A	B	C	D
1	Monthly Budget	January	February	March
2	Rent	400	400	
3	Car Payment	150	150	
4	Insurance	44	44	
5	Power	65	75	

- Save and close the document.

Lesson 11: Inserting and Deleting Cells

By the end of this lesson, learners should be able to:

- Insert cells
- Delete cells
- Merge cells

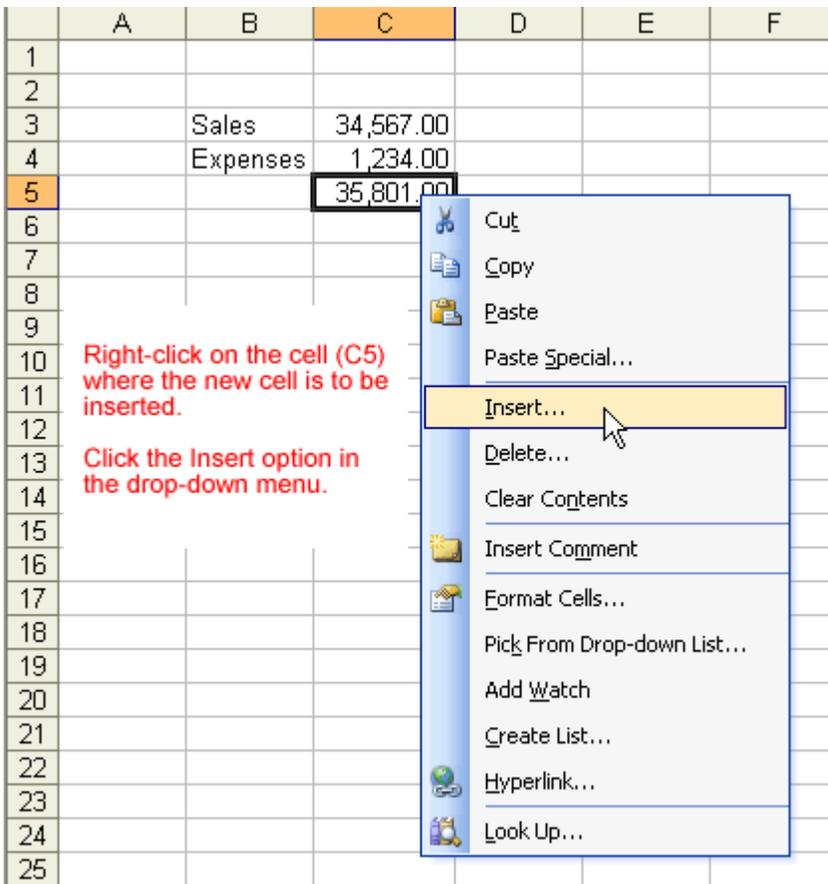
Inserting a cell

When working in an Excel 2003 worksheet, you may need to **insert or delete cells** without inserting or deleting entire rows or columns.

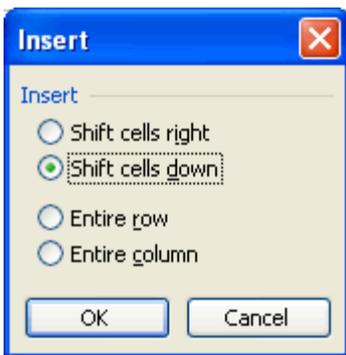
To Insert Cells:

- Select the location where the new cell(s) should be inserted. It can be a single cell or a range of cells.
- Right-click** and choose **Insert**.

Note: You could also choose **Insert** → **Cell** on the menu bar.



- The **Insert** dialog box opens. Select either:
- Shift cells right** to shift cells in the same row to the right.
- Shift cells down** to shift selected cells and all cells in the column below it downward.



Insert dialog box

- Choose an option and click the OK button.

•Your result displays in the spreadsheet.

	A	B	C	D
1				
2				
3		Sales	34,567.00	
4		Expenses	1,234.00	
5				
6			35,801.00	
7				
8				

Inserted Cell

✓ Remember, you can also use the **Insert** dialog box to insert or delete columns and rows.

Deleting a cell

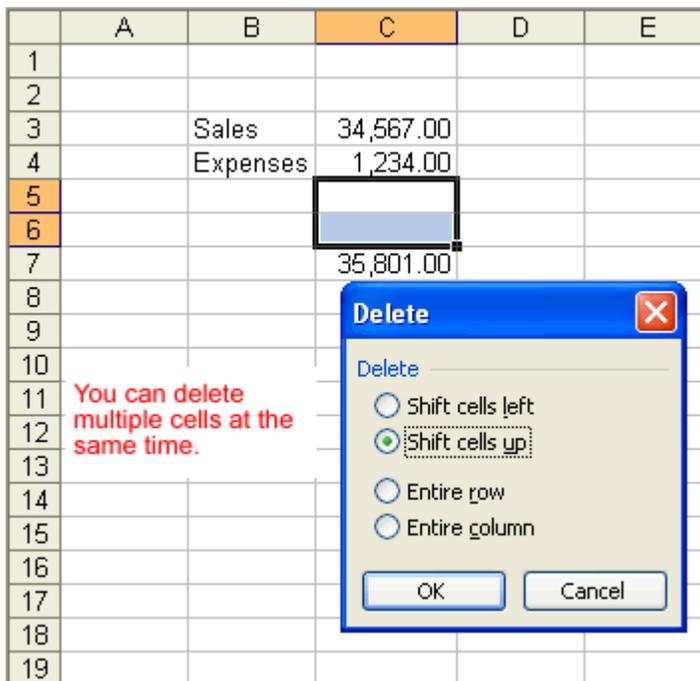
To Physically Delete the Cell from the Spreadsheet:

•**Right-click** and choose **Delete**.

	A	B	C	D	E	F
1						
2						
3		Sales	34,567.00			
4		Expenses	1,234.00			
5						
6						
7			35,801.00			
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

- Cut
- Copy
- Paste
- Paste Special...
- Insert...
- Delete...**
- Clear Contents
- Insert Comment
- Format Cells...
- Pick From Drop-down List...
- Create List...
- Hyperlink...
- Look Up...

- The **Delete** dialog box opens. Select either:
- Shift cells left** to shift cells in the same row to the left.
- Shift cells up** to shift selected cells and all cells in the column above it upward.



- Choose an option and click the **OK** button.
- Your result displays in your spreadsheet.

Merging cells

In Excel 2003, you have another alignment option available to you: **merge and center**. This is performed when you want to select one or more cells and merge them into a larger cell. The contents will be **centered** across the new merged cell.

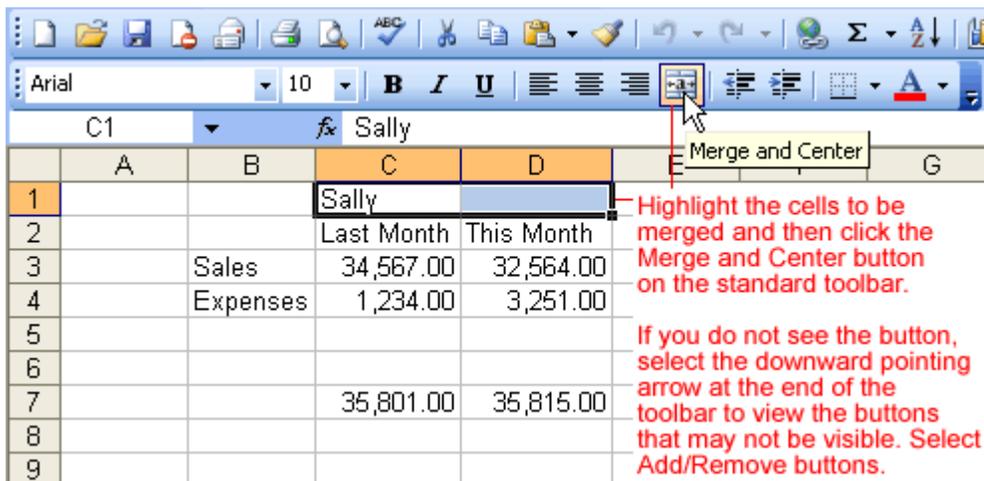
The picture below shows why we might want to merge two cells. The spreadsheet presents Last Month and This Month Sales and Expenses for Sally. Notice that Sally's name appears above the Last Month column. To evenly center Sally's name across the two cells we would perform a merge and center.

	A	B	C	D	E	F
1			Sally			
2			Last Month	This Month		
3		Sales	34,567.00	32,564.00		
4		Expenses	1,234.00	3,251.00		
5						
6						
7			35,801.00	35,815.00		
8						
9						

We would like to see Sally's name centered over both cell C1 and D1.

To Merge Two Cells Into One:

- Select the cells that you want to merge. It can be cells in a column, row or both columns and rows.
- Click the  **Merge and Center** button on the standard toolbar.



Highlight the cells to be merged and then click the Merge and Center button on the standard toolbar.

If you do not see the button, select the downward pointing arrow at the end of the toolbar to view the buttons that may not be visible. Select Add/Remove buttons.

- The two cells are now merged into one.

	A	B	C	D	E
1			Sally		
2			Last Month	This Month	
3		Sales	34,567.00	32,564.00	
4		Expenses	1,234.00	3,251.00	
5					
6					
7			35,801.00	35,815.00	
8					

Challenge!

- Open your **Monthly Budget** file.
- Insert a blank row above the current Row 1, which contains the months of the year.
- Type **My Budget** in A1.
- Use the **merge and center** function to center **My Budget** over Columns A through N.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	My Budget													
2	Monthly Budget	January	February	March	April	May	June	July	August	September	October	November	December	Total
3	Rent	400	400											

- Save and close the document.

Lesson 12: Text and Cell Alignments

By the end of this lesson, learners should be able to:

- Change horizontal cell alignment
- Change vertical cell alignment
- Change text control
- Change text orientation

Using the Standard Toolbar to Align Text and Numbers in Cells

You've probably noticed by now that Excel 2003 **left-aligns text** (labels) and **right-aligns numbers** (values). This makes data easier to read.

	A	B	C	D
1				
2				
3		Sales	34,567.00	
4		Expenses	1,234.00	
5				
6				
7				
8				

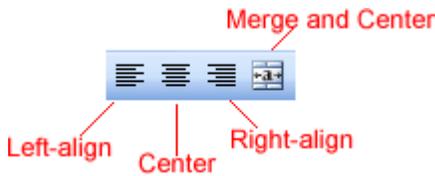
Text, by default, is left-aligned in Excel 2003.

Numbers, by default, are right-aligned in Excel 2003.

You do not have to leave the defaults. Text and numbers can be defined as left-aligned, right-aligned or centered in Excel 2003. The picture below shows the difference between these alignment types when applied to labels.

right-aligned text
left-aligned text
centered text

Text and numbers may be aligned using the left-align, center and right-align buttons of the **Formatting** toolbar:



To Align Text or Numbers in a Cell:

- Select a cell or range of cells
- Click on either the **Left-Align**, **Center** or **Right-Align** buttons in the standard toolbar.
- The text or numbers in the cell(s) take on the selected alignment treatment.

Changing Horizontal Cell Alignment

We've previously seen how to align text or numbers using the left-align, center and right-align buttons in the standard toolbar. You can also define alignment in the **Alignment** tab of the **Format Cells** dialog box.

	A	B	C	D
1				
2				
3				
4				
	←→			
5	Horizontal Alignment	Horizontal Left	Horizontal Center	Horizontal Right
6				

✓ The **Horizontal** section features a drop-down that contains the same **left**, **center**, and **right** alignment options in the picture above and several more:

Fill

"Fills" the cell with the current contents by repeating the contents for the width of the cell.

Justify

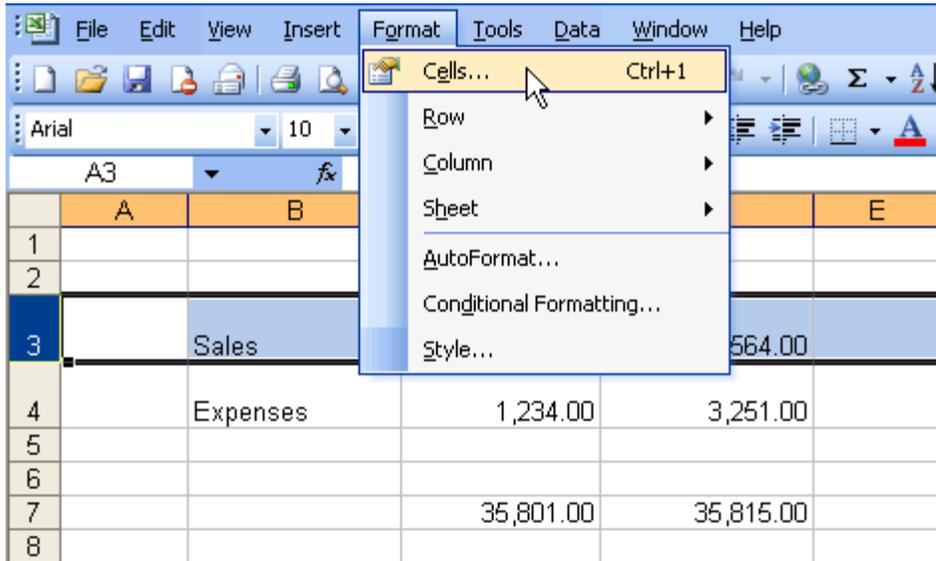
If the text is larger than the cell width, **Justify** wraps the text in the cell and adjusts the spacing within each line so that all lines are as wide as the cell.

Center Across Selection

Contents of the cell furthest to the left are centered across the selection of cells. Similar to merge and center, except the cells are not merged.

To Change Horizontal Alignment using the Format Cells Dialog Box:

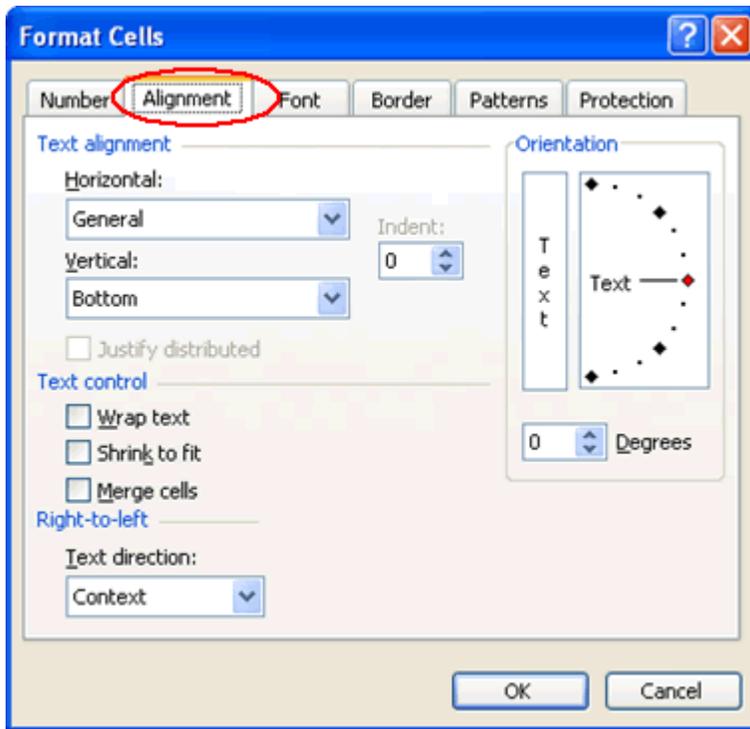
- Select a cell or range of cells.
- Choose **Format** → **Cells** from the menu bar.



(You could also right-click and choose **Format Cells** from the shortcut menu.)

- The **Format Cells** dialog box opens.

- Click the **Alignment** tab.



- Click the **Horizontal** drop-down menu and select a horizontal alignment treatment.
- Click OK to apply the horizontal alignment to the selected cell(s).

Changing Vertical Cell Alignment

You can also define vertical alignment in a cell, similar to how it is done for horizontal alignment. In **Vertical alignment**, information in a cell can be located at the top of the cell, middle of the cell or bottom of the cell. The default is bottom.

	A	B	C	D
1				
2		Some examples of Vertical Alignment of information in a cell.		
3				
4				
5	Vertical Alignment	Vertical Justify	Vertical Center	Vertical Bottom
6				

To Change Vertical Alignment using the Format Cells Dialog Box:

- Select a cell or range of cells.

- Choose **Format** → **Cells** from the menu bar.

(You could also right-click and choose **Format Cells** from the shortcut menu.)

- The **Format Cells** dialog box opens.
- Click the **Alignment** tab.
- Click the **Vertical** drop-down menu and select a vertical alignment treatment.
- Click OK to apply the vertical alignment to the selected cell(s).

Changing Text Control

Text Control allows you to control the way Excel 2003 presents information in a cell. There are three types of Text control: **Wrapped Text**, **Shrink-to-Fit** and **Merge Cells**.

	A	B	C
1			
2	Text Control Examples:		
3			
4			
5	This is an example of wrapped text.	— Wrapped Text Example	
6			
7	Shrink to fit example	— Shrink-to-fit Example	
8			
9			

- The **Wrapped Text** wraps the contents of a cell across several lines if it's too large than the column width. It increases the height of the cell as well.
- **Shrink-to-Fit** shrinks the text so it fits into the cell; the more text in the cell the smaller it will appear in the cell.
- **Merge Cells** can also be applied by using the  **Merge and Center** button on the standard toolbar.

To Change Text Control using the Format Cells Dialog Box:

- Select a cell or range of cells.
- Choose **Format** → **Cells** from the menu bar.
- The **Format Cells** dialog box opens.
- Click the **Alignment** tab.

- Click on either the **Wrapped Text**, **Shrink-to-Fit** or **Merge Cells** check boxes-or any combination of them-as needed.
- Click the **OK** button.

Changing Text Orientation

The fourth type of cell alignment in the Format Cells dialog box is **Text Orientation**, which allows text to be oriented 90 degrees in either direction up or down.

7		Text oriented at 90 Degrees.	Text oriented at 45 Degrees.	Text oriented at -90 Degrees.
8				
9		Text oriented at 0 Degrees (by default).		
10				
11				
12		Text Orientation Examples		
13				

To Change Text Orientation using the Format Cells Dialog Box:

- Select a cell or cell range to be subject to text control alignment.
- Choose **Format** → **Cells** from the menu bar.
- The **Format Cells** dialog box opens.
- Click the **Alignment** tab.
- Increase or decrease the number shown in the **Degrees** field or spin box.
- Click the **OK** button.

Challenge!

- Open your **Monthly Budget** file.
- Center** the text **horizontally** in Column A and Row 2.
- Apply a **distributed vertical text alignment** to Row 2.

	A	B	C
1			
2	Monthly Budget	January	February
3	Rent	400	400
4	Car Payment	150	150
5	Insurance	44	44

- Save your document.
- Use the **text control** and **text orientation** features so that you are familiar with them.
- Close the document **without** saving any of the formatting from the **text control** and **text orientation** features.

Lesson 13: Formatting Numbers

By the end of this lesson, learners should be able to:

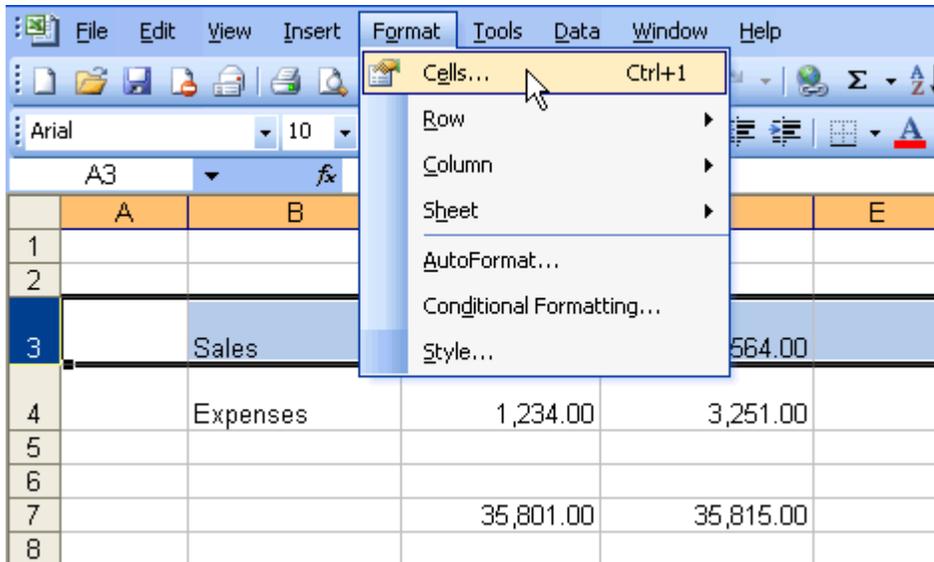
- Format the display of numbers
- Format the date
- Format the time
- Format the display of percentages

Formatting Numbers in the Format Cells Dialog Box

Numbers in Excel can assume many different formats: Date, Time, Percentage or Decimals.

To Format the Appearance of Numbers in a Cell:

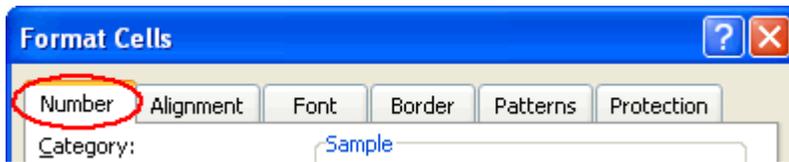
- Select a cell or range of cells.
- Choose **Format** → **Cells** from the menu bar.



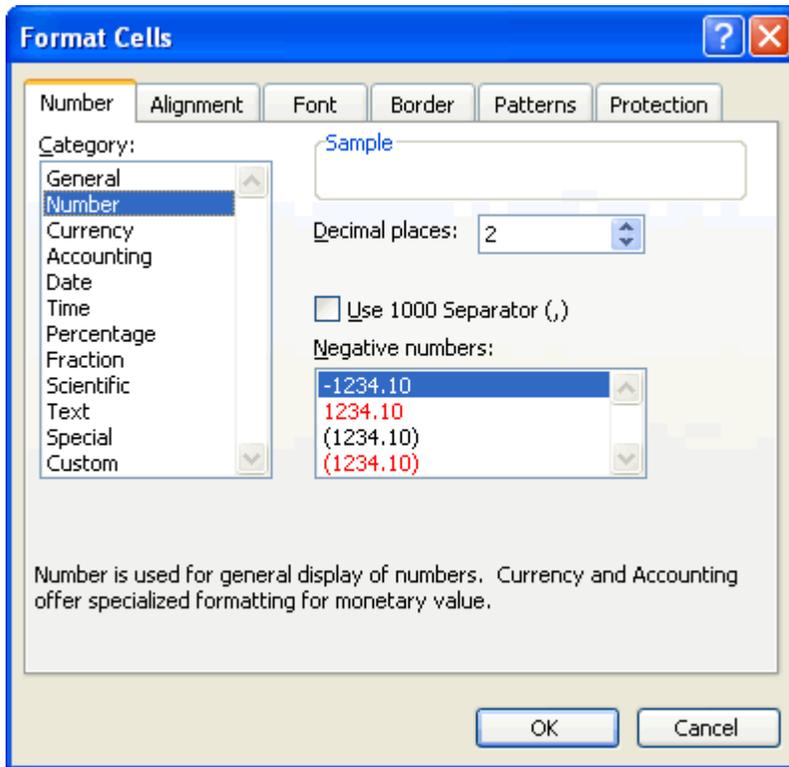
(You could also right-click and choose **Format Cells** from the shortcut menu.)

- The **Format Cells** dialog box opens.

- Click the **Number** tab.



- Click **Number** in the **Category** drop-down list.



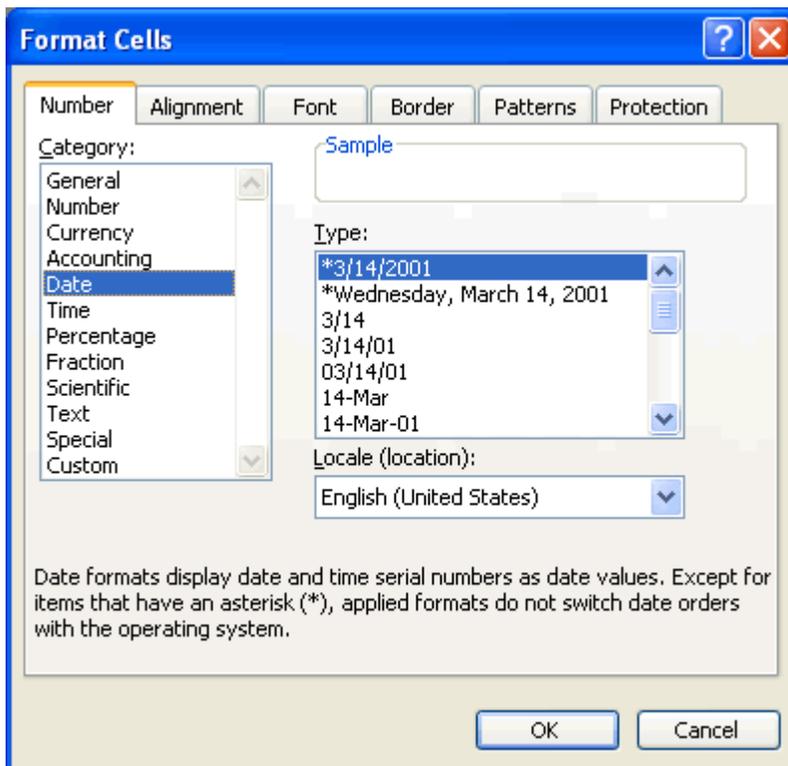
- Use the **Decimal places** scroll bar to select the number of decimal places (e.g., 2 would display 13.50, 3 would display 13.500).
- Click the **Use 1000 Separator** box if you want commas (1,000) inserted in the number.
- Use the **Negative numbers** drop-down list to indicate how numbers less than zero are to be displayed.
- Click the OK button.

Formatting Date in the Format Cells Dialog Box

The **date** can be formatted in many different ways in Excel 2003. Here are a few ways it can appear:

To Format the Appearance of a Date in a Cell:

- Select a cell or range of cells.
- Choose **Format** → **Cells** from the menu bar.
- The **Format Cells** dialog box opens.
- Click the **Number** tab.
- Click **Date** in the **Category** drop-down list.



- Select the desired date format from the **Type** drop-down list.
- Click the OK button.

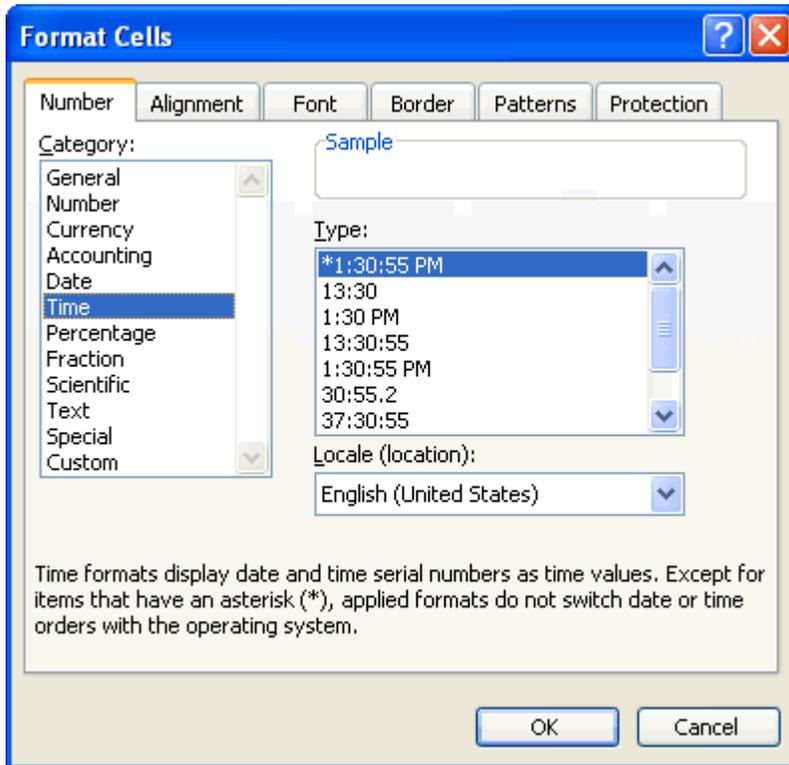
Formatting Time in the Format Cells Dialog Box

The **time** can be formatted in many different ways in Excel 2003. Here are a few ways it can appear:

13:30
1:30 PM

To Format the Appearance of Time in a Cell:

- Select the range of cells you want to format.
- Choose **Format** → **Cells** from the menu bar.
- The **Format Cells** dialog box opens.
- Click the **Number** tab.
- Click **Time** in the **Category** drop-down list.



- Select the desired time format from the **Type** drop-down list.
- Click the OK button.

Formatting Percentage in the Format Cells Dialog Box

There may be times you want to display certain numbers as a **percentage**. For example, what percentage of credit cards bills account for your total monthly expenses?

To Express Numbers as a Percentage in a Spreadsheet:

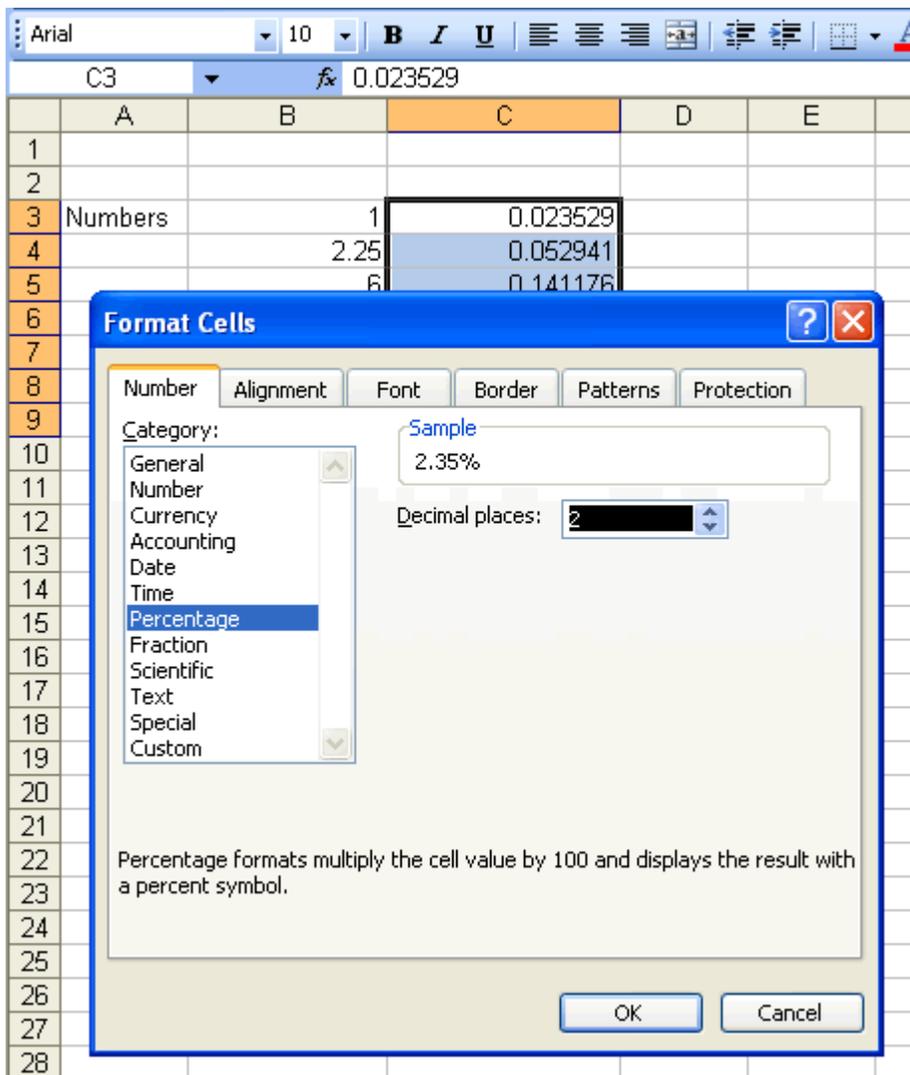
- Select a cell or range of cells.

	A	B	C	D	E
1					
2					
3	Numbers	1	0.023529		
4		2.25	0.052941		
5		6	0.141176		
6		4.5	0.105882		
7		9	0.211765		
8		12	0.282353		
9		7.75	0.182353		
10		42.5			
11					
12					

Highlight the cells to format as a Percentage

- Choose **Format** → **Cells** from the menu bar.
- The **Format Cells** dialog box opens.
- Click the **Number** tab.

- Click **Percentage** in the **Category** drop-down list.



- Define the **Decimal Places** that will appear to the right of each number.
- Click the **OK** button.

	A	B	C	D	E
1					
2					
3	Numbers	1	2.35%		
4		2.25	5.29%		
5		6	14.12%		
6		4.5	10.59%		
7		9	21.18%		
8		12	28.24%		
9		7.75	18.24%		
10		42.5			
11					

The numbers in the cell reflect that of a Percentage

Challenge!

- Open your **Monthly Budget** file.
- Format the numbers in the spreadsheet as **Currency** without the \$ symbol.
- Fill the formula from B19 to C19 through N19. This text #DIV/0! will appear in cell 19 of Columns D through N because expenses have not been entered for those columns yet.
- Select Row 19 and format the numbers as a **percent** with no decimal places.

An Example:

C19		=C18/C17		
	A	B	C	D
1				
2	Monthly Budget	January	February	March
3	Rent	400.00	400.00	
4	Car Payment	150.00	150.00	
5	Insurance	44.00	44.00	
6	Power	65.00	75.00	
7	Phone	50.00	100.00	
8	Cable	85.00	85.00	
9	Credit Cards	0.00	200.00	
10	Groceries	200.00	200.00	
11	Gas	100.00	125.00	
12				
13				
14				
15				
16	Total Monthly Expenses	1,094.00	1,379.00	
17	Income	2,400.00	2,400.00	
18	Savings	1,306.00	1,021.00	0.00
19	Percent Saved	54%	43%	#DIV/0!

- Save and close the document.

Lesson 14: Applying Font, Color and Borders to Cells

By the end of this lesson, learners should be able to:

- Apply fonts
- Apply a font color
- Apply borders

Change font type, size and color

In Excel 2003 a font consists of three elements: **Typeface**, or the style of the letter; **Size** of the letter; and **Color** of the letter. The default font in a spreadsheet is **Arial 10 points**, but the typeface and size can be changed easily.

Selecting a Font Typeface:

The amount of typefaces available for use varies depending on the software installed on your computer.

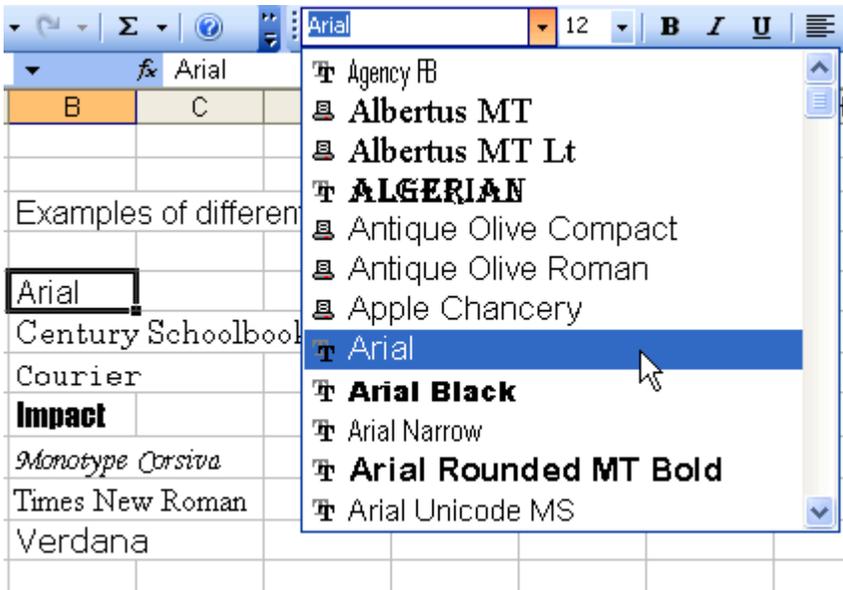
	A	B	C	D	E
1					
2					
3		Examples of different typefaces:			
4					
5		Arial			
6		Century Schoolbook			
7		Courier			
8		Impact			
9		<i>Monotype Corsiva</i>			
10		Times New Roman			
11		Verdana			
12					

To Apply a Typeface to Information in a Cell:

- Select a cell or range of cells.
- Click on the down arrow to the right of the **Font Name** list box on the Formatting toolbar.

Arial

- A drop-down list of available fonts appears.



- Click on the **Typeface** of your choice.
- The selection list closes and the new font is applied to the selected cells.

Change font type, size and color (continued)

To Apply a Font Size to Information in a Cell:

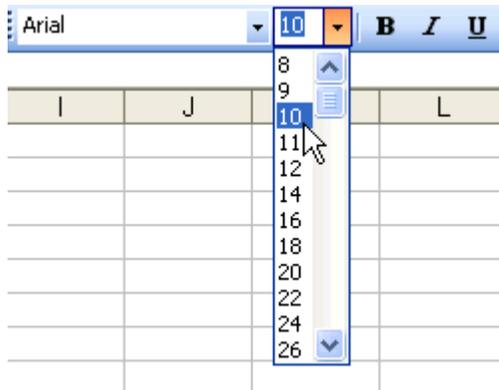
The "Font Size" list varies from typeface to typeface. The Arial font sizes, for example, are 8, 9, 10, 11, 12, 14, 16, 18, 20, 22, 24, 26, 28, 36, 48, 72.

	A	B	C	D	E
1					
2					
3		Examples of different sizes:			
4					
5		Arial, 8			
6		Arial, 10			
7		Arial, 12			
8		Arial, 14			
9		Arial, 16			
10		Arial, 18			
11		Arial, 20			
12					

- Select a cell or range of cells.
- Click on the down arrow to the right of the **font size** list box on the Formatting toolbar.



- A drop down list of available font sizes appears.



- Click on the **Font Size** of your choice.
- The selection list closes and the new font size is applied to the selected cells.

Change font type, size and color (continued)

To Apply Color to Information in Cells:

- Select a cell or range of cells.

- Click on the down arrow to the right of the **font color** list box.



- A drop-down list of available colors appear.



- Click on the **color** of your choice.
- The selection list closes and the new font color is applied to the selected cells.

Underline, italics and bold

In addition to the typeface, size and color, you can also apply **Bold**, *italics*, and/or underline font style attributes to any text or numbers in cells.

To Select a Font Style:

- Select a cell or range of cells.
- Click on any of the following options on the Formatting toolbar.



- Bold** button (Ctrl + B).
- Italics* button (Ctrl + I).
- Underline button (Ctrl + U).
- The attribute(s) selected (**bold**, *italics*, or underline) are applied to the font.

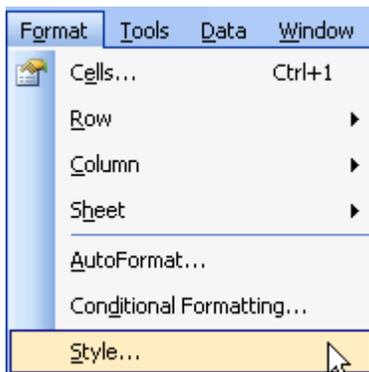
✓ The **Bold**, *Italics*, and Underline buttons on the **Formatting** toolbar are like toggle switches. Click once to turn it on, click again to turn it off.

Design and apply styles

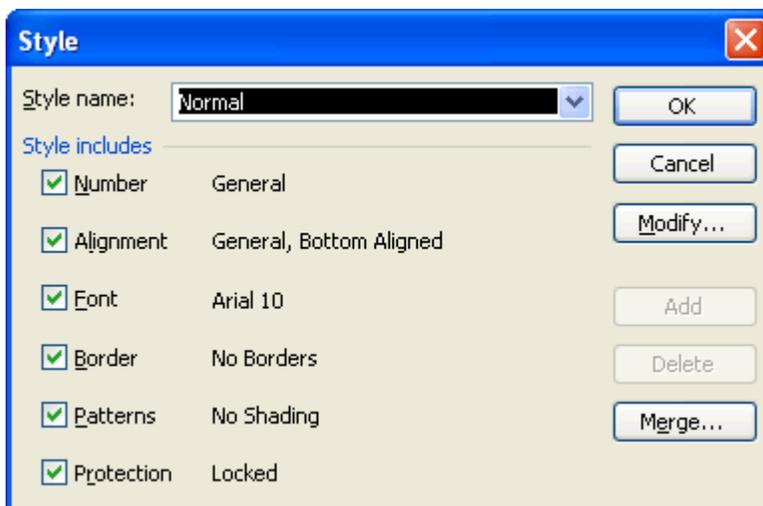
Styles can save a lot of time when formatting a spreadsheet. A **Style** is a unique collection of font attributes (Number, Alignment, Font, Border, Patterns and Protection). Many different styles can be created in a spreadsheet, each with different attributes and names. When applied to a cell, information in it resembles the attributes defined for that style.

To Apply a style:

- Select the cell or range of cells.
- Choose **Format** → **Style** from the menu bar.



- Select a style from the **Style name** drop-down list.



✓ You can change the style attributes (Number, Alignment, Font, Border, Patterns and Protection) for any Style Name.

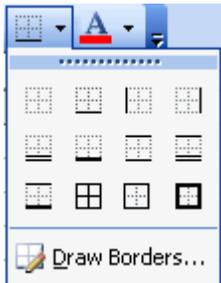
✓ You can create new styles by clicking on the **Add** button in the Style dialog box.

Adding a border to cells

Borders can be applied to cells in your worksheet in order to emphasize important data or assign names to columns or rows.

To Add a Border to a Cell or Cell Range:

- Select a cell or range of cells.
- Click on the down arrow next to the **Borders** button.
- The **Border** drop-down appears.



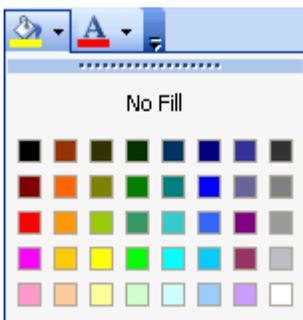
- Choose a **borderline** style from the **Border** drop-down menu.
- The selected cells display the chosen border.

Adding Color to Cells

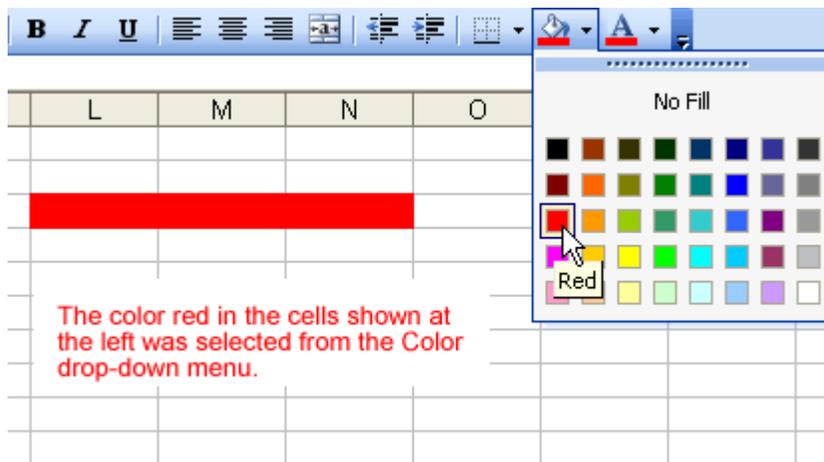
Colors can be applied to cells in your worksheet in order to emphasize important data or assign names to columns or rows.

To Add Color to a Cell:

- Select a cell or range of cells.
- Click the down arrow next to the **Fill Color** button. A **Fill Color** drop-down menu displays.



- Choose a **fill color** from the **Fill Color** drop-down menu.



- The selected cells display the color.

Challenge!

- Open your **Monthly Budget** file.
- Bold** the words **My Budget** in Row 1 and change the **font** to Verdana, size 14.
- Format the other labels (Rent, Car Payment, Insurance, etc.) as Arial, bold, size 10.
- Use **AutoFit** to format Columns A, J, L, and M.
- Change the font color of all your expenses to **RED**.
- Change the font color of all your income to **GREEN**.
- Apply at least one **border**.

An Example:

	A	B	C	D	E	F	G	H
1	My Budget							
2	Monthly Budget	January	February	March	April	May	June	July
3	Rent	400.00	400.00					
4	Car Payment	150.00	150.00					
5	Insurance	44.00	44.00					
6	Power	65.00	75.00					
7	Phone	50.00	100.00					
8	Cable	85.00	85.00					
9	Credit Cards	0.00	200.00					
10	Groceries	200.00	200.00					
11	Gas	100.00	125.00					
12								
13								
14								
15								
16	Total Monthly Expenses	1,094.00	1,379.00					
17	Income	2,400.00	2,400.00					
18	Savings	1,306.00	1,021.00	0.00	0.00	0.00	0.00	0.00
19	Percent Saved	54%	43%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
20								

- Save and close the document.

Charting, Printing and Page Setup

Lesson 15: Creating a Chart

By the end of this lesson, learners should be able to:

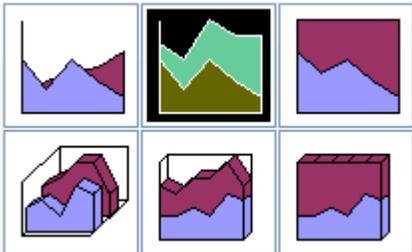
- Identify the parts of a chart
- Identify different types of charts
- Create an Embedded Chart
- Create a Chart Sheet

Understanding the Different Chart Types

Excel 2003 allows you to create many different kinds of charts.

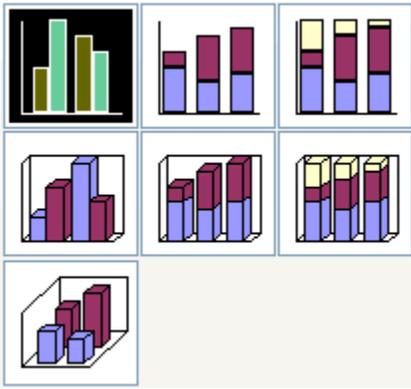
Area Chart

An **area chart** emphasizes the trend of each value over time. An area chart also shows the relationship of parts to a whole.



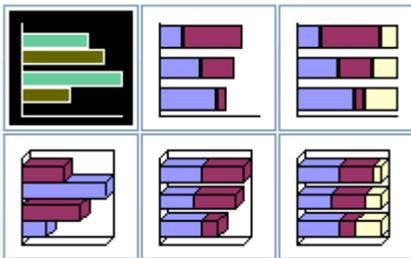
Column Chart

A **column chart** uses vertical bars or columns to display values over different categories. They are excellent at showing variations in value over time.



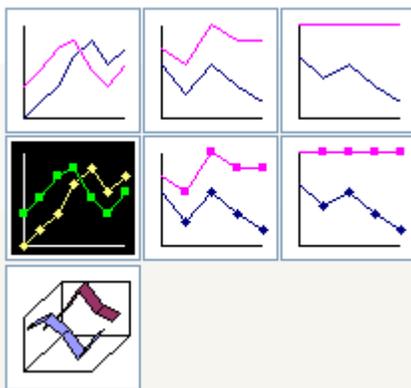
Bar Chart

A **bar chart** is similar to a column chart except these use horizontal instead of vertical bars. Like the column chart, the bar chart shows variations in value over time.



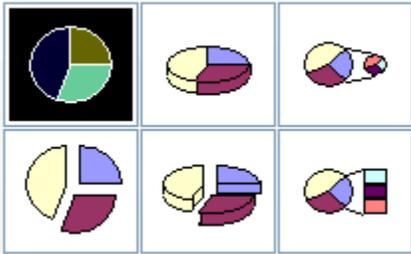
Line Chart

A **line chart** shows trends and variations in data over time. A line chart displays a series of points that are connected over time.



Pie Chart

A **pie chart** displays the contribution of each value to the total. Pie charts are a very effective way to display information when you want to represent different parts of the whole, or the percentages of a total.

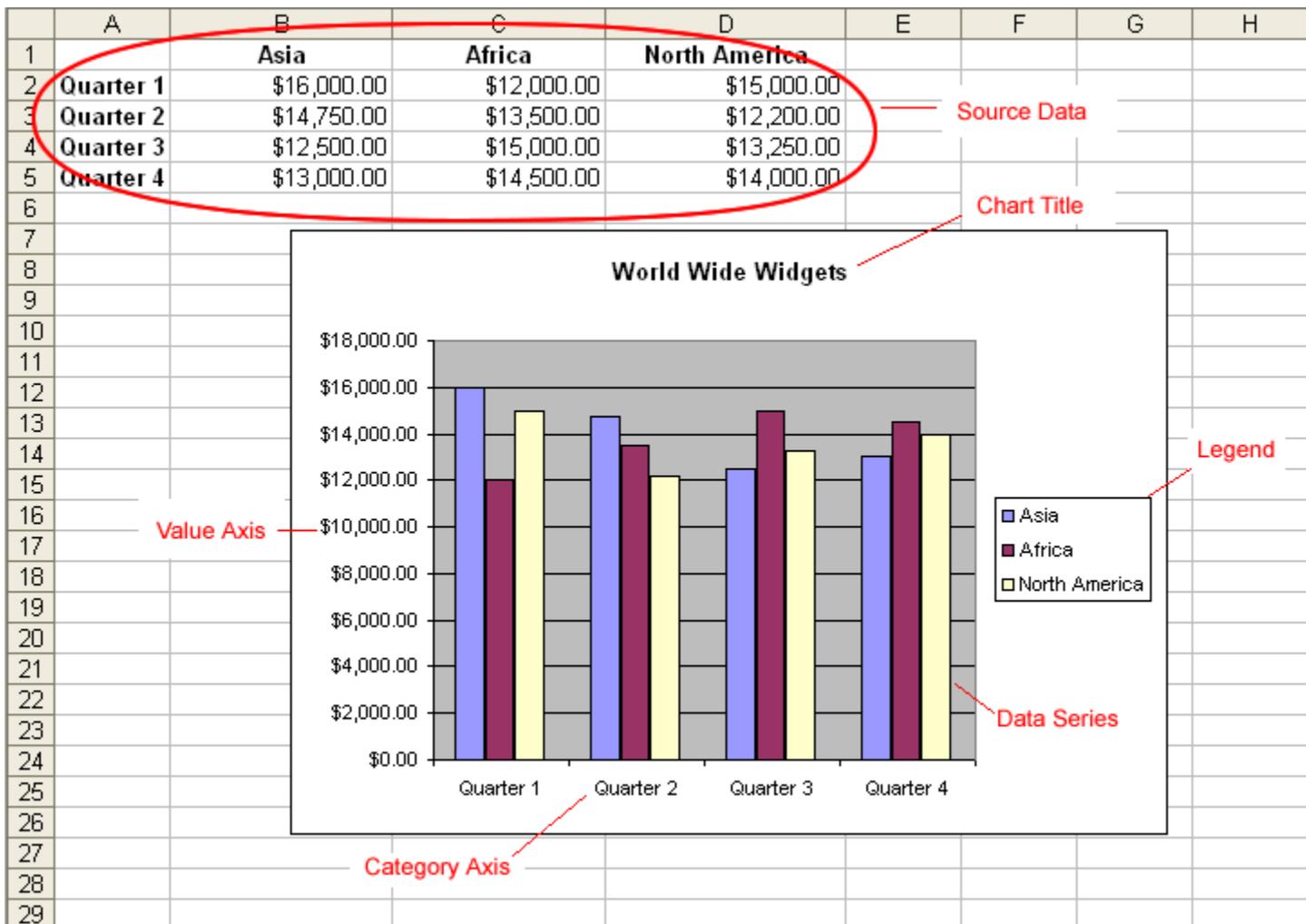


Other Charts

Other charts that can be created in Excel 2003 include: **Doughnut; Stock XY (scatter); Bubble; Radar; Surface; or Cone, Cylinder, and Pyramid charts.**

Identifying the Parts of a Chart

Have you ever read something you didn't fully understand but when you saw a chart or graph, the concept became clear and understandable? Charts are a visual representation of data in a worksheet. Charts make it easy to see comparisons, patterns, and trends in the data.



Source Data

The range of cells that make up a chart. The chart is updated automatically whenever the information in these cells change.

Title

The title of the chart.

Legend

The chart key, which identifies each color on the chart represents.

Axis

The vertical and horizontal parts of a chart. The vertical axis is often referred to as the Y axis, and the horizontal axis is referred to as the X axis.

Data Series

The actual charted values, usually rows or columns of the source data.

Value Axis

The axis that represents the values or units of the source data.

Category Axis

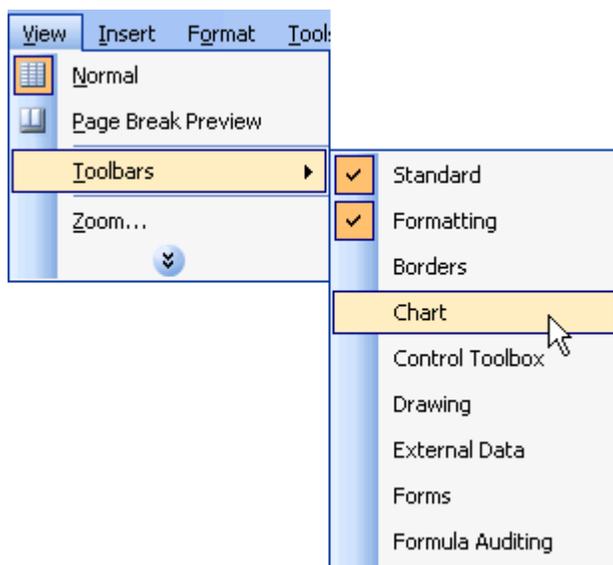
The axis identifying each data series.

Creating a Chart Using the Chart Toolbar

Charts can be created in a number of ways in Excel 2003. The quickest way to create and edit your charts is to use the **Chart Toolbar**.

To Show the Chart Toolbar:

- Choose **View** → **Toolbars** → **Chart** on the menu bar.



Parts of the Chart Toolbar:

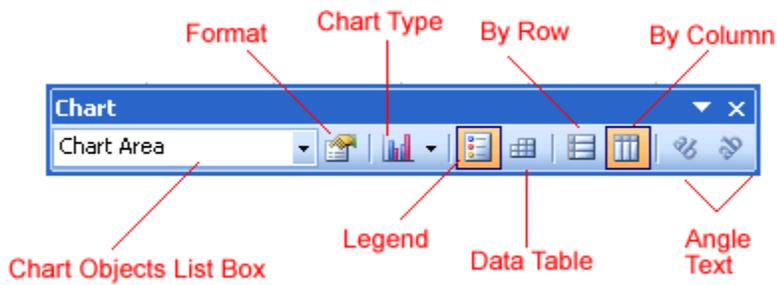


Chart Objects List Box

This list box lets you select different parts of a chart for editing.

Format Chart Area

Used to format that part of the chart which is currently selected.

Chart Type

A drop-down menu that lets you select different types of charts. The chart type can be changed at any time.

Legend

Used to show or hide the chart legend.

Data Table

Used to show or hide the actual Source Data used to create the chart.

By Row

Plots the Data Series using the row labels (Y-axis).

By Column

Plots the Data Series using the column labels (X-axis).

Angle Text

Use to rotate the angle of the X-axis and Y-axis labels.

Creating an Embedded Chart

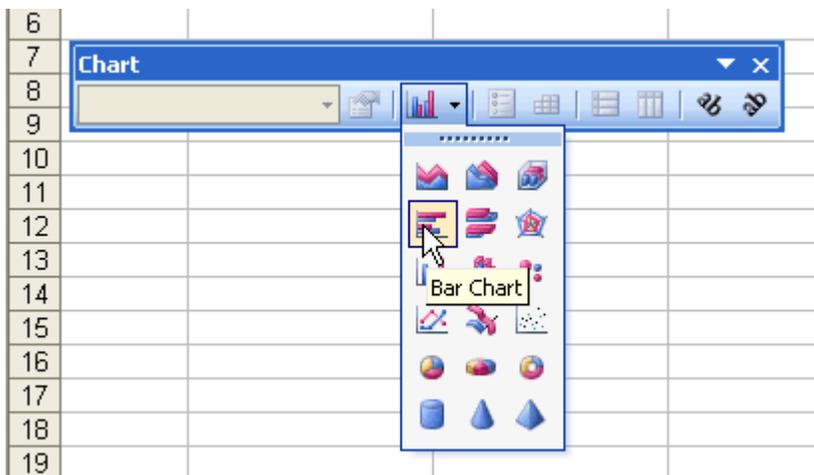
Charts can be created in either of two ways in Excel 2003: **Embedded Charts** and a **Chart Sheet**. Excel creates an **embedded chart** by default. An embedded chart is placed on the same worksheet as the source data used to create it.

To Embed a Chart in a Worksheet:

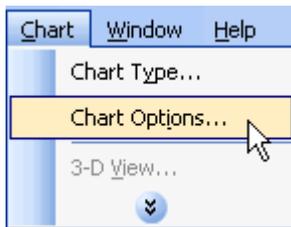
- Choose **View** → **Toolbars** → **Chart** on the menu bar.
- Select the range of cells that you want to chart. Your source data should include at least three categories or numbers.

	A	B	C	D	E
1		Asia	Africa	North America	
2	Quarter 1	\$16,000.00	\$12,000.00	\$15,000.00	
3	Quarter 2	\$14,750.00	\$13,500.00	\$12,200.00	
4	Quarter 3	\$12,500.00	\$15,000.00	\$13,250.00	
5	Quarter 4	\$13,000.00	\$14,500.00	\$14,000.00	
6					
7	Chart				
8					
9					
10					

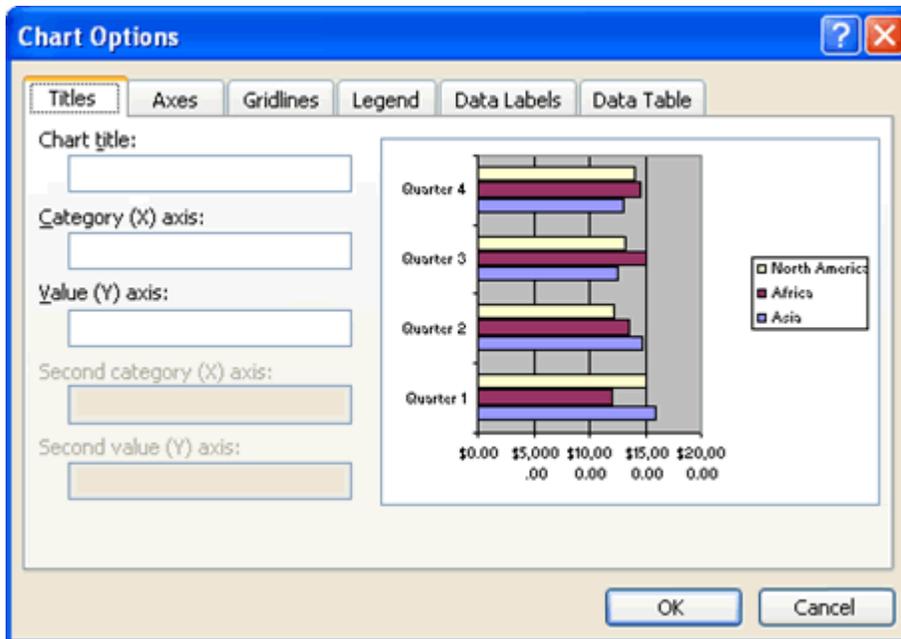
- Click the chart type pull down on the chart toolbar and select the chart that you would like to use.



- Open the chart options dialog box: **Chart** → **Options** to add a title to your chart.



- Select the **Titles** tab and type the title of the chart in the **Chart Title** text box.



✓ Different charts work best with different data. A pie chart, for example, can only display one data series at a time.

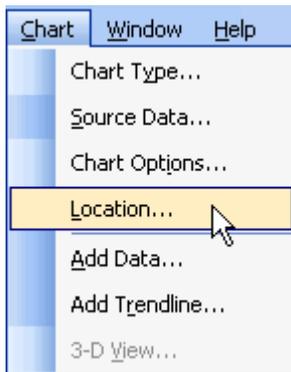
✓ Excel 2003 includes a 4-step Chart Wizard that you can use to guide you through the steps for creating a chart. Highlight the cell range you want to chart, choose **Insert** → **Chart** on the menu bar and follow the instructions in the wizard.

Creating a chart sheet

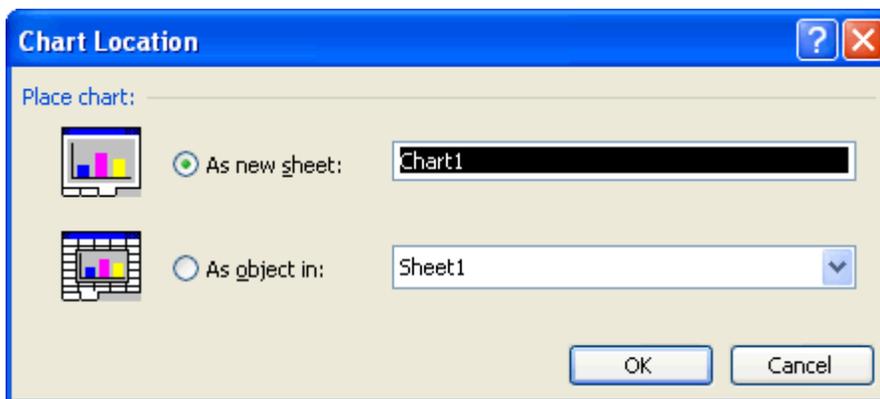
Sometimes, you may want to create a chart and place it on a separate sheet in the workbook. This is called a **Chart Sheet**. Chart sheets can make your charts stand out, particularly when working with complicated spreadsheets.

To Move an Embedded Chart to a Chart Sheet:

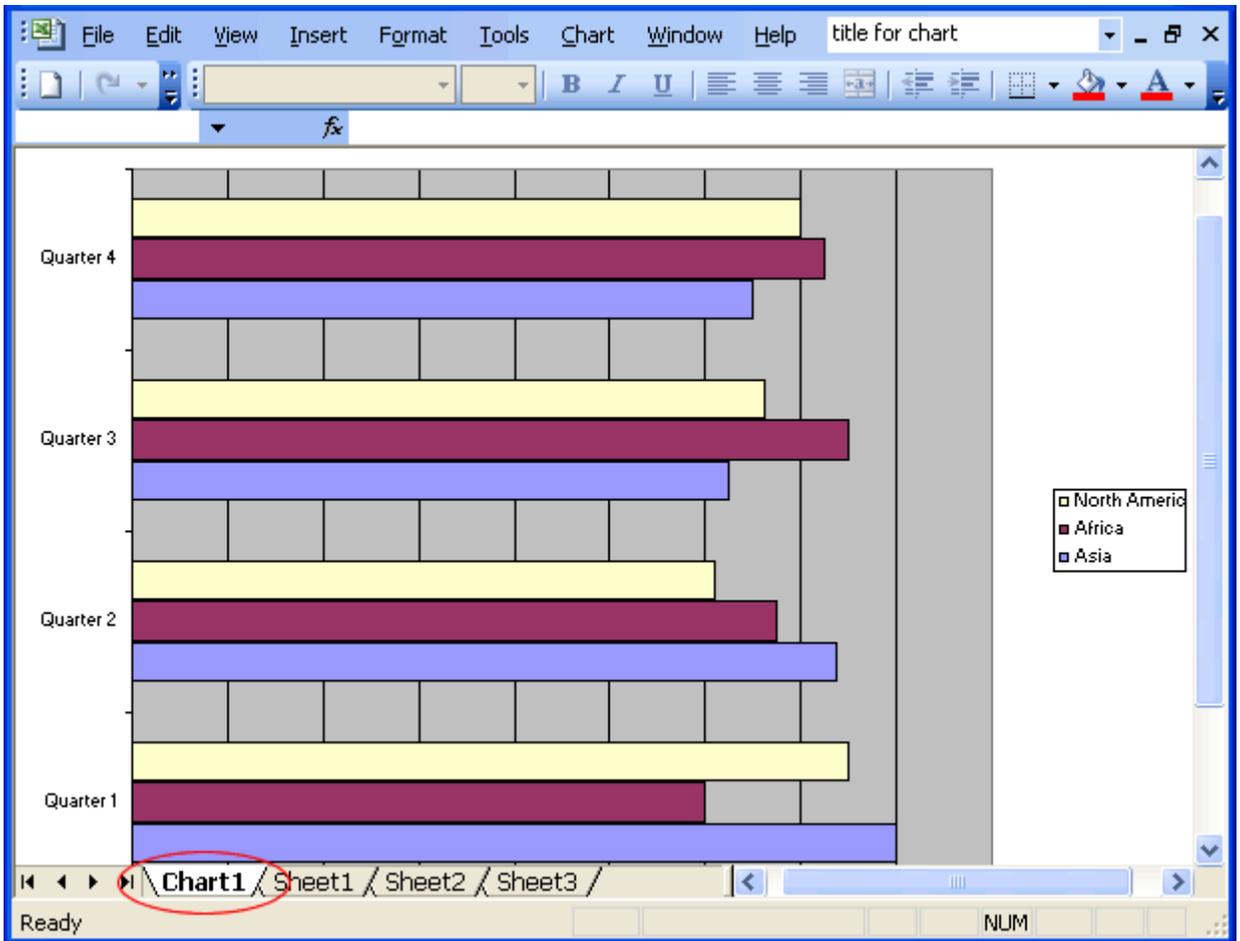
- Create an embedded chart.
- Select the chart to be moved to a chart sheet.
- Choose **Chart** → **Location** from the menu bar.



- In the **Chart Location** dialog box, select the **As a new sheet** radio button.
 (The **As object in** radio button adds the chart as an embedded object on the worksheet.)



- Click the **OK** button. The chart is displayed on a separate Chart Sheet in the Workbook.

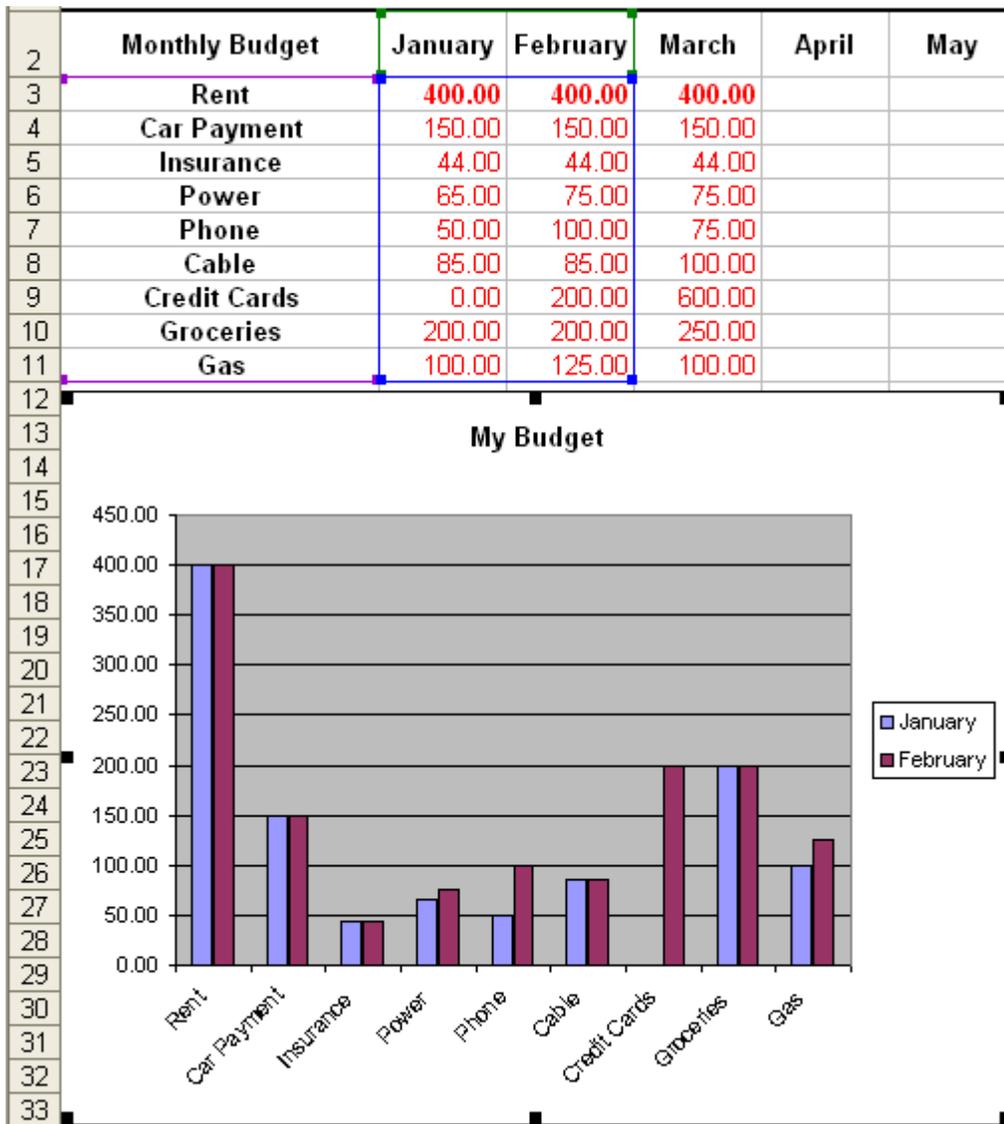


✓ You can also use the Chart Location dialog box to rename the Chart Sheet.

Challenge!

- Open your **Monthly Budget** file.
- Type your income for the month of March in D17.
- Type your expenses for the month of March in the appropriate cells of Column D.
 - The **Total Expenses** and **Savings** will be calculated for you because of the formula in each cell.
- Create an **embedded Column Chart** using the expense data for the months of January and February.
 - **Important Note:** Do not include the data for rows 16 through 18 and do not include the data for the month of March.
- Create a title for your chart and name it **My Budget**.

An Example:



- Save and close the document.

Lesson 16: Moving, Resizing, and Deleting Charts

By the end of this lesson, learners should be able to:

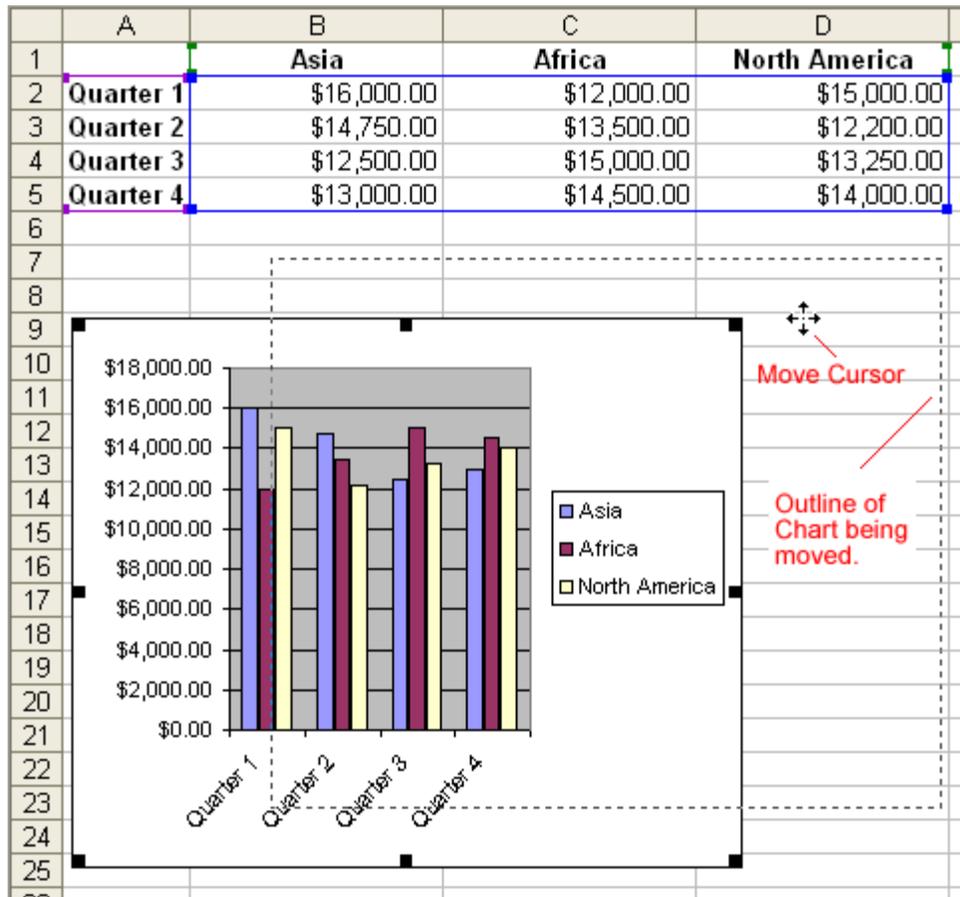
- Move a chart
- Resize a chart
- Delete a chart

Moving a chart

An embedded chart can be **moved** anywhere on a worksheet. The easiest way to move a chart is to drag it around the worksheet.

To Move a Chart:

- Click anywhere on the white space in the chart and use the cursor to drag the chart anywhere on the worksheet.



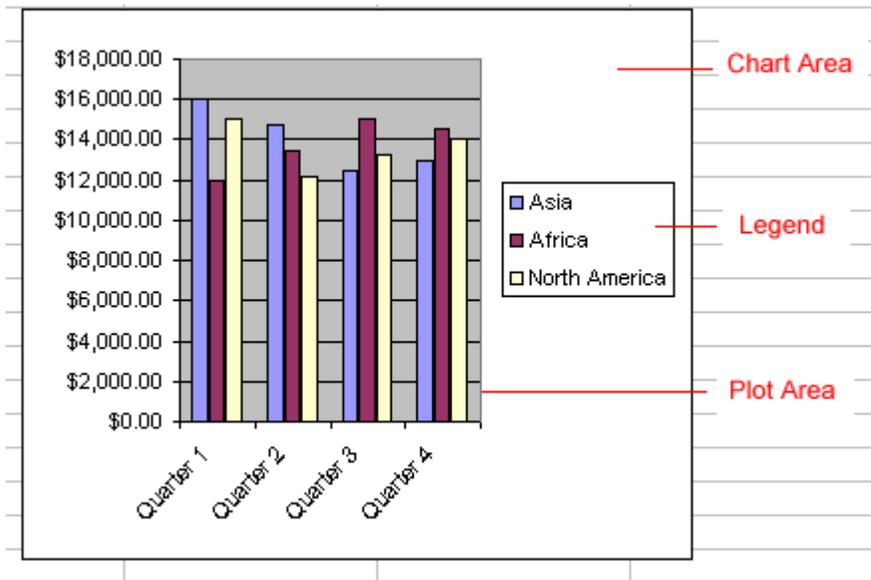
- Release the mouse button to place the graph in its new location.

Resizing a Chart

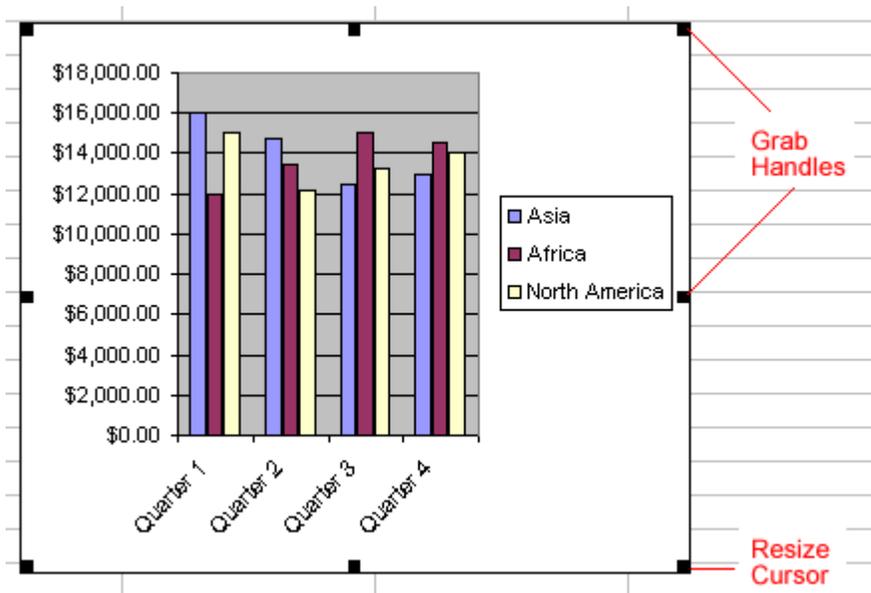
Charts can be **resized**-made larger or smaller-to fit on a worksheet. **Chart Titles** are sized in proportion to how large or small you make the chart. And within the Chart Area, the Legend and/or Plot Area can be made larger or smaller. Chart Titles can be moved but not resized.

To Resize a Chart:

- Click anywhere on the white space of the **chart area**, **plot area** or **legend** you want to move or resize.



- Point the mouse to one of the Grab Handles or Resize Cursor-the pointer changes to a double-headed arrow-to resize the chart.



- Use the mouse to drag the sizing handle until the chart is resized to the desired size.

Deleting a Chart

Any embedded chart or chart sheet can be **deleted** from a worksheet. A chart sheet is deleted in the same manner a worksheet is deleted. This section discusses how to delete an embedded chart.

To Delete a Chart:

- Click anywhere on the white space of the **chart area** to select the chart.
- Press the **Delete** key on your keyboard.

✓ If you have difficulty deleting a chart, click anywhere outside of the chart and then select the chart again.

Challenge!

- Open your **Monthly Budget** file.
- Move the chart so that it is located below Row 19 and all the data.
- Resize** the chart so that it is larger than its current size.
- Save and close the document.

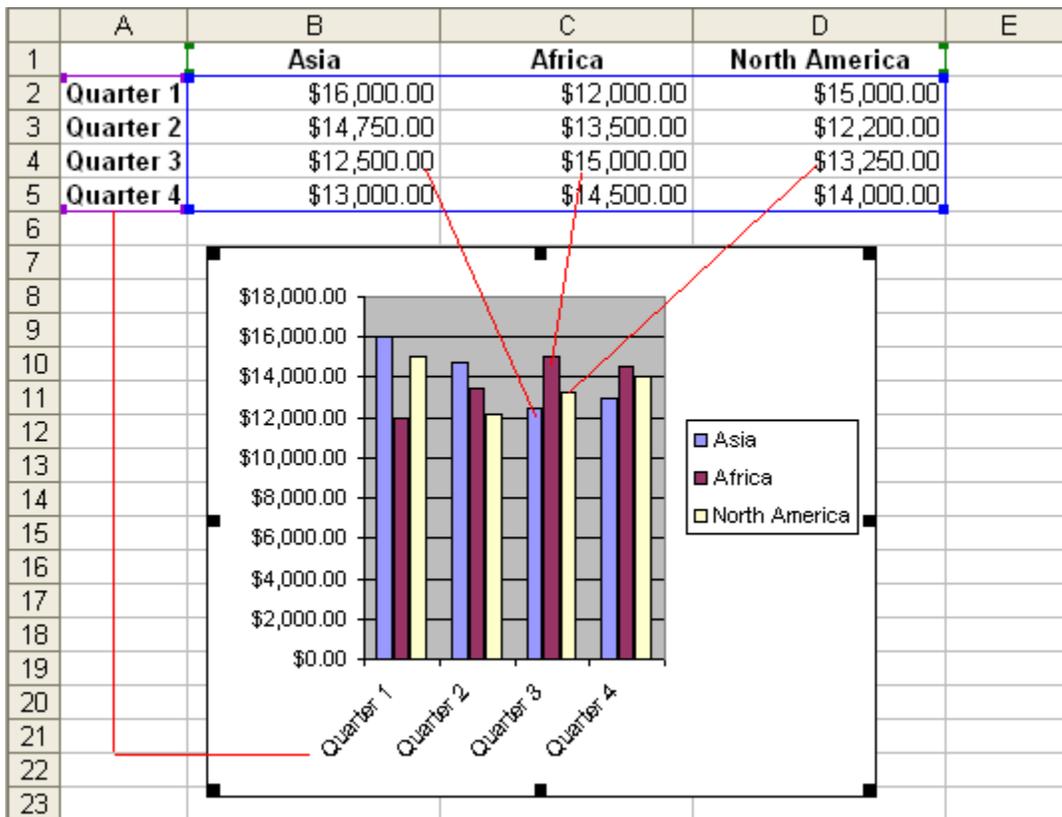
Lesson 17: Editing Charts

By the end of this lesson, learners should be able to:

- Change Chart Data
- Change the Chart Title
- Change the Data Series Names or Legend Names
- Change the Chart Type

Changing Chart Data

When you add a chart to your worksheet, Excel creates a link between the chart and your source data. Any changes made to the original source data are automatically reflected in the chart.



To Change Chart Values Directly in Worksheet Cells:

- Open the worksheet that contains the chart to be changed.
- Click in the cell whose value will change and type the new value.

- Press **Enter** to accept the new value.

Changing Chart Data (continued)

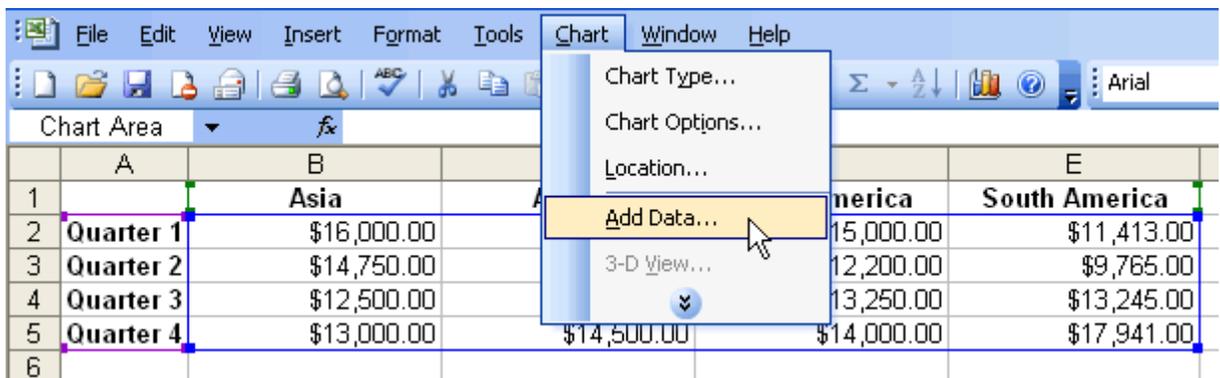
To Add Data to an Existing Chart:

Rows or columns of data can be added to an existing chart by selecting the **Add Data** option on the Chart Menu.

- Input any new Source Data into the worksheet (e.g., a new column called South America).

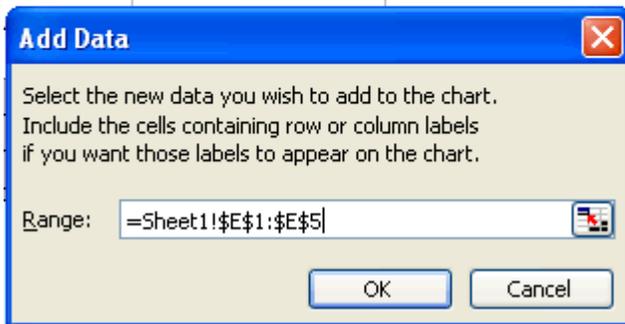
	A	B	C	D	E
1		Asia	Africa	North America	South America
2	Quarter 1	\$16,000.00	\$12,000.00	\$15,000.00	\$11,413.00
3	Quarter 2	\$14,750.00	\$13,500.00	\$12,200.00	\$9,765.00
4	Quarter 3	\$12,500.00	\$15,000.00	\$13,250.00	\$13,245.00
5	Quarter 4	\$13,000.00	\$14,500.00	\$14,000.00	\$17,941.00
6					

- Click on the chart to select it for editing.
- Choose **Chart** → **Add Data** from the menu bar.



- The **Add Data** dialog box appears.
- Select the cell range of new data to be added to the chart. Marching ants appear around the cell range. The selected cells are added to the Add Data dialog box.

	D	E
ica	North America	South America
\$12,000.00	\$15,000.00	\$11,413.00
\$13,500.00	\$12,200.00	\$9,765.00
\$15,000.00	\$13,250.00	\$13,245.00
\$14,500.00	\$14,000.00	\$17,941.00



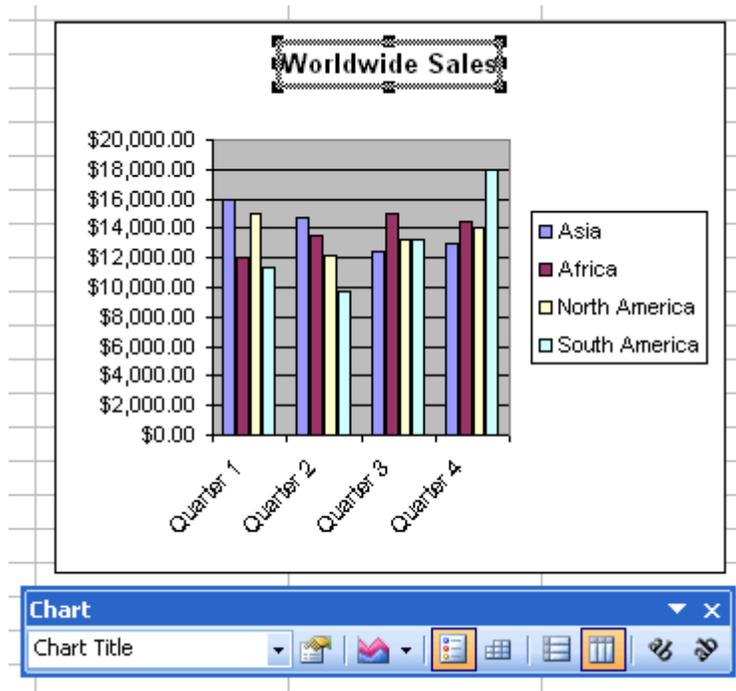
- Click the **OK** button to add the new data to the chart.

Changing the Chart Title

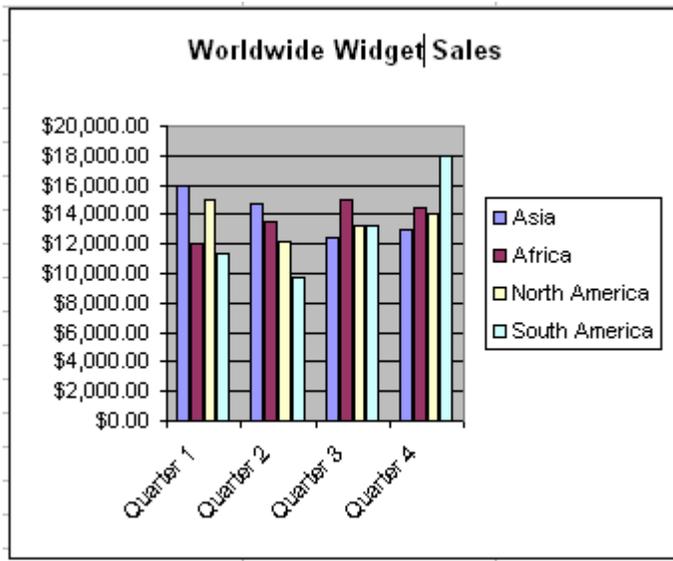
The **Chart Title** can be changed at any time to a name that's meaningful to you.

To Change the Chart Title on the Chart:

- Click on the **Chart Title**.



- Click anywhere in the title name and make any changes to the text.



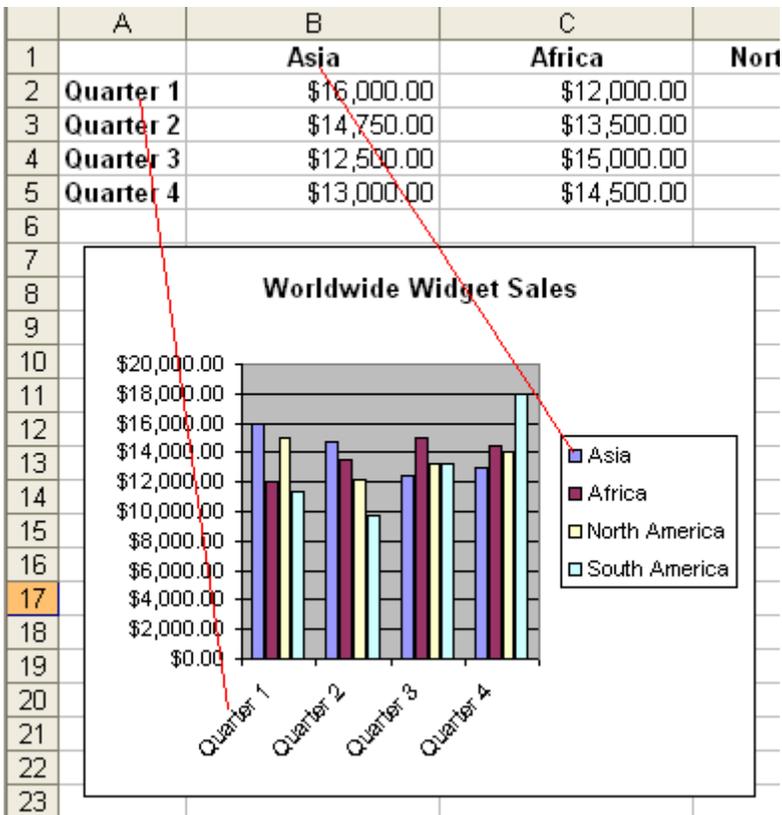
- Click anywhere outside of the title to apply your changes.

Changing the Data Series Names or Legend Text

Data Series Names and **Legend Text** are changed in much the same manner as when you changed Chart Values in the worksheet.

To Change the Data Series Names or Legend Text on the Worksheet:

- Click the cell that contains the **Data Series name** or **Legend** that you want to change.



- Type the new name.
- Press the **Enter** key to add the new name to the chart.

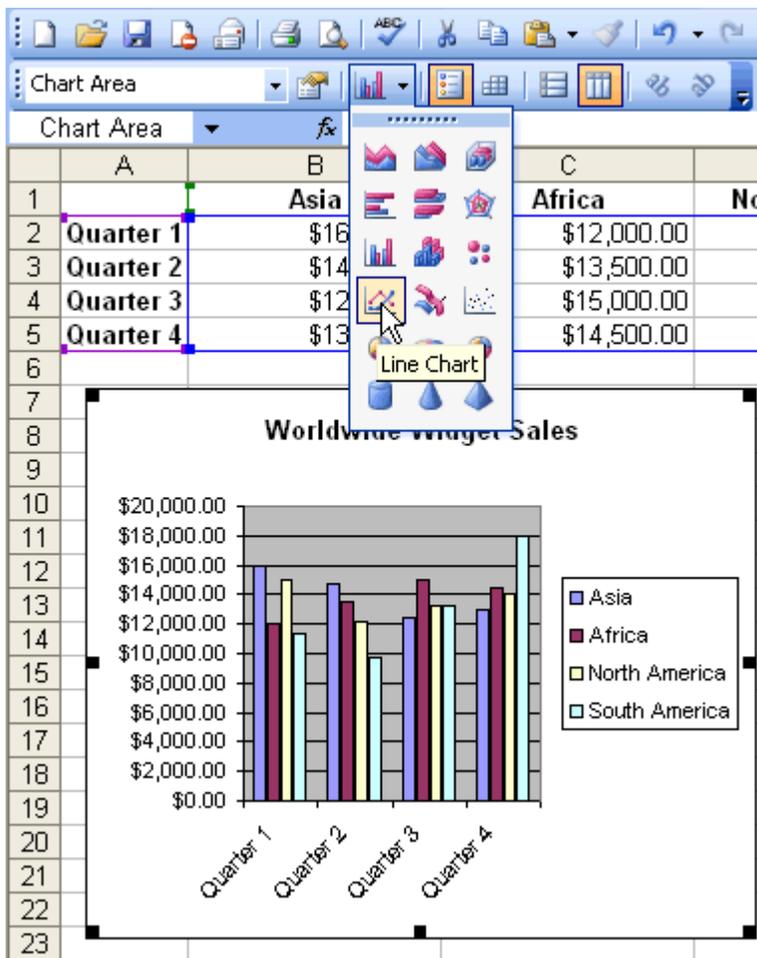
Changing the Chart Type

There are 14 different types of charts in Excel 2003, and, with each chart type, there can be several variations. You can see that you can create any number of different charts. The **Chart Type** can be changed at any time with a couple of clicks of the mouse.

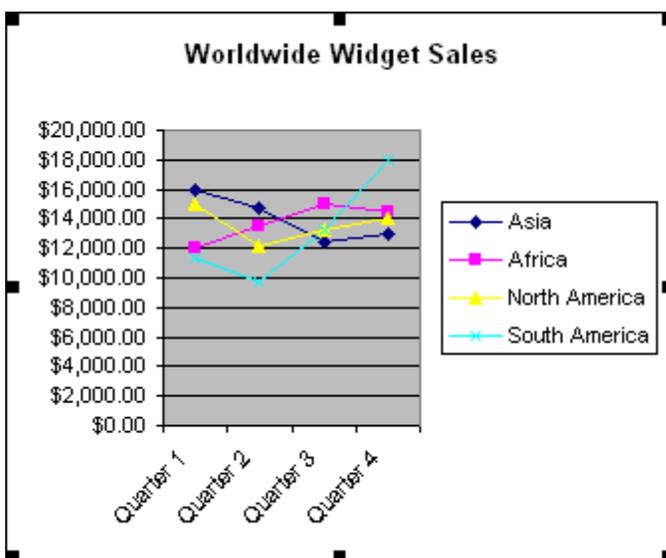
To Select a Different Chart Type:

- Click on the chart to select it for editing.

- Click on the **Chart Type** dropdown list box and select a different chart.



The new chart replaces that one selected for change.



Challenge!

- Open your **Monthly Budget** file.
- Change the dollar amount of **Gas** you spent in the month of February (cell C11) and press **Enter** to accept the new value.
 - Notice how the chart changes when you make that modification. Also, the values in C16 and C18 change automatically.
 - If you did not see the chart change, try entering another number into C11.
- **Add** the data for the month of March to the chart.
- Change the **chart title** from **My Budget** to whatever you wish to name it.
- Save and close the document.

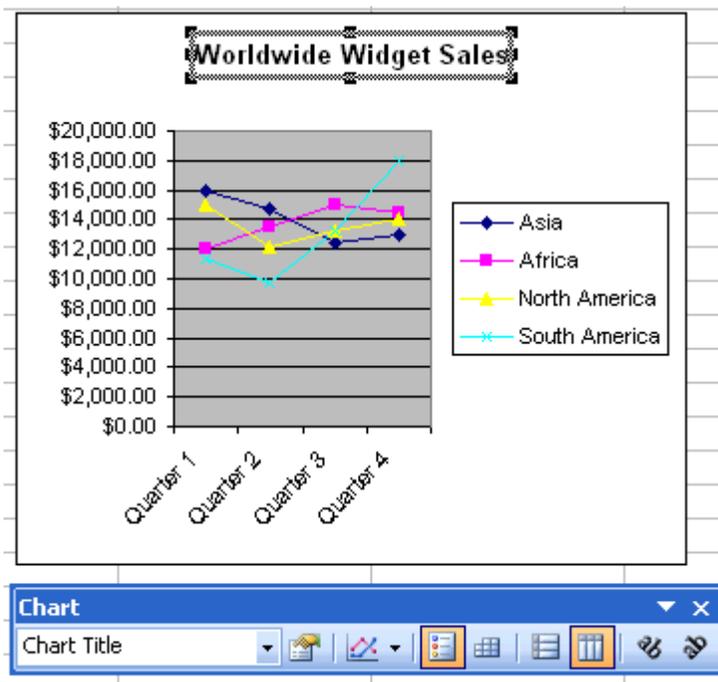
Lesson 18: Formatting a Chart

Formatting the Chart Title

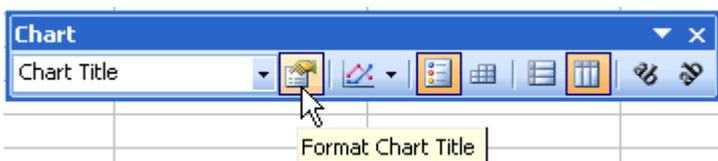
The **Chart Title** can be formatted to change color, pattern, typeface, size and alignment using the **Format Chart Title** dialog box.

To format the chart title:

- Select the **Chart Title**.

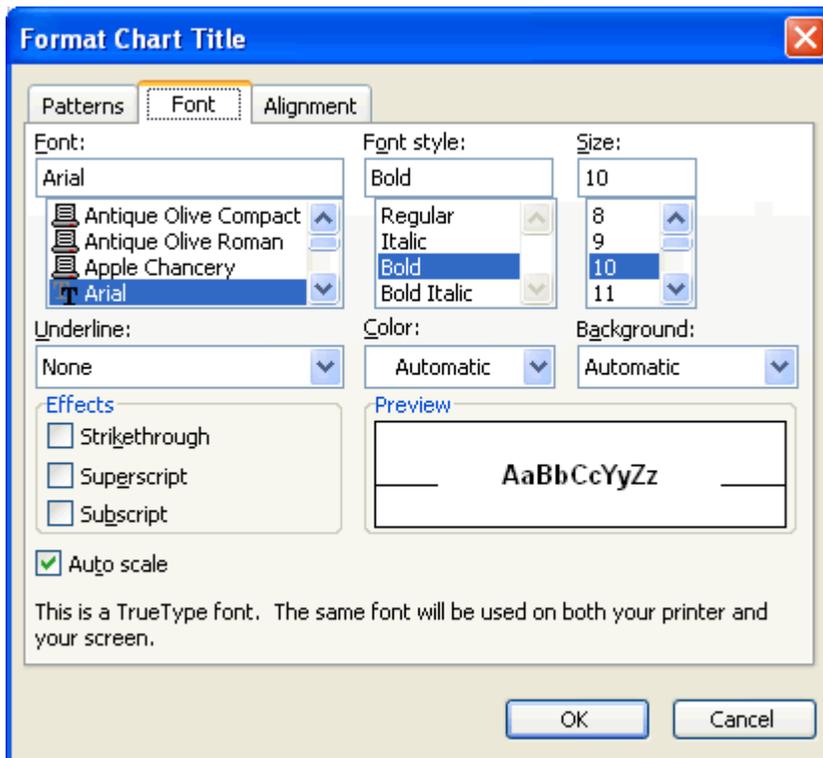


- Click the **Format Button** on the **Chart Toolbar** (or double click the Chart Title).



- The **Format Chart Title** dialog box contains three different tabs-Patterns, Font and Alignment-that can be used to format the Chart Title.
- The Patterns tab lets you define borders and fill colors (see lesson 13).
- The Font tab lets you define Font, Font Style, Size and Color (see lesson 11).

- The Alignment tab lets you define horizontal and vertical cell placement, as well as text orientation (see lesson 11).



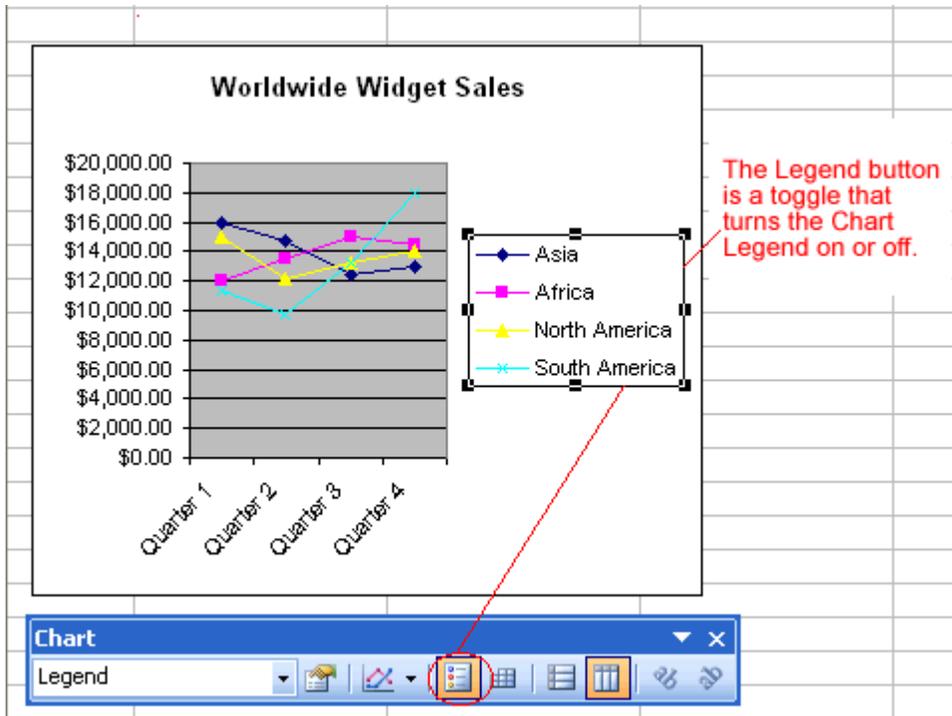
- Click the **OK** button to accept the Chart Title format changes.

Formatting the Chart Legend

The **chart legend** displays very useful information about the chart. Like a roadmap, the Legend identifies what different colors or objects represent in the chart. The Chart Legend, like the Chart Title and Category Axis Labels, can be formatted to your liking.

To Format the Chart Legend:

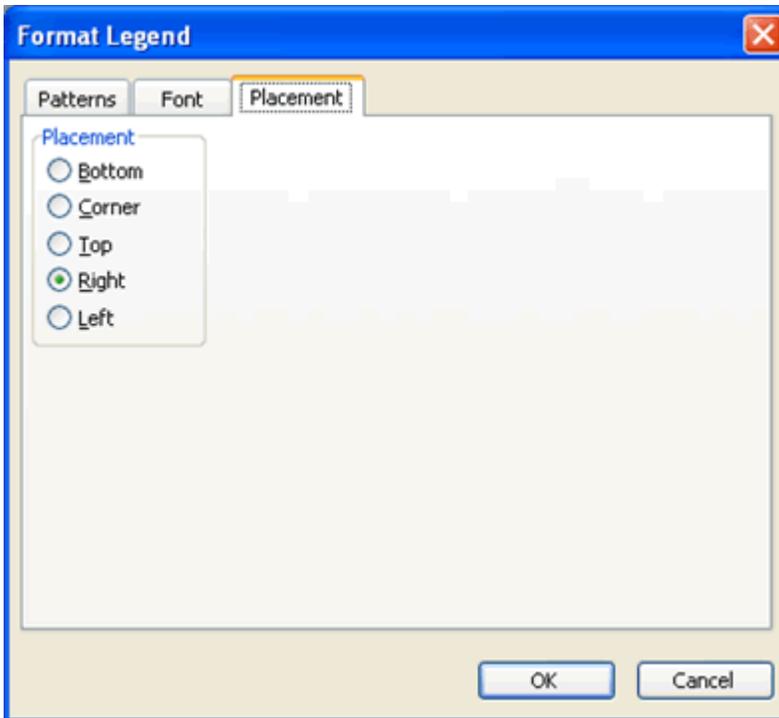
- Press the **show/hide legend** button on the **Chart Toolbar** to turn on the Legend display. (This button acts like a toggle by turning the display on or off.)



- Click to select the **Chart Legend**.
- Click the **Format Button** on the **Chart Toolbar** (or double click the chart legend).



- The **Format Legend** dialog box contains three different tabs- Patterns, Font and Alignment-that can be used to format the Chart Title.
- The **Patterns** tab lets you define borders and fill colors.
- The **Font** tab lets you define Font, Font Style, Size and Color.
- The **Placement** tab lets you define the location where the Legend will appear on the chart.



- Click the **OK** button to accept the Chart Legend format changes.

✓ The only way to change the actual text that appears in the Chart Legend is to change the Source Data in the worksheet.

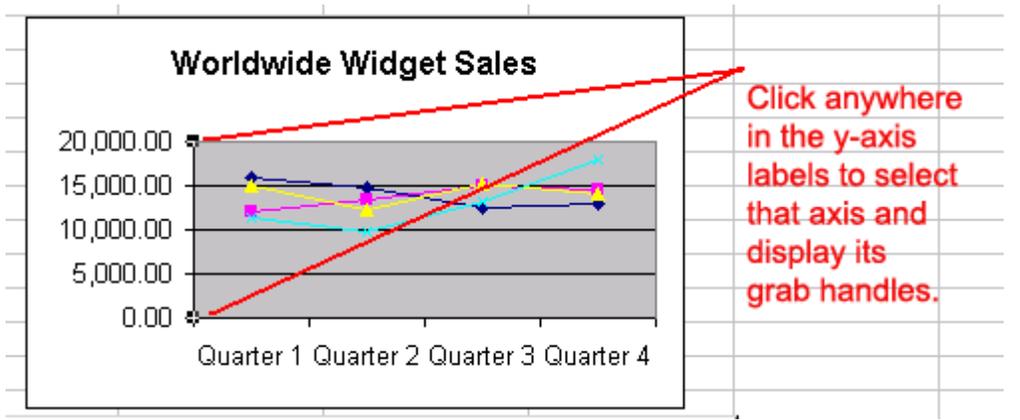
Formatting the Axis Labels

We've previously made reference to a Y-axis and an X-axis in Excel. In Excel, a graph represents a data in two dimensions. The number of items sold in January is data on two dimensions: number of items and month. The number of items might be plotted on one axis, Y-axis, while the month may be plotted on the X-axis. The Y-axis runs up-and-down on the graph. The X-axis runs left-to-right.

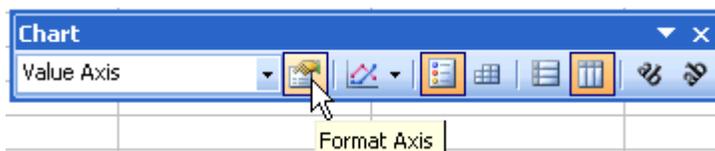
When formatting the **Axis** labels in your chart, you can adjust the numbers on the **Scale** of the chart as well as change font, color, and style.

To Format an Axis:

- Click anywhere in the Axis label that you want to edit:

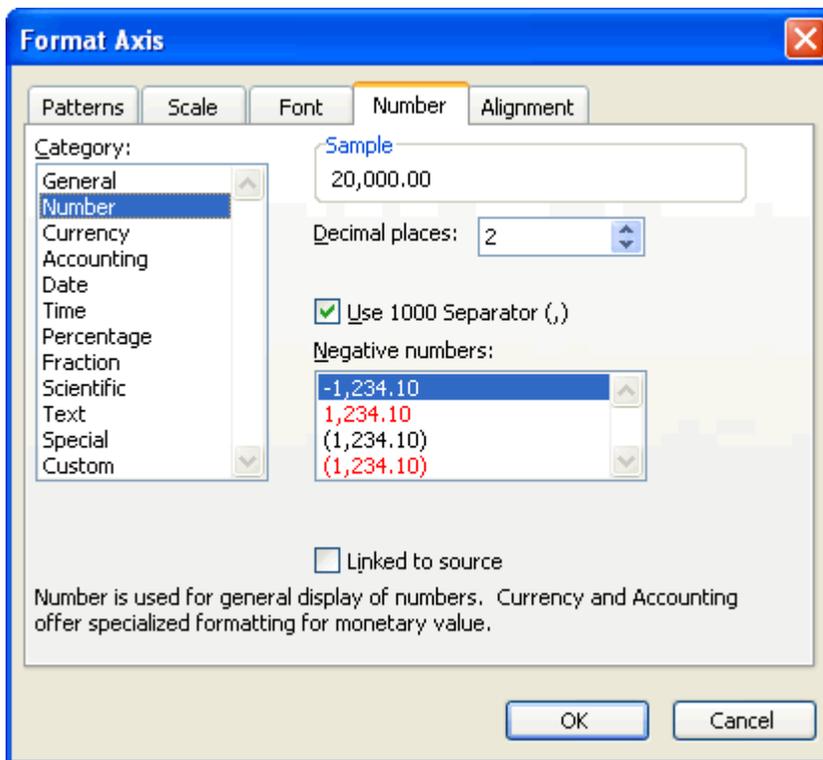


- Click the **Format Button** on the **Chart Toolbar** (or double click the chart axis).



- The **Format Axis** dialog box contains five different tabs-**Patterns**, **Font** and **Alignment**-that can be used to format the Chart Title.
- The **Patterns** tab lets you define borders and tick marks.
- The **Scale** tab lets you define numeric intervals on the Value (Y) Axis scale.
- The **Font** tab lets you define Font, Font Style, Size and Color.
- The **Number** tab lets you define the format of numbers displayed in the Axis (see lesson 12).

- The **Alignment** tabs let you define text orientation (see lesson 11).



- Click the **OK** button to accept the Axis format changes.

✓ You can also use the **angle axis** buttons on the chart toolbar to change the angle of the value and category axis.

Changing the Data Series Color

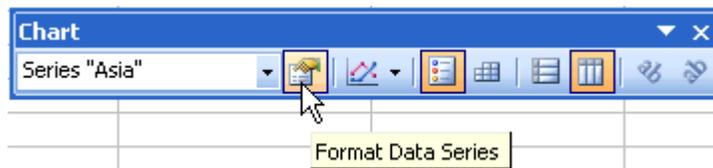
When a chart is created in Excel 2003 you notice that color is automatically applied to the **Data Series**. You can keep this format or change it for each Data Series in the chart. Many different aspects of each data series can be changed, but you'll probably change the color of bars, columns, pie slices and areas most often.

To Change the Color of a Data Series:

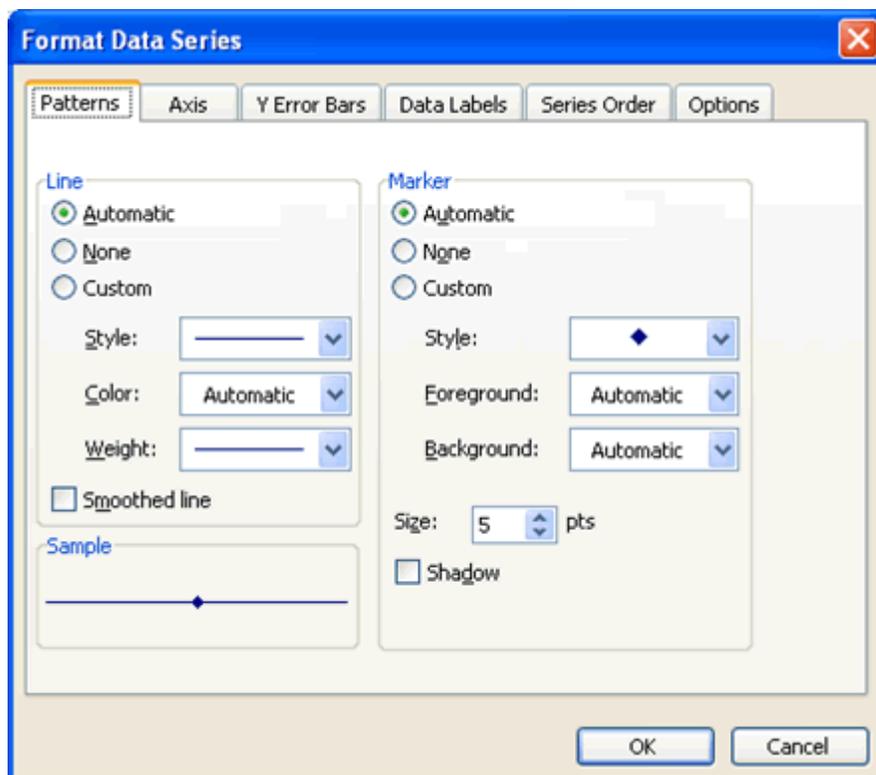
- Select the data series that you wish to edit.



- Click the **Format Button** on the **Chart Toolbar** (or double click the data series).



- Use the **Format Data Series** dialog box to pick a new color.



- Click the **OK** button to accept the Data Series color changes.

Challenge!

- Open your **Monthly Budget** file.
- Format** the **chart title** to Verdana, size 12 font.
- Select the **show/hide legend** button until the legend is visible on the chart.
- Format the **legend placement** so that it is to the left of the chart.
- Format the **y-axis** so the currency amount has a **dollar symbol (\$)** in front of it.
- Modify the color of the **January data series** so that the January column appears **GREEN**.
- Save and close the document.

Lesson 19: Defining Page Setup Options

By the end of this lesson, learners should be able to:

- Set page margins
- Change page orientation and paper size
- Create headers and footers
- Create sheet settings

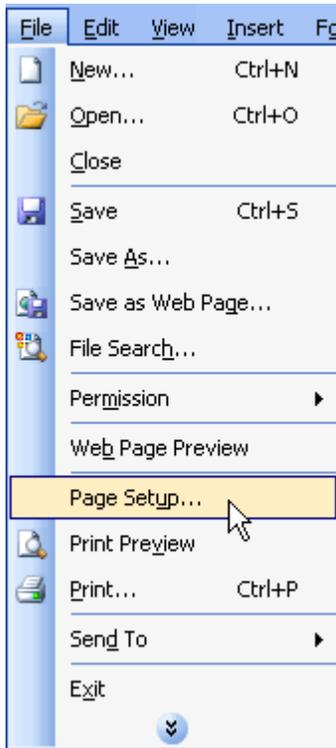
Setting Page Margins

The **Page Margins** define where on the page Excel will print the worksheet. By default, the top and bottom margins are set at 1 inch in Excel 2003. The left and right margins are set at .75 inch. Margin settings can be changed to whatever you want. Different margins can be defined for each worksheet in the workbook.

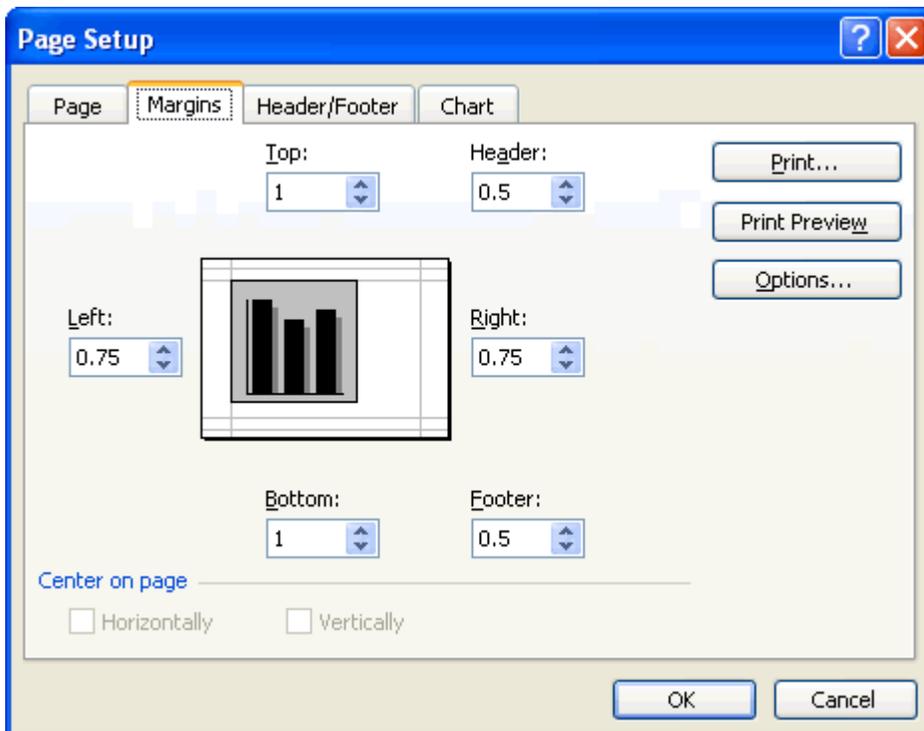
To Change the Margins in the Page Setup Dialog Box:

- Select the correct worksheet.

•Choose **File** → **Page Setup** from the menu bar.



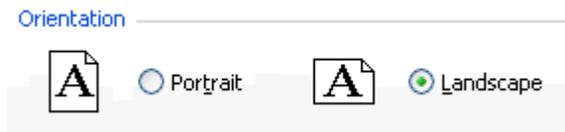
Select the **Margins** tab.



- Use the spin box controls to define the settings for each page margin-**Top, Bottom, Left, Right, Header** and **Footer**.
- Click the OK button to change the margin settings.

Changing the Page Orientation and Paper Size

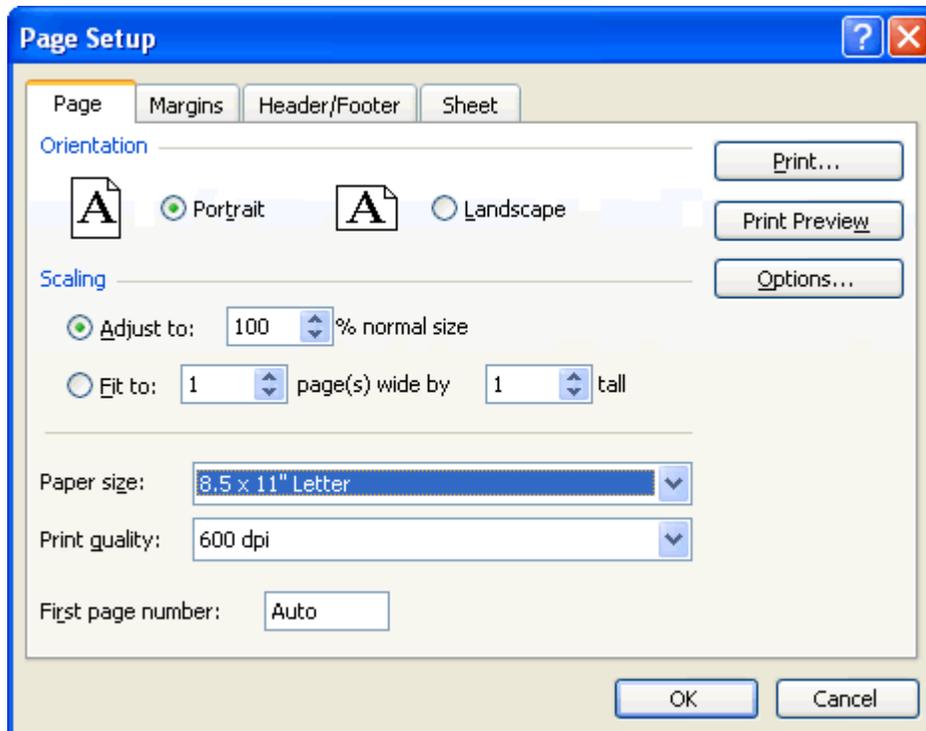
The **Page** tab of the **Page Setup** dialog box lets you change page **orientation** (portrait or landscape) or **paper size** (e.g., letter size or legal size). The default paper size in Excel 2003 is 8.5 X 11 inches, with a portrait orientation (prints up and down on the long side of the page). A landscape orientation, on the other hand, prints up and down on the short side of the page.



To Change Page Orientation:

- Select the correct worksheet.
- Choose **File** → **Page Setup** from the menu bar.

Click on the **Page** tab.



- Choose an **Orientation** (Portrait or Landscape) for the worksheet.
- Select a **Paper Size** from the list of available paper size options that appear in the list box.
- Click on the **paper size**.
- Click the OK button to accept the page settings.

✓ The Page tab of the Page Setup dialog box lets you **shrink** the spreadsheet data so it fits on a specified number of pages when you print. Click the **Fit to:** option button and enter the desired number of pages wide and pages tall.

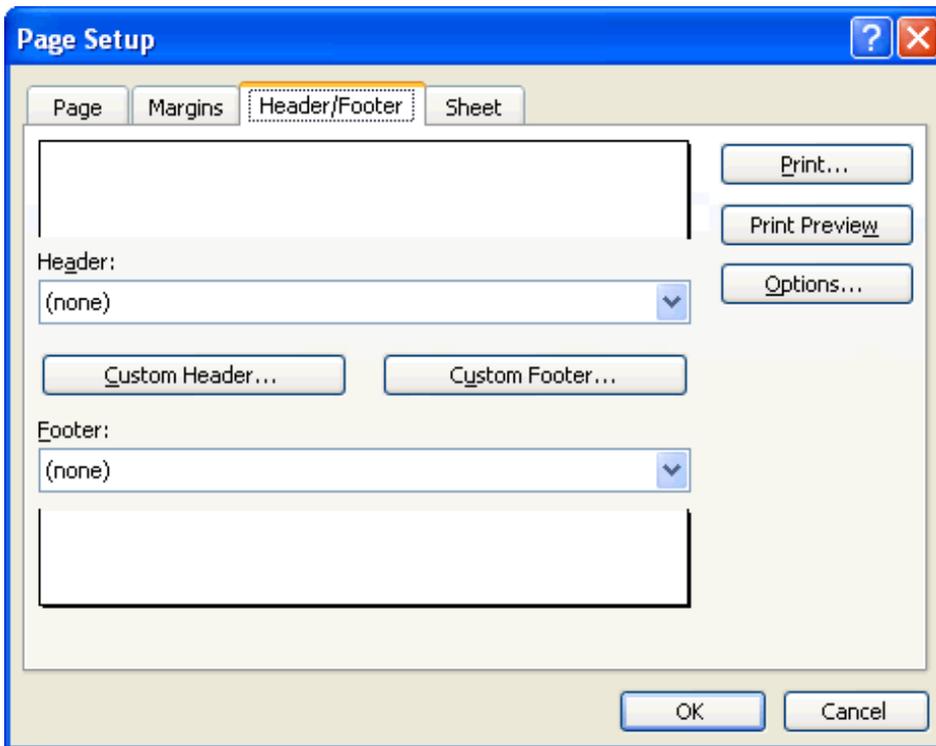
✓ The Page tab of the Page Setup dialog box lets define the resolution of the print job. **Print Quality** is measured in **dpi**, or dots per inch. High dpi provides a better print quality.

Creating Headers and Footers

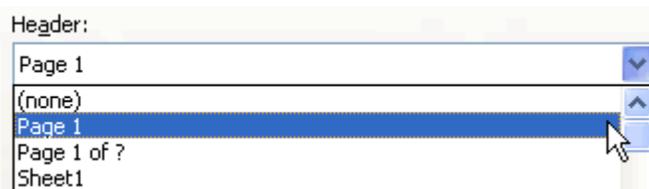
Headers and Footers can be added to any worksheet, although not required. A **Header** is any information that appear at the top of each page. A **Footer** prints at the bottom of the page. If you want a header or footer inserted onto a page then you will have to define them. Excel 2003 defaults to no header and no footer.

To Create a Header:

- Choose **File** → **Page Setup** from the menu bar.
- Select the **Header/Footer** tab in the **Page Setup** dialog box

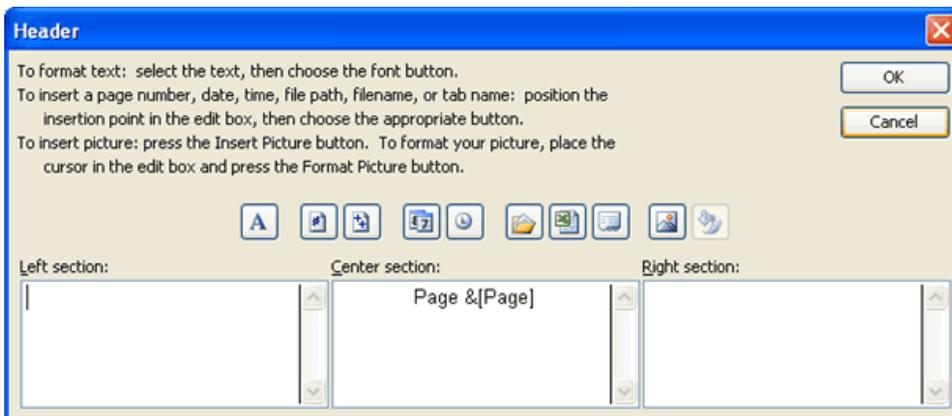


- Click the **Header** drop down list and select and of the predefined headers:



OR

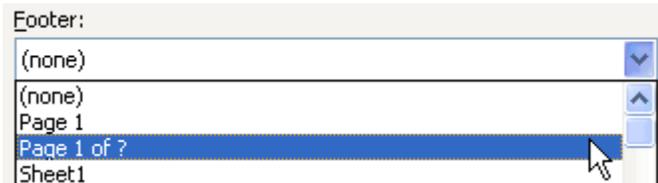
click the **Custom Header** button to create your own header. Follow the instructions in the Header dialog box to make your entry.



- Click the **OK** button to return to the Page Setup dialog box.

To Create a Footer:

- Choose **File** → **Page Setup** from the menu bar.
- Select the **Header/Footer** tab in the **Page Setup** dialog box.
- Click the **Footer** drop down list and select one of the predefined footers.



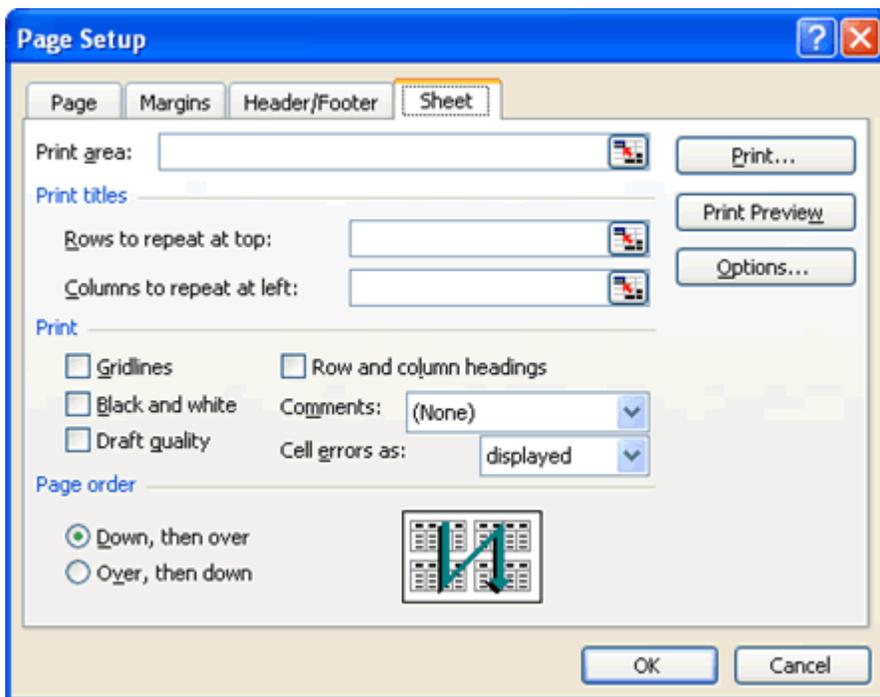
OR

Click the **Custom Footer** button to create your own footer. Follow the instructions in the Footer dialog box to make your entry.

✓ You can insert **Placeholder** buttons into both the header and footer to format text, insert page numbers, date, time, filename, or tab name. Excel replaces those placeholders with the information each represents when the worksheet is printed. Follow the instructions in the Header and Footer dialog boxes.

Creating Sheet Settings

The **Sheet** tab in the **Page Setup** dialog box provides additional print options you may want to add to your worksheet.



Print Area

By default, Excel prints from the A1 to the last occupied cell in a worksheet. You can specify a different range of cells to print.

Print Titles

Prints column and row labels on each page of the printout. Specify these rows or columns in the **Rows to Repeat at Top** and **Columns to Repeat at Left** textboxes.

Print - Gridlines

Determines whether gridlines are printed. However, turning off gridlines does not affect their appearance in Normal View.

Print - Black and White

If you used colors in your worksheet but don't want to waste the ink in your color printer, use black and white.

Print - Draft Quality

Choose draft quality to print the worksheet without gridlines or graphics.

Print - Row and Column Headings

Click this option to include row numbers and columns letters in your printed document.

Page Order

Determines the order in which worksheets are printed.

Challenge!

- Open your **Monthly Budget** file.
- Change the **right and left margins** to .5".
- Verify the **top and bottom margins** are 1".
- Change the **Page Orientation** to **Landscape** and verify the page size is 8.5 X 11".
- Create a **custom footer** with **your name or GCF username** in the left section and the **date** in the right section.
- Save and close the document.

Advanced Excel Topics

Lesson 21: Using AutoFilter

By the end of this module, learners should be able to:

- Filter data in a spreadsheet

Using AutoFilter

[Watch the video!](#) (1:05 min) - [Tips](#) for watching our videos.

The **AutoFilter** feature makes filtering, or temporarily hiding, data in a spreadsheet very easy. This allows you to focus on specific spreadsheet entries.

To Use AutoFilter:

- Select **Data** from the main menu.
- Select **Filter** → **AutoFilter**.
- Click the drop-down arrow next to the heading you would like to filter.

For example, if you would like to only view data from the **West Sales Region**, click the drop-down arrow next to **Sales Region**.

	A	B	C	D	E
1	Employee Name	Sales Region	January	February	March
2	Smith, Jane	Sort Ascending	\$505,000.00	\$750,000.00	\$600,200.00
3	Potter, Betty	Sort Descending	\$80,000.00	\$150,000.00	\$175,000.00
4	Doe, John	(All)	\$425,000.00	\$225,000.00	\$125,000.00
5	Shadow, Elizabeth	(Top 10...)	\$95,000.00	\$125,500.00	\$250,000.00
6	Robinson, Betty	(Custom...)	\$423,456.00	\$324,560.00	\$123,450.00
7	Smith, Harold	East	\$525,325.00	\$425,325.00	\$156,250.00
8	Thomas, Robert	North	\$152,380.00	\$265,489.00	\$160,578.00
9	Zachman, Zachary	South	\$80,000.00	\$90,000.00	\$35,000.00
10	Altman, Zoey	West	\$190,000.00	\$175,000.00	\$165,000.00
11	Bittiman, William	South	\$250,000.00	\$125,000.00	\$80,000.00
12	Allenson, Carol	West	\$375,800.00	\$385,000.00	\$275,000.00
13	Carlson, David	West	\$425,000.00	\$325,650.00	\$150,280.00
14	Kellerman, Frances	West	\$425,000.00	\$189,050.00	\$125,000.00
15	Collman, Harry	North	\$325,000.00	\$128,500.00	\$250,225.00
16	Ferguson, Elizabeth	South	\$175,000.00	\$195,000.00	\$80,000.00
17	Morrison, Thomas	East	\$255,000.00	\$324,560.00	\$156,250.00
18	Hodges, Melissa	West	\$195,850.00	\$425,325.00	\$160,578.00
19					

- Choose the data you would like to **display**.

In this example, you would choose **West**. All other data will be filtered, or hidden, and only the West Sales Region data is visible.

➤ Click the drop-down arrow again and select **All** to display all of your original data.

Challenge!

Download and save the **Employee Sales** spreadsheet to complete this Challenge. Need help? [How to Download a File](#)

- Open the **Employee Sales** spreadsheet.
- Use the AutoFilter feature to filter all entries except for the **North Sales Region**.
- Continue to use AutoFilter until you are comfortable with this feature.
- Save and close the spreadsheet.

Lesson 22: Sorting Lists

By the end of this module, learners should be able to:

- Sort lists in ascending order
- Sort lists in descending order
- Sort multiple categories at the same time

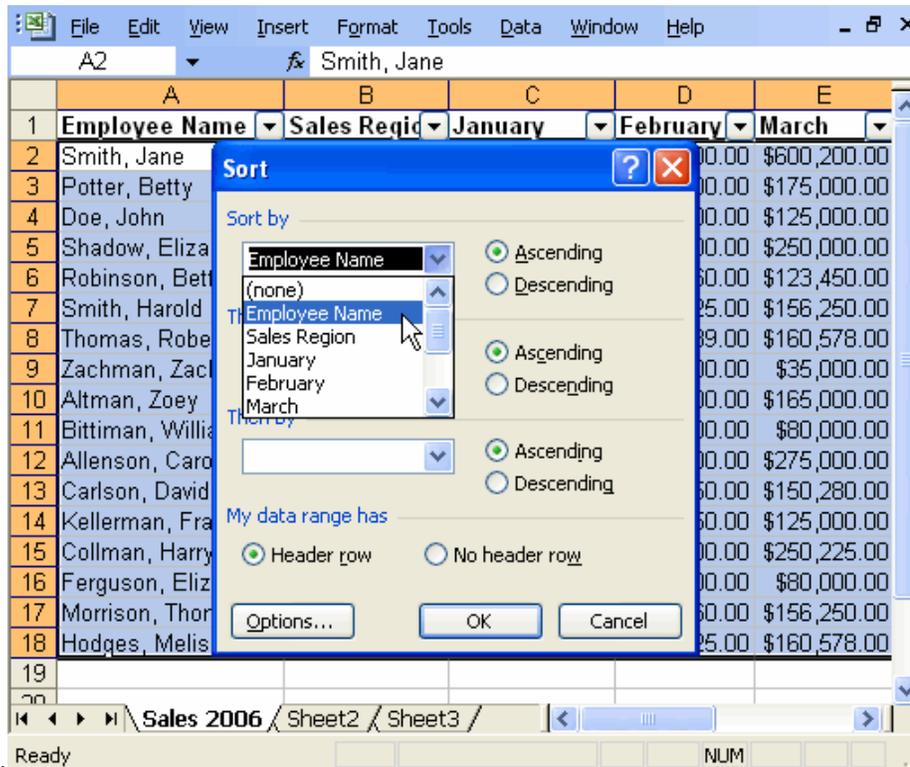
Sorting Lists

Sorting lists is a common spreadsheet task that allows you to easily reorder your data. The most common type of sorting is alphabetical ordering, which you can do in ascending or descending order.

In this example, we will alphabetize the **employee names**.

To Sort in Ascending or Descending Order:

- Select **Data** from the main menu.
- Select **Sort**. The **Sort** dialog box will appear.
- Select the category you would like to **Sort by**.
- Select **Ascending** to sort in alphabetical order from A to Z.



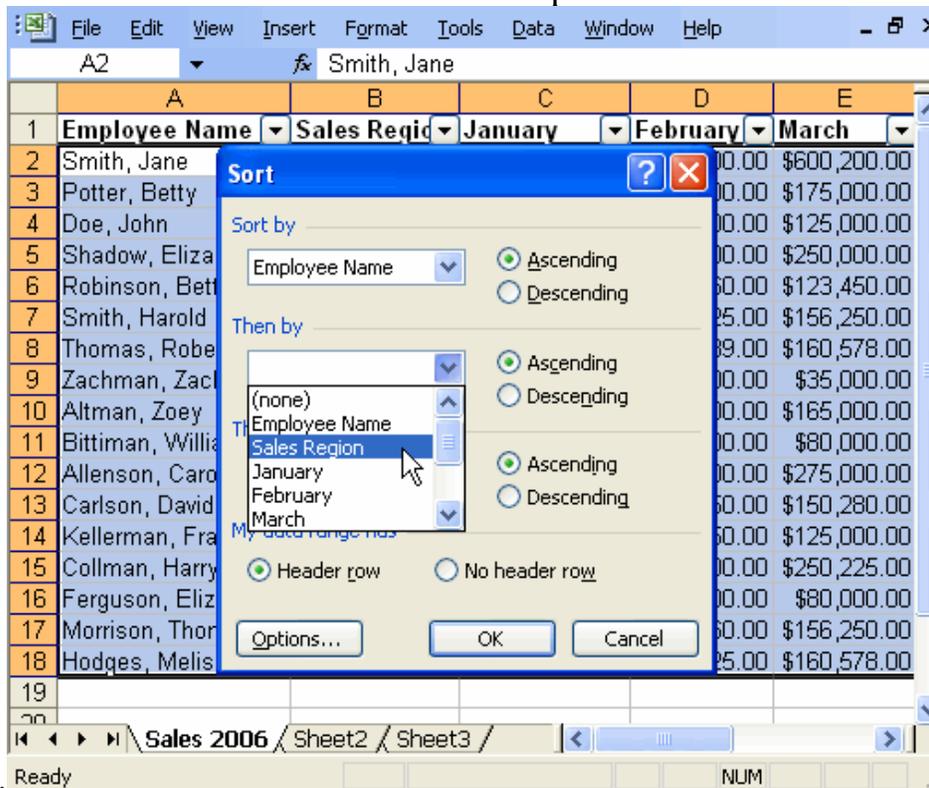
Click **OK**.

➤ To sort in **reverse alphabetical order** from Z to A, select **Descending**.

To Sort Multiple Categories:

- Select **Data** from the main menu.
- Select **Sort**. The **Sort** dialog box will appear.
- Select the category you would like to **Sort by**.
- Select **Ascending** to sort in alphabetical order from A to Z.
- In the **Then by** section, select the second category you would like to sort.

Click **OK** to sort in alphabetical order and by sales



region.

Challenge!

If you have not already done so in a previous Challenge, download and save the **Employee Sales** spreadsheet. Need help? [How to Download a File](#)

- Open the **Employee Sales** spreadsheet.
- Sort the **employee names** in alphabetical order.
- Sort by the **Sales Region** and then by **Employee Name**.
- Continue to sort the different categories until you are comfortable with this feature.
- Save and close the spreadsheet.

Lesson 23: Inserting, Viewing, and Editing Comments

By the end of this module, learners should be able to:

- Insert comments
- View comments
- Edit comments
- Delete comments
- Show and hide comments

Inserting, Viewing, and Editing Comments

[Watch the video!](#) (0:52 min) - [Tips](#) for watching our videos.

There may be times you would like to leave a reminder or note in the spreadsheet for yourself or someone else. Excel allows you to **easily insert comments** in a cell, as well as view and edit those comments.

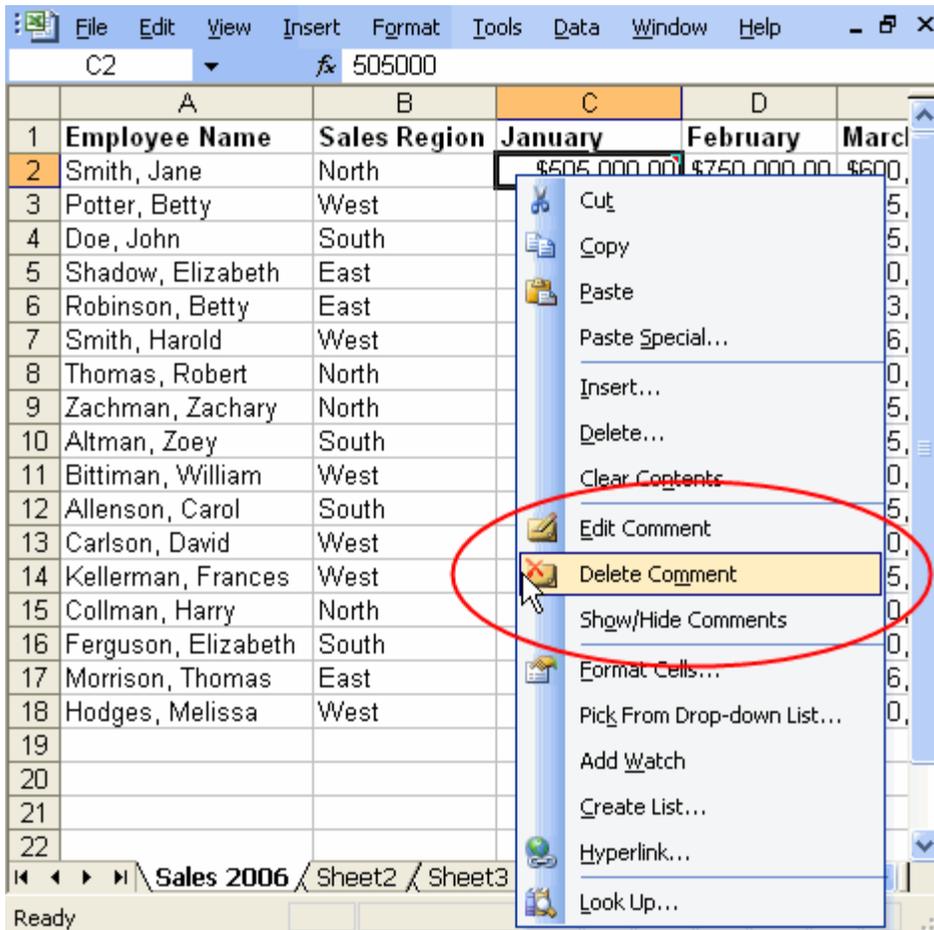
To Insert a Comment:

- Select the cell where you would like to add a comment.
- Choose **Insert** → **Comment** from the main menu.
- Enter your comment into the text box that appears next to the selected cell.
- Click in any other cell. The comment box will disappear.

➤ Notice the small, red triangle in the upper-right corner of the selected cell. This triangle indicates that there is a comment associated with the cell.

To Edit, Delete, Show, or Hide a Comment:

- Right-click the cell with a comment.
- Select **Edit Comment**, **Delete Comment**, or **Show/Hide Comments** from the menu.



➤ To hide a comment after choosing to show it, simply right-click the cell, choose **Hide Comment** from the menu.

Challenge!

If you have not already done so in a previous Challenge, download and save the **Employee Sales** spreadsheet. Need help? [How to Download a File](#)

- Open the **Employee Sales** spreadsheet.
- Add the following comment to the cell with **Jane Smith's February** sales information:
 - Record Month -- Sold 19 cars!
- Add the following comment to the cell with **Thomas Morrison's June** sales information:
 - Lowest monthly sales -- out sick.
- **Delete the comment** associated with Jane Smith's February sales record.
- Save and close the spreadsheet.

Lesson 24: Inserting Hyperlinks

By the end of this module, learners should be able to:

- Insert a hyperlink

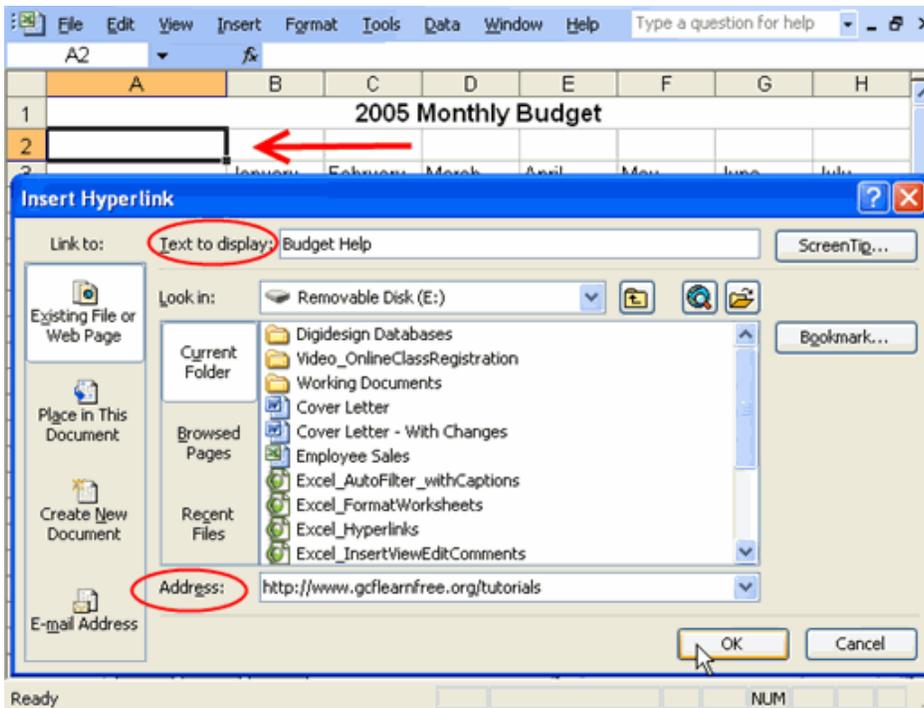
Inserting Hyperlinks

You can insert **hyperlinks** into a spreadsheet to access specific websites from that spreadsheet. Many businesses use hyperlinks within spreadsheets to easily link to online documents that are relevant to that specific spreadsheet.

In this example, we are working with a personal budgeting spreadsheet. We will insert a hyperlink that links to the GCFLearnFree.org® website. The site offers a tutorial on Money Basics, which includes general budgeting information.

To Insert a Hyperlink to a Website:

- Select the cell where you would like to insert the hyperlink.
- Select **Insert** → **Hyperlink** from the main menu. The **Insert Hyperlink** dialog box will appear.
- Enter the text you would like to appear as your link in the **Enter text to display:** field.
- Enter the website address in the **Address:** field at the bottom of the dialog box.
- Click **OK**. The hyperlink will appear in your spreadsheet.



Challenge!

Download and save the **Monthly Budget** spreadsheet to complete this Challenge. Need help? [How to Download a File](#)

- Open the **Monthly Budget** spreadsheet.
- Insert a **hyperlink** to a website of your choice.
- Save and close the spreadsheet.

Lesson 25: Grouping Worksheets Video

by the end of this module, learners should be able to:

- Group worksheets
- Format multiple worksheets at the same time

Formatting Worksheets

You can format multiple worksheets at the same time in Excel. To do this you must first **group** the worksheets together.

To Group and Format Worksheets:

- Click the first sheet tab you would like to format.
- Press and hold the **Shift** key on your keyboard.
- Click the last sheet tab you would like to format.

For example, if you have a workbook with three worksheets labeled 2005, 2006, and 2007, respectively, you would click the 2005 tab, press and hold the Shift key, and then click the 2007 tab. Both sheet tabs you clicked, and any in between, will be highlighted.

	A	B	C	D	E	F
1	2005 Monthly Budget					
2						
3		January	February	March	April	May
4	Rent	\$250.00	\$250.00	\$250.00	\$250.00	\$250.00
5	Car Payment	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
6	Cable	\$30.00	\$30.00	\$30.00	\$30.00	\$30.00
7	Power	\$42.00	\$45.00	\$45.00	\$50.00	\$55.00
8	Phone	\$30.00	\$32.00	\$35.00	\$30.00	\$42.00
9	Insurance	\$45.00	\$45.00	\$45.00	\$45.00	\$45.00
10	Credit Cards	\$100.00	\$100.00	\$100.00	\$100.00	\$100.00
11	Groceries	\$300.00	\$300.00	\$300.00	\$300.00	\$300.00
12	Gas	\$175.00	\$175.00	\$175.00	\$175.00	\$175.00
13						
14						
15						
16						
17	Monthly Expenses	\$972.00	\$977.00	\$980.00	\$980.00	\$997.00
18	Income	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00
19	Savings	\$228.00	\$223.00	\$220.00	\$220.00	\$203.00

- Edit one of the worksheets.

Any changes you make to one sheet will appear in **all the highlighted sheets**. For example, if you delete a row in the first sheet, that row will no longer appear in any of the highlighted sheets.

Challenge!

If you have not already done so in a previous Challenge, download and save the **Monthly Budget** spreadsheet. Need help? [How to Download a File](#)

- Open the **Monthly Budget** spreadsheet.
- Group the three sheet tabs.
- Add a column to the right of **July**.
- Type **August** in the column heading.
- Save and close the spreadsheet.

Lesson 26: Applying and Modifying Cell Formats

By the end of this module, learners should be able to:

- Format cell styles using the Format Cells dialog box.
- Format numbers, alignment, font, border, and patterns in a spreadsheet

Applying and Modifying Cell Formats

[Watch the video!](#) (2:24 min) - [Tips](#) for watching our videos.

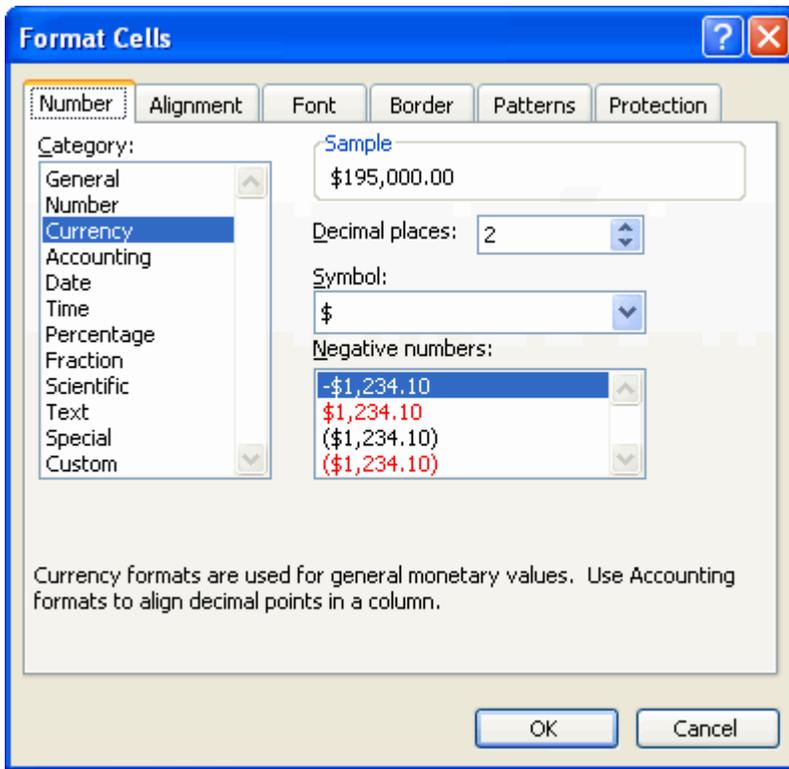
You may want to modify the **appearance** of your spreadsheet to make it more visually appealing. Excel allows you to make cosmetic changes to **cell formatting**.

To Apply and Modify Cell Formats:

- Use your mouse to select the cells you want to modify.
- Select **Format** → **Cells** from the main menu. The **Format Cells** dialog box will appear.
- Decide how you want to format the cells.
- Select the **tabs** that allow you to make the desired changes.
- Use the **Format Cells** drop-down menus and tools to make the desired changes.

- Click

OK.



In the Format Cells Dialog Box You Can Change:

- Number Formatting
- Alignment Formatting
- Font Formatting
- Border Formatting
- And More!

Challenge!

If you have not already done so in a previous Challenge, download and save the [Employee Sales](#) spreadsheet. Need help? [How to Download a File](#)

- Open the **Employee Sales** spreadsheet.
- Modify the **font** to be **Verdana**.
- Change the **font size** to 14.
- Make the **column headings** blue.

- Continue to format the cells until you are comfortable using the Number, Alignment, Font, Border, and Patterns tabs in the **Format Cells** dialog box.
- Save and close the spreadsheet.

Lesson 27: Creating New Workbooks from Templates

By the end of this module, learners should be able to:

- View available templates
- Create a new workbook from a template

Creating New Workbooks Using Templates

Excel allows you to create new workbooks using templates, or a predefined pattern. Several templates are preloaded in Excel and others are located on Microsoft Office Online.

To Create New Workbooks Using Templates On Your Computer:

- Open Excel.
- Select **New** from the menu. The New Workbook dialog box will appear.
- File** → **New** from the main menu. The New Workbook task pane will appear.
- Click **On my computer...** in the Templates section of the New Workbook task pane. The **Templates** dialog box will appear.
- Select the **Spreadsheet Solutions** tab.
- Select the template you wish to use.
- Click **OK**.

To Create New Workbooks Using Templates on Office Online:

- Open Excel.
- Select **File** → **New** from the main menu. The New Workbook task pane will appear.
- Click **Templates on Office Online** in the Templates section of the New Workbook task pane. Office Online will open in a new browser window.
- Browse the template categories and click the link of the category you wish to view.
- Click a template link.
- Click **Download Now** to download the template.

Challenge!

- Open Excel.
- Select **File** → **New** from the main menu.
- View the **templates** on your computer.
- Click **Templates on Office Online**.
- View several of the template categories on Office Online.
- Select a template.
- Download the template.
- Enter your data into the template.
- Save and close Excel.

Excel 2003 Quiz

- Question 1
- Microsoft Excel is what type of program?
 - A. Database
 - B. Email
 - C. Spreadsheet
 - D. Word processor
- Question 2
- A cell:
 - A. is an intersection of a column and a row.
 - B. has a unique cell address.
 - C. Neither A or B.
 - D. Both A and B.
- Question 3
- A document was saved to your disk and you want to open it for editing. Which menu do you select?
 - A. Edit
 - B. File
 - C. Open
 - D. View
- Question 4
- All formulas in Excel begin with the following symbol:
 - A. =
 - B. +
 - C. %
 - D. #
- Question 5
- Which formula below will add the value of B2 to the value of C3?
 - A. =B2+C3
 - B. =C3+B2
 - C. =SUM(B2+C3)
 - D. All of the above
- Question 6
- The AutoSum function is used to create a formula that includes a range of cells.
 - A. True
 - B. False
- Question 7

- A dialog box will appear before you delete a worksheet even if the worksheet does not contain data.
- A. True
B. False
- Question 8
- A workbook defaults to three worksheets. Additional worksheets can be created
- A. True
B. False
- Question 9
- Grouping worksheets allows you to:
 - A. apply identical formulas across all the worksheets in a group.
 - B. apply identical formatting across all the worksheets in a group.
 - C. make changes to all the worksheets in a group by changing only one of the worksheets.
 - D. All of the above.
- Question 10
- You want to insert a column between column A and column B. Which of the following needs to be done?
 - A. All the information in the worksheet needs to be retyped.
 - B. Insert a column by selecting the Columns selection on the Edit menu.
 - C. Insert a column by selecting the Columns selection on the Insert menu.
 - D. It cannot be done. A new worksheet needs to be created
- Question 11
- The easiest way to select an entire row is to _____.
 - A. Choose the Select option in the Edit menu
 - B. Click both the first entry and last entry in the row
 - C. Click the row heading
 - D. Double-click any cell in the row
- Question 12
- If a cell shows #####, it means you must insert a column.
- A. True
B. False
- Question 13
- The merge and center button:
 - A. is only available when worksheets are grouped.
 - B. is used to center vertically only.
 - C. allows you to select one or more cells and merge them into a larger cell.
 - D. is a button on the Drawing Toolbar.
- Question 14

- Which of the following operations cannot be performed in the Alignment tab of the Format Cells dialog box?
 - A. Change text orientation
 - B. Color a cell background
 - C. Merge cells
 - D. Wrap text
- Question 15
- The Source Data is:
 - A. the range of cells that make up a chart.
 - B. the same thing as an axis.
 - C. Both A and B.
 - D. Neither A and B.
- Question 16
- The quickest way to create and edit your charts is to use:
 - A. the Tools Menu.
 - B. the Chart Toolbar.
 - C. the View function.
 - D. the Format Dialog box.
- Question 17
- Which of the following is not a chart type in Excel?
 - A. Bar Chart
 - B. Pie Chart
 - C. Pin Chart
 - D. Line Chart
- Question 18
- A chart created on the same worksheet as the source data is called a chart sheet.
 - A. True
 - B. False
- Question 19
- To resize a chart:
 - A. use the arrow keys on your keyboard.
 - B. use the mouse to drag the sizing handles until the chart is the desired size.
 - C. use the mouse to drag the blinking cursor through the choices small (50%), medium (75%) and large (100%).
 - D. delete the original chart and insert a new chart with the correct measurements.
- Question 20
- Which dialog box allows you to add headers and footers to a document?
 - A. Save As
 - B. Page Setup

C.

View

Options

D. Filter Data

•

Answers:

- 1) C, 2) D, 3) B, 4) A, 5) D, 6) A, 7) B, 8) A, 9) D, 10) C, 11) C, 12) B, 13) C, 14) B, 15) A, 16) B, 17) C, 18) B, 19) B, 20) B

Practical Questions for Revision

1. (a) using Microsoft word, type the passage below as it is and answers the questions that follow.

“UNESCO hails Uganda”

The Director General of the United Nations Educational, scientific and cultural Organization (UNESCO), KIOCHIRO Matsuura, has commended Uganda’s efforts in emphasizing science Education. Matsuura, who is here for a two-day visit, said on his arrival at Entebbe Airport yesterday that the UN agency was “enjoying a strong bilateral relationship with Uganda.

“We appreciate Uganda’s efforts in embracing science and cultural education as part of national development. This being my first official visit here, I hope strengthen the ties between Uganda and UNESCO”, Matsuura said.

He emphasized that Uganda’s cultural and scientific education statistics which stand as shown in the table below were encouraging by world standards. These statistics were carried out in the year 2000, 2001, 2002, 2004 for both cultural and science education.

Cultural education:

Males (%) 70, 50, 28, 40, and 80

Females (%) 60,30,96,48 and 78

Science education:

Males (%) 30,78,90,20 and 60

Females (%) 56,89,76,59 and 90

	Males		Females	
	Year	%	Year	%
Cultural education				
Science Education				

- (i) Set the font size to 13 and double space the document. (02mark)
- (ii) Copy the document and paste it on the next page. (02mark)
- (iii) Set the title “UNESCO” hails Uganda to font size 14 and bolded.(02mark)
- (iv) Set the margins to(1.5) and (1.3 right) then bottom and top (1.2)

- (v) Set the document body text to’ Arial Narrow” (02mark)
- (vi) Insert the header as “Diploma” and in italics (02mark)
- (vii) Set the whole document to justified and font color, red (02mark)
- (viii) Number pages in uppercase alphabet. (02mark)
- (ix) Save your work in the diskette provided in your surname and index no. (02mark)

- (x) If the statistics given in percentages correspond to the years shown, enter the percentages in the table appropriately. (02mark)

2 (b) The information below is driven from MUFTI Limited from some few selected staff. The staff include JACKIE, KENT, PAULINE, UNICE, XAVIER, LEONALD, SONNY, CHRISTINE, PHILIPER and INNOCENT. They earn the following amount as basic salary respectively: 660000, 760000,870000, 580000, 600000, 610000, 630000, 640000, 650000 and 555000.

- (i) Enter the above information using Microsoft Excel. (02mark)
- (ii) Lunch allowances for all employees is 22% of their basic pay. (02mark)
- (iii) Housing allowances are 62% of lunch allowances. (02mark)
- (iv) All employees are paid transport allowances of 59,000 (02mark)
- (v) Compute the employees’ gross pay. (02mark)
- (vi) PAYE is 2.5% of basic salary. (02mark)
- (vii) National social security fund is calculated at 18% of gross pay. (02mark)
- (viii) Compute the employees’ net pay. (02mark)
- (ix) Plot a line graph of net pay against basic salary in worksheet 2. (02mark)

- (x) Save your work in your name and registration number on the desktop.
(02mark)

SECTION B (60 MARKS)

Answer all questions from this section

3. Road accidents are very rampant in Uganda. Many people have lost their lives in road accidents. You are required, using presentation software to educate Ugandans about road accidents. Create four slides as indicated in parts (I)-(IV). Every slide should:

- Using minimal graphical effects to make the presentation entertaining.
- Be able to convey the appropriate message to the community.
- Run automatically.
- Have your name and index number as footer.
- **Slide I** - should include the title, your name and your school name. (06 marks)
- **Slide II**- should include the actual causes of road accidents in Uganda.(07 marks)
- **Slide III**- should include the contribution of the traffic police in the prevention of road accidents. (07 marks)
- **Slide IV** – should include the preliminary precautions to avoid road accidents. (07 marks)
- Save the presentation as “ Road Accidents” (01 marks)
- Print your slides (02 marks)

Name _____ **MARKING GUIDE** _____ Stream _____

840/1
COMPUTER STUDIES
Paper 1
April, 2012
1 ¼ Hours

Senior One End of Term One Examination

COMPUTER STUDIES

Paper 1

1 Hour 15 Minutes

INSTRUCTIONS TO CANDIDATES:

Write your name and stream in the spaces above.

*This paper consists of **two** sections: **A** and **B**.*

*Section **A** contains **20 compulsory objective-type** questions. Write your best alternative:*

***A, B, C** or **D**, in the table provided below.*

<i>Section B contains two compulsory structured questions. Answers must be written in the spaces provided.</i>									
TABLE FOR SECTION A ANSWERS									
1.	C	5.	B	9.	C	13.	A	17.	A
2.	C	6.	D	10.	C	14.	A	18.	B
3.	D	7.	A	11.	B	15.	D	19.	B
4.	C	8.	B	12.	B	16.	C	20.	B

SECTION A: (20 MARKS)

1. The term computer is derived from a Latin word “*Computare*” which locally means:
 - A. To simplify work.
 - B. To calculate and multiply.
 - C. To add and count.
 - D. To input and store data.

2. Data is a general word for:
 - A. Processed information.
 - B. Raw materials.
 - C. Raw facts and figures.
 - D. Dynamic Access Time Application.

3. Which number system is used to represent digital information in computers?
 - A. Decimal system.
 - B. Analogue system.
 - C. Digital System.
 - D. Binary system.

4. Which of the following is a unit of measuring computer memory?
 - A. How heavy the hard disk is in grams (g).
 - B. Millions of instructions per second (MIPS).
 - C. Giga Bytes (GB).
 - D. How fast the computer is in meters (m).

5. The screen that is seen after supplying a username, password and logging onto a computer is:
 - A. User Accounts Screen.
 - B. Desktop Screen.
 - C. Monitor Screen.
 - D. Welcome Screen.

6. Who of the following is regarded as the father of computers?
 - A. Joseph Marie Jacquard.
 - B. Bill Gates.
 - C. The Early Man.
 - D. Charles Babbage.

7. The first electronic digital computer was:

- A. ENIAC.
 - B. the Mark I.
 - C. UNIVAC.
 - D. IBM 305 RAMAC.
8. Which of these generations in the evolution of computers, is characterized by the use of integrated circuits?
- A. First generation.
 - B. Third generation.
 - C. Second generation.
 - D. Fourth generation.
9. Which of the following was a development during the Electro-mechanical era (1890 - 1946)?
- A. Blaise Pascal's Calculator.
 - B. Transistors.
 - C. ASCC.
 - D. The Slide Rule.
10. The American statistician who developed a mechanical tabulator based on punched cards to rapidly represent data gathered for the USA population census of 1890 was:
- A. Howard Aiken.
 - B. Dr. Grace Murray Hopper.
 - C. Herman Hollerith.
 - D. William Oughtred.
11. Which one of the following was an analog logarithms-based device used as a primary calculator for engineers throughout the 19th and early 20th centuries?
- A. The Abacus.
 - B. The Slide Rule.
 - C. The Stepped Reckoner
 - D. Blaise Pascal's Calculator
12. What does
the term Artificial Intelligence mean as used in computer science?
- A. Knowledge about artificial devices that are being produced today.
 - B. Programming of devices to assume human capabilities such as learning and self-correction.
 - C. Fast thinking and cleverness of machines.
 - D. Brainpower of computers that is greater than our Natural Intelligence as human beings.

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13. Which one of the following is the lowest-level programming language understood by computers?
- A. Machine Code Language.
 - B. FORTRAN (Formula Translator).
 - C. BASIC (Beginner's All-purpose Symbolic Instruction Code).
 - D. 5GLs (Fifth-Generation programming Languages).
14. Second generation computers reduced in size as compared to first generation computers because they
- A. could now fit in a single room.
 - B. could now fit on a desk (desktop).
 - C. could now fit on a lap (laptop).
 - D. could now fit in a palm of a hand (palmtop).
15. Which of the following is **not** a characteristic of third generation computers?
- A. They had internal memory of about 2Megabytes.
 - B. Multi-tasking was possible.
 - C. They used keyboards for input.
 - D. They had a processing speed of about 30,000 instructions per second.
16. Use of the mouse and hand held pointing devices was a development of:
- A. First generation.
 - B. Third generation.
 - C. Fourth generation.
 - D. Second generation.
17. GUI is an acronym for:
- A. Graphical User Interface.
 - B. General Universal Inputs.
 - C. German Upper Involvement.
 - D. Great User Internet.
18. Which of the following characteristics will be associated with future computers?
- A. Very noisy computers.
 - B. Input by voice and touch.
 - C. Self-initiating computing systems.
 - D. One Million Bytes of RAM.
19. Which of the following was used in the first generation for secondary storage?

A. Magnetic Hard Disks Memory.

B. Magnetic Core Memory.

C. Magnetic Drum Memory.

D. Optical Discs (CDs and DVDs)

20. The acronym LSI stands for:

A. Long System Intelligence.

B. Large Scale Integration.

C. Last Software Input.

D. Least Security Information.

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SECTION**B****(20****marks)**

Answer **all** questions in this section. Answers **must** be written in the spaces provided.

21. (a) What is a **computer**?

(3 marks)

A computer is an electronic device that accepts user **input** (data), **processes** it under special instructions (programs), to produce the desired meaningful **output** (information).

(b) Outline any **seven** characteristics of modern Computers today. (7 marks)

Modern computers today have the following characteristics:

Speed. Computers operate at extremely high speeds . Their speed is measured in millions of instructions per second (MIPS).

Automatic (Spontaneous). The computers are automatic. They do not need any supervision in order to do tasks when instructed.

(3) Accuracy. Computers are very accurate. The errors in made computing are due to the users but not technological weakness. If a user enters wrong data, the computer gives wrong Information. This trend is described as GIGO (Garbage In, Garbage Out)

(4) Computer are versatile. Modern Computers can perform different kinds of tasks at the same time. For example you can play music while typing a document at the same time. This is also known as **multi-tasking**.

(5)Diligence (Endurance). Computers have the ability to perform the same task for a long time without getting tired. This is because a computer is a machine, and so does not have human behaviors of tiredness and lack of concentration. For example, Computers which are used for controlling the satellites.

(6) Adaptability: Modern Computers can be adapted to comply with different settings and environments. For example, they can be used as personal computers, for home use, banking, communication, entertainment, weather forecasting, space explorations, teaching, railways, medicine etc.

(7) Need User input. Computers cannot initiate themselves and make the decisions. They need instructions from users to enhance the process. After all, a computer is only a machine.

(8) Artificial intelligence. Computers are artificially intelligent. i.e They can be programmed to assume capabilities such as learning, reasoning, adaptation, and self-correction. For example computers can respond as if they were thinking by playing chess, recognize handwriting and speech. However, the computers themselves cannot think. The artificial intelligence is only supported by the power of the programs installed in them.

(9) Storage. For a computer to be able to work, it must have some form of work space where data is stored before being processed. All information is stored on a hard disk or in the Random Access Memory (RAM).

(10) Reduction of cost. Computers are a short term investment in order to achieve a long term gain. Though the investment is high, they reduce the cost in the long run. They reduce man power and lead to a neat and efficient way for solving various tasks.

22. (a) Write the following Computer Studies acronyms in full: (10 marks)

- i). ICT.
Information and Communication Technology
- ii). ARPANET
Advanced Research Projects Agency Network
- iii). RAM.
Random Access Memory
- iv). FORTRAN
Formula Translator
- v). UNIVAC Universal Automatic Computer

END.

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